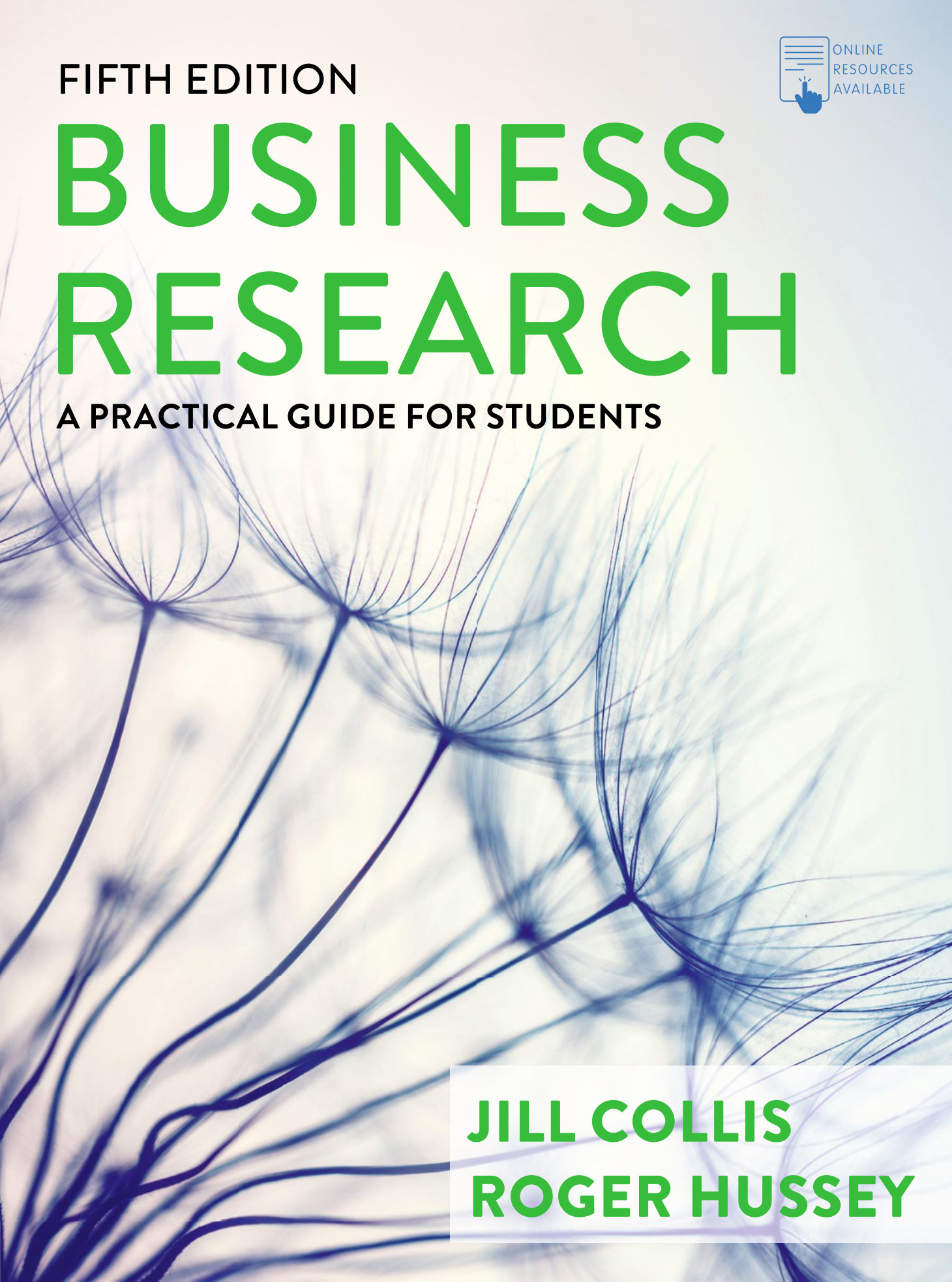
FIFTH EDITION

BUSINESS RESEARCH

A PRACTICAL GUIDE FOR STUDENTS

ONLINE RESOURCES AVAILABLE



JILL COLLIS
ROGER HUSSEY

'This is an excellent research textbook for undergraduate and postgraduate students. It is well structured, concise and easy to follow, providing practical guidance to help students understand the complexities of Business research. The inclusion of a new chapter on publishing research is an extremely valuable addition to this fifth edition.'

Robert Bowen, *Swansea University, UK*

'Conducting research is not an easy activity in the world of business and writing about this process is even more difficult – it is worth reading and buying *Business Research*. For Masters students, it offers a good overview of what should be part of a research proposal and how this can be used to set up a good line of reasoning for doing a research project. For PhD students it gives enough in-depth insights to be useful when doing research; the relationships with different aspects of the philosophy of science are also well introduced. For MBA students, there is also enough in the book to pay attention to and the authors have done a good job of making the book valuable for users who have a more practical focus on the necessary steps to be taken for writing a good research report.'

Bartjan Pennink, *University of Groningen, Netherlands*

'*Business Research* by Collis and Hussey is an excellent resource for both students and teachers of research methods. Compelling yet straightforward, this fifth edition further comprehensively outlines the significance of research methods, while the publication strategy section is a valuable addition. The book covers vital features of conducting scientific research in a step-by-step process, and with examples, tables, and text boxes in chapters, it is straightforward to follow. The book is highly recommended and equally valuable for the undergraduate, as well as advanced level research methods students in social sciences. The authors have done a fabulous job in taking their readers along the course of discovering the fascinating science of conducting research.'

Naveed Akhter, *Jönköping University, Sweden*

'One of the best business research books available. I am impressed by how Collis and Hussey lead us through the research maze in an uncomplicated manner. The clearly written text follows the typical pattern of the research process and provides practical guidance to undergraduate and postgraduate students as they develop their research knowledge in an easily structured way. Particularly useful in this edition is the new chapter on how to publish research. A fantastic revision, well worth its value for money!'

Lynette Louw, *Rhodes University, South Africa*

BUSINESS RESEARCH

a practical guide for students

Jill Collis & Roger Hussey

fifth edition

macmillan international HIGHER EDUCATION

RED GLOBE PRESS

This edition published 2021 by
RED GLOBE PRESS

Previous editions published under the imprint PALGRAVE

Red Globe Press in the UK is an imprint of Macmillan Education Limited, registered in England, company number 01755588, of
4 Crinan Street, London, N1 9XW.

Red Globe Press® is a registered trademark in the United States, the United Kingdom, Europe and other countries.

ISBN 9781352011814 paperback
ISBN 9781352011821 ebook

This book is printed on paper suitable for recycling and made from fully managed and sustained forest sources. Logging, pulping and manufacturing processes are expected to conform to the environmental regulations of the country of origin.

A catalogue record for this book is available from the British Library.

A catalog record for this book is available from the Library of Congress.

brief contents

contents

list of figures

list of tables

list of boxes

about the authors

Jill Collis, BA (Hons), PhD, has a business background. Her subsequent experience as a mature student gave her considerable insight into the needs of students and those who teach them, which is reflected in her writing. She started her academic career as a research associate in the Small Business Centre at Kingston University, London in 1998 and worked her way up. From 2010 to 2019 she was Reader (Associate Professor) in Accounting at Brunel University London, where she was the founding director of the Accounting and Auditing Research Centre. Jill's research has contributed to the 'think small first' approach in UK company law and policy on better regulation to reduce burdens on smaller entities. Internationally, she is recognised as a leading scholar on the financial reporting and auditing needs of small and micro-companies. In 2015, she received the Best Supervisor Award from the Union of Brunel Students and an award from Brunel's College of Business, Arts and Social Sciences in recognition of her outstanding contribution to the student experience.

Roger Hussey is a Fellow of the Association of Chartered Certified Accountants and holds an MSc in Industrial Relations and a PhD in Accounting from the University of Bath. He has published many books and articles on accounting and management subjects. After several years in industry he was appointed Director of Research into Employee Communications at the Industrial Relations Unit, St Edmund Hall, University of Oxford. After six years at Oxford, he moved to the University of the West of England, Bristol. In 2000, Roger became the Dean of the Odette School of Business at the University of Windsor, Canada. He is now Emeritus Professor at the University of the West of England and the University of Windsor.

preface to the fifth edition

Business Research offers a succinct and accessible guide to business and management research, which makes it an ideal core text. The international success of the previous editions of *Business Research* has led to the development of this updated and expanded fifth edition. What sets it apart from many other research books is that it provides practical guidance to undergraduate, Master's and doctoral students. Despite its development over the years, we are delighted to say that students will still find it small enough to carry around as a constant source of reference!

The key features of the book are:

- The chapters follow the typical pattern of the research process, from the design of the project to the writing-up stage and dissemination of the research.
- Each chapter helps students develop knowledge in a structured manner. Knowledge is built up incrementally, and there are clear links between the chapters. Topics that are not relevant to the level of the student can be omitted.
- As many first-time researchers find the language of research off-putting, we introduce terms gradually. Key definitions are provided in the margin and, for ease of reference, there is a glossary at the end of the book.
- The clear and accessible writing style aids understanding. The text is supported by boxes, figures, tables (and screen shots where appropriate), which illustrate or summarise particular aspects.
- The main problem for all students is how to find the most efficient and effective way of collecting, analysing, and presenting their data while maintaining academic rigour. Therefore, we refer to a range of studies that illustrate the methods covered in this book. These are chosen for their richness, clarity and variety of approach.
- Examples of students' work and 'vox pops' are used to integrate the student's perspective.
- At any time, students can refer to the 'Trouble shooting' chapter for advice.
- Higher level students can follow up the suggestions for further reading associated with each chapter.
- There are a number of activities at the end of each chapter which are designed to encourage discussion and reflection. They can be used by students for independent study or by lecturers/professors as the basis for group work in class. In addition, online progress tests are available on the companion website.
- The companion website also contains detailed *PowerPoint* slides and other teaching and learning material.

Changes in the fifth edition

Existing users will find the fifth edition retains the familiarity of the previous edition. The main difference they will notice is that we have added a new chapter, which will be of particular interest to students conducting high level research and those planning an academic career after their studies. The new chapter covers how to plan a publication strategy, and which conferences and journals to target. It also gives advice on writing conference papers, as well as how to design and present a poster or *PowerPoint* slides at a conference. In addition, the chapter leads the reader through the process of writing and submitting an article to an academic journal, the challenge of responding to reviewers' comments, and gives advice on what to do if the article is rejected. Building a list of publications is essential for graduates seeking an academic career and is often a

prerequisite to securing that all-important first job. However, there is little guidance on this in the public domain. Therefore, this chapter will help support higher-level students and early-career researchers in achieving their goals.

The success of the book in different countries has led to a more international perspective. Every chapter has been carefully reviewed, refreshed and updated where necessary. The successful format of the earlier editions has been retained, but the design has been improved to better meet the needs of students and their lecturers/professors.

Suggested lecture programmes

Undergraduate and postgraduate students on taught programmes often need to complete their research within a relatively short period of time. Consequently, they have to balance the conceptual demands of the subject with pressing practical considerations. In contrast, doctoral students generally have more time, but need to develop greater knowledge of the conceptual aspects of research. The following examples illustrate which chapters might be included for students at these different levels.

Undergraduate students

Week no.	Suggested chapter(s)	Notes
1	1. Understanding research	
2	2. Dealing with practical issues	
3	3. Identifying your paradigm (overview) and 4. Designing the research	
4	5. Searching and reviewing the literature	Supported by training on using e-resources and software for managing references
5	6. Writing your research proposal	
6	7. Collecting qualitative data	
7	8. Analysing qualitative data	
8	10. Collecting data for statistical analysis	
9	11. Analysing data using descriptive statistics	Supported by training on statistical software
10	13. Writing up the research	

Postgraduate students

Week no.	Suggested chapter(s)	Notes
1	1. Understanding research	
2	2. Dealing with practical issues	
3	3. Identifying your paradigm	
4	4. Designing the research	

Week no.	Suggested chapter(s)	Notes
5	5. Searching and reviewing the literature	Supported by training on using e-resources and software for managing references
6	6. Writing your research proposal	
7	7. Collecting qualitative data	
8	8. Analysing qualitative data	
9	10. Collecting data for statistical analysis	
10	11. Analysing data using descriptive statistics	Supported by training on statistical software
11	12. Analysing data using inferential statistics	Supported by training on statistical software
12	13. Writing up the research	

Doctoral students

Week no.	Suggested chapter(s)	Notes
1	1. Understanding research	
2	2. Dealing with practical issues	
3	3. Identifying your paradigm	
4	4. Designing the research	
5	5. Searching and reviewing the literature	Supported by training on using e-resources and software for managing references
6	6. Writing your research proposal	
7	7. Collecting qualitative data	
8	8. Analysing qualitative data	
9	9. Integrated collection and analysis methods	
10	10. Collecting data for statistical analysis	
11	11. Analysing data using descriptive statistics	Supported by training on statistical software
12	12. Analysing data using inferential statistics	Supported by training on statistical software
13	13. Writing up the research	
14	14. Publishing your research	

acknowledgements

We are grateful to our colleagues around the world and the many cohorts of students who have kindly commented on previous editions of this book.

We are indebted to our editorial and publishing team: Isabelle Cheng, Christian Ritter, Liz Holmes and Pavitra Arulmurugan for their forbearance and support. Finally, we are deeply indebted to Sir Timothy John Berners-Lee for the gift of the World Wide Web, which allows this transatlantic duo to continue writing together and communicate with their publishers without leaving their desks!

Jill Collis
Roger Hussey

tour of the book

Learning objectives
What you will learn. Helps organise your study and track your progress.

Learning objectives

When you have studied this chapter, you should be able

- determine the knowledge, skills and personal qualitie researchers need
- use techniques for generating research topics
- negotiate access to data and consider ethical issues

Key definitions
Key terms appear in bold and are defined in the page margin for quick reference. A full glossary, also featuring other useful terms (in green in the text), can be found at the back of the book and online.

Qualitative data are data in a non-numerical form.

Quantitative data are data in a numerical form.

Looking at the approach adopted by the rese choose to collect **quantitative data**, which is methods of analysis. They often describe such choose to collect **qualitative data** and analyse They might describe such studies as qualitati study might incorporate elements of both as gaining understanding of phenomena in the s

However, referring to a research approach ing. For example, you might want to design images, published text or transcripts of intervi

Vox pops
Students share their experiences. Bringing theory to life, they help you relate to key challenges that others have overcome.

Vox pop What has been the high point of your research so far?

Ambrose, first year PhD student investigating the role of corporate governance mechanisms in global financial integration

The amazing feeling that my research idea has the potential to contribute towards academic knowledge globally.

Tables, figures and boxes
Summarising important information, illustrating key concepts visually, and offering checklists.

Box 1.2 Attributes supervisors look

- Confidence, enthusiasm and a positive
- Ability to communicate clearly in verba
- Capacity for independent learning and
- Ability to think independently and reas
- Motivation and perseverance in achievi

Table 1.1 Classification of the main types of research

Type of research	Basis of classification
Exploratory, descriptive, explanatory and predictive research	Purpose of the research
Quantitative and qualitative research	Process of the research
Applied and basic research	Outcome of the research
Deductive and inductive research	Logic of the research

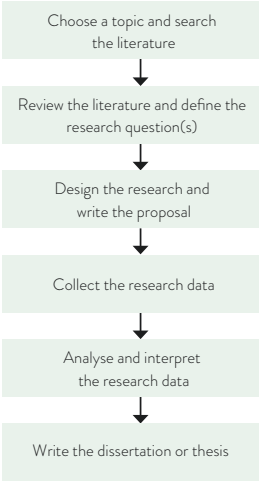
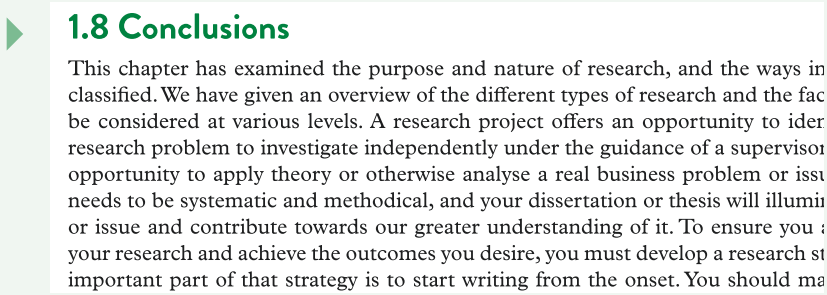


Figure 1.1 Overview of the research process

Conclusions

Check your understanding of the chapter material.



1.8 Conclusions

This chapter has examined the purpose and nature of research, and the ways in
classified. We have given an overview of the different types of research and the fac
be considered at various levels. A research project offers an opportunity to ider
research problem to investigate independently under the guidance of a supervisor
opportunity to apply theory or otherwise analyse a real business problem or issu
needs to be systematic and methodical, and your dissertation or thesis will illumi
or issue and contribute towards our greater understanding of it. To ensure you
your research and achieve the outcomes you desire, you must develop a research st
important part of that strategy is to start writing from the onset. You should ma

References

Full details are provided of important texts that are cited within the chapters. These references help identify key publications for further reading.

References for further

Barth, M. E. (2018) 'How international acc
Accounting Research, Summer 17(2), pp
Creedy, J. (2001) 'Starting research', *The A*
Hamidi, H. (2018) 'Research possibilities in
in developing countries: A review and re
Journal, 10(2) Special Issue, pp. 146–15
Litman, T. (2012) *Evaluating Research Quali*
http://www.vtpi.org/resqual.pdf
Ott, D. L. and Michailova, S. (2018) 'Cultur
Management Reviews, 20(1), pp. 99–119
Phillips, E. M. (1984) 'Learning to do resear
Phillips, E. M. and Pugh, D. S. (2010) *How t*
Tenzer, H., Terjesen, S., and Harzing, A.-W.

Activities

Consolidate your learning with these reflective and practical exercises.

Activities

1 Select two academic journals
library and construct a table
to whether the research is ex
explanatory or predictive.
2 Construct a second table tha
according to whether the res
qualitative.

Troubleshooting

Resolve problems quickly, by examining common challenges that can arise during the main stages of the research process. Guidance is offered on how to resolve these issues, with cross-references to specific chapters in the book for further information.

15.5 Making a preliminary plan

Problem You know the research topic
know how to plan the first stages of the

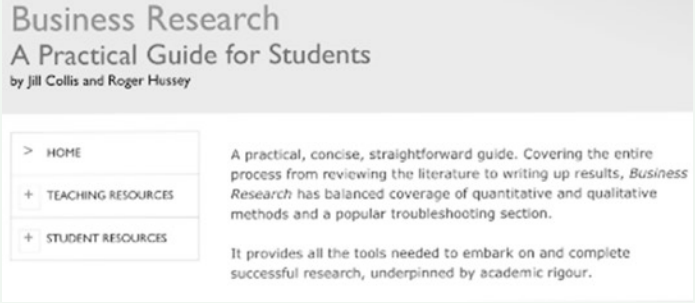
The research proposal is going to be your det
some preliminary investigations before you
should be as follows:

1. Carry out a literature search using keywords
important academic articles and other publ
2. Identify a research problem or issue to inves
key articles and other publications (see Cha

Companion website

macmillanihe.com/Business-Research-5e

Visit the companion website for interactive progress tests, an online glossary, *Microsoft PowerPoint* slides for lecturers, and other useful resources to help support teaching and learning.



1

Understanding research

Learning objectives

When you have studied this chapter, you should be able to:

- explain the nature and purpose of research
- classify different types of research
- identify the main stages in the research process
- understand the role of supervision
- recognise the characteristics of good research.

1.1 Introduction

Whether you are an undergraduate student conducting your first research project or a postgraduate student conducting research at Master's or doctoral level, the explanations in this chapter will help you develop a firm understanding of what research is in an academic context. This is important because we use the term 'research' quite loosely in everyday language, but you will need to know what it means in the context of your dissertation or thesis.

We start this chapter by examining a definition of research and unravelling the meaning behind the terms used in the definition. This paves the way for a discussion on the purpose of research and the typical objectives of academic research. We then go on to examine the main ways in which research studies are classified. These classifications help us understand the reasons why the research was conducted, the way in which the research data were collected and analysed, the logic of the research, and whether the outcome of the research is likely to be a solution to a particular problem or a more general contribution to knowledge. This is followed by a preliminary look at the main stages in the research process and the important role your supervisor will play. To give you an idea of what you should be aiming for, the final topic in this chapter compares the characteristics of good and poor research.

1.2 Nature and purpose of business research

Research is a systematic and methodical process of enquiry and investigation with a view to increasing knowledge.

Data are known facts or things used as a basis for inference or reckoning.

A **research question** is the specific question relating to the research problem that is addressed by the research.

A **research problem** is the particular problem or issue that is the focus of the research.

A **research topic** is the general area of research interest.

Although **research** is central to both business and academic activities, there is no consensus in the literature on how it should be defined. One reason for this is that research means different things to different people. However, from the many definitions offered, there is general agreement that research is:

- a process of inquiry and investigation
- systematic and methodical, and
- increases knowledge.

As far as the nature of research is concerned, the above definition tells us that researchers need to use appropriate methods for collecting and analysing research **data**[1] and that they need to apply them rigorously. The general purpose of academic research is to investigate a **research question** with a view to generating knowledge. A research question is the specific question that the research is designed to investigate. It provides a focus for your research. Do not confuse it with the questions that you might ask participants in the research, which are detailed questions designed to collect research data. Your research question will relate to a particular **research problem** or issue you have identified within your **research topic** (the general subject area of interest). We will look at this in more detail later on in this chapter.

Whether you are an undergraduate, a Master's or doctoral student, a research project offers you an opportunity to identify and select a research problem and investigate it independently under the guidance of a supervisor. It allows you to apply theory to or otherwise analyse a real business problem, or to explore and analyse more general issues. It also enables you to apply techniques and procedures to illuminate the problem and contribute to our greater understanding of it or to generate solutions. In the process of doing your research, you will develop skills that will enhance your employability. The typical objectives of research can be summarised as follows:

- to review and synthesise existing knowledge
- to investigate some existing situation or problem
- to provide solutions to a problem
- to explore and analyse more general issues
- to construct or create a new procedure or system

1. This term is a Latin plural noun, the singular of which is 'datum'.

- to explain a new phenomenon
- to generate new knowledge
- a combination of any of the above.

From this you can see that research is purposeful and is conducted with a view to achieving an outcome. The research report is usually called a **dissertation** or **thesis**. A dissertation or thesis is a lengthy, detailed discourse that is written as part of an academic degree (a discourse is a formal discussion of a topic). Academic research can also be conducted for the purpose of publishing the study as a book or an article in an academic journal, or for consultancy purposes. This book focuses primarily on the needs of students carrying out some form of business research for a qualification.

A **dissertation** or **thesis** is a lengthy, detailed discourse that is written as part of an academic degree.

1.2.1 Types of enterprise to study and users of business research

Types of enterprise to research include small and medium-sized enterprises (SMEs), businesses with limited liability (such as companies), and organisations in the not-for-profit or public sectors. The focus in the media is mainly on big business, yet 99% of businesses are SMEs and you may find yourself employed by one or even starting one. Whatever type of entity you choose as the focus of your research, you will find a wide range of issues to investigate.

The typical users of business research are:

- the government – for developing/monitoring policies, regulations, and so on
- owners, managers and business advisers – for keeping up to date with new ideas and specific developments in business
- management – for developing internal policies and strategies (for example, comparing research results relating to their own business with those with previous periods, their competitors, and/or industry benchmarks)
- academics – for further research and educational purposes.

1.2.2 International research

Increasingly research has reflected an international dimension. International research has considerable benefits as it can provide fresh knowledge about other countries and permit comparisons. However, the quality of such research raises questions if the researcher does not fully understand practices in other countries. The main problems with international research arise when:

- the student is conducting research in a country other than their home country
- the supervisor is from another country or does not recognise the cultural differences that might be present
- the research is being conducted in another country and neither the supervisor nor the student appreciates the differences
- the assessors of the research and those responsible for the application of its findings have insufficient understanding of the cultural differences.

The likelihood of such problems arising depends on whether those involved in the research process have cultural intelligence. This has been defined as 'an individual's capability to function and manage effectively in culturally diverse situations and settings' (Ott and Michailova, 2018, p. 99). Training courses, educational interventions and the research experience may help improve cultural understanding.

International research offers significant benefits which go beyond those gained by researchers involved and their institutions. Disciplines such as international marketing and international accounting have made a substantial contribution worldwide. Barth (2018) identifies a number of benefits of international studies that apply specifically to the regulation of

accounting. However, some of her arguments in favour of international accounting research can be applied to other disciplines. For example:

- A study examining a specific institutional feature in one particular country can give insights that are relevant to other countries with a similar institutional feature.
- A study examining the diverse institutional settings that exist in different countries can give insights that research based on only one country cannot provide.

There is a considerable amount of literature that offers suggestions for future research in disciplines and countries other than the ones we have mentioned. One example suggested by Hamidi (2018) is a study on human resource development, which would not be unusual except that the focus could be on SMEs in developing countries. A more extensive article summarised systematically reviews 264 articles on language in international business and suggests a future research agenda (Tenzer, Terjesen and Harzing, 2017).

A study that has international elements, including the nationalities and experiences of those involved in the study, has the potential to offer valuable findings. We have identified the main difficulties that can arise, but if action is taken to resolve them international research, however it is defined, can result in useful findings that may be publishable.

Vox pop What has been the high point of your research so far?

Ambrose, first year PhD student investigating the role of corporate governance mechanisms in global financial integration

The amazing feeling that my research idea has the potential to contribute towards academic knowledge globally.

1.3 Classifying research

Studying the characteristics of the different types of research helps us to examine the similarities and differences. Research can be classified according to the:

- purpose of the research – the reason why it was conducted
- process of the research – the way in which the data were collected and analysed
- logic of the research – whether the research logic moves from the general to the specific or vice versa
- outcome of the research – whether the expected outcome is the solution to a particular problem or a more general contribution to knowledge.

For example, the aim of your research project might be to describe a particular business activity (purpose) by collecting qualitative data that are quantified and analysed statistically (process), which will be used to solve a business problem (outcome). Table 1.1 shows the classification of the main types of research according to the above criteria.

Table 1.1 Classification of the main types of research

Type of research	Basis of classification
Exploratory, descriptive, explanatory and predictive research	Purpose of the research
Quantitative and qualitative research	Process of the research
Applied and basic research	Outcome of the research
Deductive and inductive research	Logic of the research

1.3.1 Exploratory, descriptive, explanatory, and predictive research

If we are classifying a study according to its purpose, we can describe it as being exploratory, descriptive, explanatory, or predictive research.

Exploratory research is conducted to provide better general understanding of **phenomena**[2] when there are very few or no previous studies. It can also be used to examine the feasibility of a more rigorous, larger study later. The aim of this type of research is to look for patterns and develop ideas rather than test propositions. The research questions in exploratory research focus on 'how', 'what' and 'where' as the aim is to gain insights and familiarity with the phenomenon under study.

Typical techniques used in exploratory research include case studies, observation and historical analysis, which can provide both quantitative and qualitative data. Such techniques are very flexible as there are few constraints on the nature of activities employed or on the type of data collected. The research will assess which existing theories and concepts can be applied to the problem or whether new ones should be developed. The approach to the research is usually very open and concentrates on gathering a wide range of data and impressions. As such, exploratory research rarely provides conclusive answers to problems or issues, but gives guidance on what future research, if any, should be conducted.

Descriptive research is conducted to identify and describe the detailed characteristics of phenomena. Descriptive research goes further than exploratory research when examining a phenomenon as the aim of the study is to provide a basis for arguments founded on empirical evidence. The following are examples of research questions in a descriptive research study:

- What is the absentee rate in a particular department?
- What are the feelings of workers faced with redundancy?
- What are the qualifications of different groups of employees?
- What type of packaging for a box of chocolates do consumers prefer?
- What information do consumers want shown on food labels?
- Which car advertisements on television do men and women of different ages prefer?
- How many students study accounting in China compared with students in Australia?
- How do commuters travel to work in capital cities?

You will notice that many of these questions start with 'what' or 'how' because the aim is to describe something. However, further clarification would be required before the study could begin. For example, we cannot ask everyone in the world about which car advertisements or chocolate box packaging they prefer. Even a study that compared the number of students studying accounting in China and Australia requires clarification of the types of students (for example, age, sex, and nationality) and what is studied (for example, main subjects, level/stage in the programme, and the name of the qualification). Therefore, even in a descriptive study, you must spend time refining your research questions and being specific about the phenomena you are studying. We will explain how this can be achieved in subsequent chapters.

Explanatory research is a continuation of descriptive research. The researcher goes beyond merely describing the characteristics of phenomena to explaining the cause and effect of the phenomenon under study. The aim is to understand phenomena by testing **hypotheses** and discovering causal relationships between **variables**. A hypothesis is a proposition that can be tested for association or causality against **empirical evidence**, which is data collected about each variable based on observation or experience. A variable is a characteristic of a phenomenon that can be observed or measured. The research questions in explanatory research focus on 'why' and uncover universally applicable laws. For example, information could be collected on the size of companies and the level of labour turnover. A statistical analysis of the data might show that the larger the company, the higher the level of turnover, although as we will see later, research is rarely that simple.

Exploratory research is a study where the aim is to provide a better general understanding of phenomena when there are few or no previous studies. It can also be used to examine the feasibility of a larger, more rigorous study later.

A **phenomenon** is an observed or apparent object, fact or occurrence, especially one where the cause is uncertain.

Descriptive research is a study where the aim is to identify and describe the detailed characteristics of phenomena to provide a basis for arguments founded on empirical evidence.

Explanatory research is a study where the aim is to understand phenomena by discovering and measuring causal relationships between variables.

A **hypothesis** is a proposition that can be tested for association or causality against empirical evidence.

A **variable** is a characteristic of a phenomenon that can be observed or measured.

Empirical evidence is data based on observation or experience.

2. This term is derived from a Greek noun, the singular of which is 'phenomenon'.

Predictive research is a study where the aim is to generalise from an analysis of phenomena by making predictions based on hypothesised general relationships.

Predictive research goes even further than explanatory research. The aim of explanatory research is to generalise from an analysis of phenomena by making predictions based on hypothesised general relationships. Thus, the solution to a problem in a particular study will be applicable to similar problems elsewhere, if the predictive research can provide a valid, robust solution based on a clear understanding of the relevant causes. Predictive research provides 'how', 'why' and 'where' answers to current events and similar future events. It is also helpful in situations where 'what if' questions are being asked. The following are examples of research questions in a predictive research study:

- In which city would it be most profitable to open a new retail outlet?
- Will the introduction of an employee bonus scheme lead to higher levels of productivity?
- What type of packaging will improve the sales of our products?
- How would an increase in interest rates affect our profit margins?
- Which stock market investments will be the most profitable over the next three months?
- What will happen to sales of our products if there is an economic downturn?

At the undergraduate level, research is usually exploratory and/or descriptive. At post-graduate and doctoral levels, it is usually explanatory or predictive. Table 1.2 shows this classification in increasing order of sophistication and gives examples. One drawback of increasing the level of sophistication in research is that the level of complexity and detail also increases.

Table 1.2 Examples of research classified by purpose

Type of research	Example
Exploratory	An interview survey among a clerical staff in a particular department or company to find out what motivates them to increase their productivity and see whether a research problem can be formulated.
Descriptive	A description of how the selected clerical staff are rewarded and what measures are used to record their productivity levels.
Explanatory	An investigation of causal relationships between the rewards given to the clerical staff and their productivity levels.
Predictive	A forecast of which variable(s) should be changed in order to bring about an improvement in the productivity levels of staff providing customer service in a call centre.

1.3.2 Quantitative and qualitative research

Qualitative data are data in a non-numerical form.

Quantitative data are data in a numerical form.

Looking at the approach adopted by the researcher can also differentiate research. Some people choose to collect **quantitative data**, which is data in a numerical form, and then use statistical methods of analysis. They often describe such studies as quantitative research. Other researchers choose to collect **qualitative data** and analyse the data using non-numerical methods of analysis. They might describe such studies as qualitative research. As you will see in later chapters, a large study might incorporate elements of both as their merits are often considered complementary to gaining understanding of phenomena in the social sciences.

However, referring to a research approach as simply quantitative or qualitative can be misleading. For example, you might want to design a study where you collect qualitative data (such as images, published text or transcripts of interviews), quantify the data by counting the frequency of occurrence of particular key words or themes, and then analyse the data using statistical methods. In this chapter, we will continue to refer to quantitative and qualitative approaches, but we will discuss alternative terms you may wish to use later in the book.

Some students avoid taking a quantitative approach because they are not confident with statistics and think a qualitative approach will be easier. Many students find that it is harder to start and decide an overall design for a quantitative study, but it is easier to conduct the analysis and write up the research because it is highly structured. Qualitative research is normally easier to start, but students often find it more difficult to analyse the data and write up their final report. For example, if you were conducting a study into stress caused by working night shifts, you might want to collect quantitative data such as absenteeism rates or productivity levels, and analyse the data statistically. Alternatively, you might want to investigate the same question by collecting qualitative data about how stress is experienced by night workers in terms of their perceptions, health, social problems, and so on.

There are many arguments in the literature regarding the merits of qualitative versus quantitative approaches, which we will examine later on in the book. At this stage, you simply need to be aware that your choice will be influenced by the nature of your research project, as well as your own philosophical preferences. Moreover, you might find that the access you have been able to negotiate, the type of data available and the research problem persuade you to put your philosophical preferences to one side.

1.3.3 Applied and basic research

Applied research is a study that has been designed to apply its findings to solving a specific, practical problem. It is the application of existing knowledge to improve management practices and policies, rather than to acquire knowledge for knowledge's sake. For example, you might be investigating the reorganisation of an office layout, the improvement of health and safety in the workplace, or the reduction of wastage of raw materials or energy in a factory process. Research questions are likely to focus on 'how' and 'when'. The output from this type of research is likely to be a research report containing recommendations, articles in professional or trade magazines, and presentations to practitioners. Another example of applied research that is conducted in academic institutions often goes under the general title of educational scholarship, instructional research, or pedagogic research. This type of study is concerned with improving the educational activities within the institution and the output is likely to be case studies, instructional software, or textbooks.

Applied research is a study designed to apply its findings to solving a specific, existing problem.

Basic research is a study designed to make a contribution to general knowledge and theoretical understanding, rather than solve a specific problem.

When the research is being conducted primarily to improve our understanding of general issues without emphasis on its immediate application, it is classified as **basic research**. It is conducted without a specific goal in mind and is more exploratory in nature. The aim is to make a contribution to theory or knowledge through the understanding of relationships between variables (see Chapter 10, section 10.3). Basic research is usually conducted for the general good rather than to solve a specific problem. Research questions tend to focus on 'what' and 'why'; for example, 'What is service?' or 'What is quality?' or 'What is sustainability?'. It is called basic research because by generating theory it provides the foundation for further (often applied) research. Basic research may not resolve an immediate problem, but it contributes to our knowledge in a way that could assist in finding solutions to future problems. The emphasis, therefore, is on academic rigour and the strength of the research design. The output from basic research is likely to be papers presented at academic conferences and the articles published in academic journals. However, since there is no guarantee of any short-term practical gain, it can be difficult to obtain funding for basic research.

There are many instances when the distinction between applied and basic research is not clear. It can be argued that the difference between basic and applied research lies in the time span between the research and reasonably foreseeable practical applications. Research in the field of genetics is a good example. Increasing our understanding of the chromosomes that carry genetic information for the sake of knowledge alone would be basic research, but subsequently using that knowledge to develop genetically modified crops or develop gene therapy would be classified as applied research.

1.3.4 Deductive and inductive research

Deductive research is a study in which a conceptual and theoretical structure is developed and then tested by empirical observation. Thus, particular instances are deduced from general inferences. For this reason, the deductive method is referred to as moving from the general to

Deductive research is a study in which a conceptual and theoretical structure is developed which is then tested by empirical observation. Thus, particular instances are deducted from general inferences

the particular. For example, you may have read about theories of motivation and wish to test them in your own workplace. This will involve collecting specific data of the variables that the theories have identified as being important.

Inductive research is a study in which theory is developed from the observation of empirical reality. Thus, general inferences are induced from particular instances.

Inductive research is a study in which theory is developed from the observation of empirical reality. Thus, general inferences are induced from particular instances, which is the reverse of the deductive method. Since it involves moving from individual observation to statements of general patterns or laws, it is referred to as moving from the specific to the general. For example, you may have observed from factory records in your company that production levels go down after two hours of the shift and you conclude that production levels vary with length of time worked.

All the different types of research we have discussed can be helpful in allowing you to understand your research and the best way to conduct it, but do not feel too constrained. It is important to recognise that one particular project can be described in a number of ways, as it will have purpose, process, logic and outcome. For example, you may conduct an applied, explanatory study using a quantitative approach. In a long-term project, you may wish to use qualitative and quantitative approaches, deductive and inductive methods, and you will move from exploratory and descriptive research to explanatory and predictive research. The key classifications we have examined can be applied to previous studies that you will review as part of your research and you can use these typologies to describe your own study in your proposal and later on in your dissertation or thesis.

1.4 Academic levels of research

Academic levels, in terms of the sophistication of the research design and duration of the project, depend on your reasons for conducting the study. The requirements for undergraduates are very different from those for postgraduate and doctoral students. However, the basic principles, issues and practicalities are the same.

1.4.1 Undergraduate and taught Master's students

If you are on an undergraduate or taught Master's programme, you may be required to undertake a research project. If so, you will be expected to be familiar with the main concepts and terms as explained in this book and undertake one or more of the following activities:

- Design a research project – On some programmes you are expected to design a research project and then write a report that explains the rationale for your chosen design and describes its strengths and weaknesses.
- Write a research proposal – A research proposal requires you to design a project as above, but also to include a preliminary review of the literature.
- Conduct a research project – In many cases you are not only required to design a research project and write a proposal but also to conduct some research. This involves writing a review of the literature and collecting and analysing existing data or new data (for example, from interviews or from a questionnaire survey). On some taught Master's programmes, you may be allowed to base your entire project on a critical literature review, where you will analyse the literature on a chosen topic and draw conclusions.

If you are required to design and conduct a study, your research report is likely to be called a dissertation, but you should check what term is used in your university or college. The typical length of a dissertation is 10,000 words for an undergraduate student and 15,000 words for a student on a taught Master's programme. At Master's level, a more comprehensive approach is needed, and a higher quality of work is required.

1.4.2 Master's by research and doctoral students

For students doing research for a Master's by research (MPhil) the research report is usually referred to as a thesis. However, this is not consistent across countries, so you will need to check. The typical length of a thesis for an MPhil is 40,000 words, 50,000 words for a taught

doctorate (DBA) and 80,000 words for a doctorate by research (DPhil or PhD). At this level, the intensity of the research is much greater, and you will be expected to make a contribution to knowledge. There is no consensus in the literature on how this should be defined, but general agreement that the contribution should be both original and significant. It can be achieved by identifying gaps in the literature, making new interpretations or novel applications of old ideas, testing existing knowledge using new methods, and so on. You will need to study this book carefully and the recommended reading that is relevant to your subject. It is important to remember that the expectations of your institution will have a significant influence on the process and outcome of your research.

1.4.3 Post-doctoral research

If you already hold a DBA or PhD and are looking for an academic post, or you are already in an academic position and seeking promotion, this book will reinforce your knowledge or give you a new perspective on a particular issue you have not considered previously. It might also help you to write conference papers and journal articles.

1.5 Overview of the research process

Whatever type of research or approach is adopted, there are several fundamental stages in the research process that are common to all scientifically based investigations. The simplified diagram shown in Figure 1.1 illustrates an overview of the research process. This model presents research as a neat, orderly process, with one stage leading logically on to the next stage. However, in practice, research is rarely like that. For example, failure at one stage means returning to an earlier stage and many stages overlap. Thus, if you were unable to collect the research data, it may be necessary to revise your definition of the research problem or amend the way you conduct the research. This is often a good reason for conducting some exploratory research before commencing the main study.

Vox pop What has been the biggest challenge in your research so far?

Lee, first year PhD student investigating foreign direct investment in international business

Not knowing where to start with my PhD. It's not like being on a Master's degree where there's a structured environment. There doesn't seem to be a single 'right' way. I tried talking to other students, but their advice wasn't always relevant. It seems you've got to find your own path and, like Lewis Carol said in Alice in Wonderland, 'begin at the beginning and go on till you come to the end; then stop.'

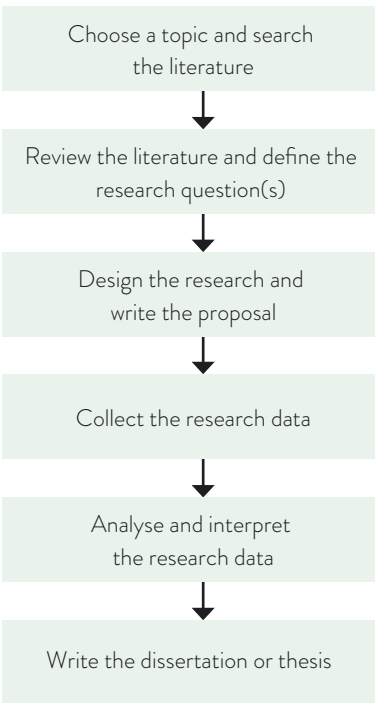


Figure 1.1 Overview of the research process

To give you an overview of the nature of research, we will now look briefly at each stage in the research process. You will find greater detail in subsequent chapters.

1.5.1 The research topic

The starting point is to choose a **research topic**, which is a general subject area that is related to your degree if you are a student, or to your discipline if you are an academic. You could find that a research topic suggests itself as a result of your coursework, job, interests or general experience. For example, you might be interested in the employment problems of minority groups in society, the difficulties of funding small businesses, what makes managers successful, or the commercial sponsorship of sport.

1.5.2 The literature

The **literature** is all sources of published data on a particular topic.

A **literature review** is a critical evaluation of the existing body of knowledge on a topic, which guides the research and demonstrates that the relevant literature has been located and analysed.

Once you have chosen a general topic, you need to search the **literature** for previous studies and other relevant information on that subject and read it. By exploring the existing body of knowledge, you will learn more about the subject and this will help you focus your ideas and find a particular research problem or issue to investigate. You will then write a critical review of the previous studies and other published material relating to your research problem. A **literature review** is a critical evaluation of the existing body of knowledge on a topic, which guides the research and demonstrates that the relevant literature has been located and analysed.

1.5.3 The research problem

All students experience some difficulty in narrowing down their general interest in a research topic to focus on a particular problem or issue that is small enough to be investigated. This is often referred to as defining the research problem and leads on to setting the research question(s). In academic research, the classic way to identify a research problem is to consider the literature and identify any gaps, as these indicate original areas to research. You will also find that many academic articles incorporate suggestions for further research in their conclusions. If you have conducted an undergraduate dissertation already, that subject area might lead you to your Master's or doctoral research questions. If you are an academic, you might have conducted previous academic or consultancy research that suggests research questions for your present study. You will need to focus your ideas, decide the scope of your research and set parameters. For example, perhaps your study will investigate a broad financial issue, but focus on a particular group of stakeholders, size of business, industry, geographical area, or period of time.

A **research paradigm** is a framework that guides how research should be conducted, based on people's philosophies and their assumptions about the world and the nature of knowledge.

A **methodology** is an approach to the process of the research encompassing a body of methods.

1.5.4 The research design

The starting point in research design is to determine your **research paradigm**. A research paradigm is a framework that guides how research should be conducted and it is based on people's philosophies and assumptions about the world and the nature of knowledge. Some researchers advocate the use of methods from more than one paradigm and we discuss the issues this raises in Chapter 3. We recommend that you find out at an early stage whether your supervisor favours a particular paradigm. Your overall approach to the entire process of the research is known as your **methodology**. Although, in part, this is determined by the research problem, the assumptions you use in your research and the way you define your research problem will influence the way you conduct the study. In other words, the way in which you choose to investigate your research question will be driven by your research paradigm.

1.5.5 Collecting research data

There are a variety of ways in which you can collect research data and we look at the main methods of data collection in Chapters 7, 9 and 10. Because of the many differences between quantitative and qualitative methods, these are explained in separate chapters. If you have a quantitative methodology, you will be attempting to measure variables or count occurrences of a phenomenon. On the other hand, if you have a qualitative methodology, you will emphasise the themes and patterns of meanings and experiences related to the phenomena.

1.5.6 Analysing and interpreting research data

A major part of your research project will be spent analysing and interpreting research data. The main methods of data analysis used will depend on your research paradigm and whether you have collected quantitative or qualitative data. We will look at this in more detail in Chapters 8, 9, 11 and 12. It is important to realise, however, that although data collection and data analysis are discussed separately in this book, the stages are sometimes simultaneous. You should not make decisions about your data collection methods without also deciding which analytical methods you will use.

1.5.7 Writing the dissertation or thesis

It is at the writing-up stage that many students experience problems, and this is usually because they have left it until the very last minute! The working title of your dissertation or thesis should be descriptive but not too long (we suggest a maximum of 12 words). It is important to start writing notes and draft chapters as soon as you start the research. To a large extent, the stages outlined above will be captured in the structure of your dissertation or thesis. Although all research reports differ in structure according to the problem being investigated and the methodology employed, there are some common features. We discuss this in detail in Chapter 13, but for the time being, it is useful to look at the typical structure of a dissertation or thesis shown in Table 1.3 as it gives you an idea of what you are aiming for. At the same time, remember that any planned structure makes it look as though the research process is more orderly than it is in reality.

Your dissertation or thesis is likely to be the largest project you have undertaken to date and, therefore, it presents quite a challenge. However, having a good understanding of the nature and purpose of research, the main stages in the research process, and the basic structure of the research report you will be writing will help you develop a sense of direction.

Table 1.3 Indicative structure of a dissertation or thesis

	% of report
1. Introduction – The research problem or issue and the purpose of the study – Background to the study and why it is important or of interest – Structure of the remainder of the report	10
2. Review of the literature – Evaluation of the existing body of knowledge on the topic – Theoretical framework (if applicable) – Where your research fits in and the research question(s) and propositions or hypotheses (if applicable)	30
3. Methodology – Identification of paradigm (doctoral students will need to discuss) – Justification for choice of methodology and methods – Limitations of the research design	20
4. Findings/results – Presentation of the analysis of your research data	15
5. Discussion (include in findings/results chapter if preferred) – Discussion of how your findings/results relate to the literature	15
6. Conclusions – Summary of what you found out in relation to each research question – Your contribution to knowledge – Limitations of your research and suggestions for future research – Implications of your findings (for practice, policy, etc.)	10
	100
References *(do not number this section)* – A detailed, alphabetical (numerical, if appropriate) list of all the sources cited in the text	
Appendices *(if required)* – Detailed data referred to in the text, but not shown elsewhere	

Vox pop What has been the biggest challenge in your research so far?

Pippa, final year PhD student investigating how a small town is affected by increased tourism

That initial transition to self-guided learning and the lack of direction provided in studying for a PhD, and then sustaining motivation and focus. A bit later my main concern was choosing a methodological approach that would best answer my research question.

1.6 Supervision

A **supervisor** is the person responsible for overseeing and guiding a student's research.

Supervision plays a vital role in undergraduate, Master's and doctoral studies, and it is a formal requirement. A **supervisor** is the person responsible for overseeing and guiding a student's research. In the UK, undergraduates and students on taught Master's programmes typically have one supervisor, whereas MPhil and doctoral students usually have two. In the latter cases, the supervisors will have specialist knowledge of the topic and at least one of them will have experience of successful supervision at that level. In some countries, there may be a supervision committee.

1.6.1 Choosing a supervisor

If you are an undergraduate or Master's student, you may find that you have no choice but are allocated a supervisor. You will find it useful to discuss with your supervisor how he or she wishes to supervise you. It is important that you understand what is expected of you and when. It is to your advantage to find out as much as you can about your supervisor to help you develop a good relationship, such as:

- what their teaching and research interests are
- what they have published (for example, books or articles in academic journals, magazines or newspapers)
- whether they favour a particular paradigm and/or methodology.

Some Master's students and most doctoral students are likely to have some influence over the appointment of their supervisor. We suggest that you obtain as much information as possible before choosing a supervisor by looking at the online profiles and publications of potential supervisors and visiting prospective universities or colleges. This will allow you to meet potential supervisors, assess the quality of facilities and resources, and evaluate the relative importance of research in that institution. When talking to potential supervisors, you need to bear in mind that most academic staff are involved in the following activities:

- teaching, designing and marking assessments, developing teaching materials
- leading subject fields, programmes
- managing departments and/or research centres
- writing academic books
- conducting research and writing conference papers, articles, research reports.

If possible, talk to current research students or those who have been supervised in the past by the academic you have in mind. Box 1.1 provides a checklist for choosing a supervisor.

Box 1.1 Checklist for choosing a supervisor

- Does the supervisor have knowledge and interest in your research topic?
- Is the supervisor sympathetic to your proposed methodology?
- Does the supervisor have a good publication record?
- Does the supervisor have a record of successful supervisions?
- Does the supervisor have enough time to take on your supervision as well as managing their other work?

Vox pop What has been the high point of your research so far?

Henvisha, first year PhD student investigating female-led SMEs and access to finance

I was very happy when I got accepted for a PhD, but I was even happier when I was told that my previous Master's dissertation supervisor had agreed to be my principal supervisor for my PhD thesis.

For me, the crucial thing is having a good guidance. It is like stepping into a huge natural park three hours before it closes. It will be easy to explore the park in such a short time if you have the guidance of someone who knows it well.

Refika, first year PhD student investigating pupils' perceptions of their cultural, national and global identities

You need to bear in mind that selection is a two-way process in which the potential supervisor will also be assessing you and your research proposal. A supervisor might decline to take you on if your research topic holds no interest for him or her; if your research proposal is considered to have serious flaws or you do not appear to have a number of other characteristics that are likely to contribute to the successful completion of your research. Box 1.2 shows the typical non-paper qualifications that supervisors look for in potential research students.

Box 1.2 Attributes supervisors look for in research students

- Confidence, enthusiasm and a positive attitude
- Ability to communicate clearly in verbal and written communications
- Capacity for independent learning and developing new skills
- Ability to think independently and reason analytically
- Motivation and perseverance in achieving objectives
- Ability to manage and sustain progress
- Punctuality and good organisational skills
- Probability of establishing good working relationship

If English is not your first language, you may want to take advantage of any academic English classes organised by your university or college. Typically, these will cover academic reading and writing; academic vocabulary and grammar. They might also include advice on writing conference papers and making research presentations as well as writing journal articles.

Vox pop What has been the biggest challenge of your research so far?

Refika, first year PhD student investigating pupils' perceptions of their cultural, national and global identities

Doing research in a new language rather than your own language is very challenging. You want to express yourself in the best way, but you might lack words and expressions as well as their cultural context and you can feel lost.

It is usually the responsibility of the programme director or other senior person in the department to exercise as much care as possible in matching students to supervisors. He or she will take into account such factors as the research topic, the number of students already being supervised by that member of staff, and the student's academic ability and personality. Although your supervisor will play a very important role in guiding your research, 'it is the responsibility of the researcher to identify a [research] question' (Creedy, 2001, p. 116).

Therefore, even if supervisors are willing to offer suggestions based on their research interests, you must take ownership of your research project and identify the specific research problem or issue and the research question(s) yourself.

1.6.2 Supervisor/supervisee relationship

It is important to realise that the supervisor/supervisee relationship is a two-way relationship in which you will play an active part. The role of the supervisor is to provide support and guidance, but it is your responsibility to plan and conduct the research and manage the relationship. Therefore, you need to know what you can expect from your supervisor and what your supervisor will expect from you. Research by Phillips and Pugh (2010) suggests that students expect:

- their work to be read in advance of meetings
- their supervisor to be available at mutually agreed times
- their supervisor to be friendly, open and supportive
- their supervisor to be constructively critical
- their supervisor to have a good knowledge of the research process.

Of course, your supervisor will have many other commitments that include supervising other students, teaching, administration, conducting research and getting published. Good supervisors will let you know when they are away for more than a few days during the normal supervision period. Equally, you will be expected to let your supervisor have such information about your own movements. Because time is precious to both the supervisor and the supervisee, be sure to arrive for your meetings punctually. It is better to be a few minutes early and give yourself time to focus on the purpose of the meeting than to arrive late.

It is your responsibility to arrange meetings with your supervisor. Some supervisors may see their students in small groups, others individually. At your first meeting, discuss arrangements for future meetings, whether email or telephone queries are acceptable between meetings, the nature and timing of written material, and your expectations of each other. To ensure that each meeting is an effective use of your time and that of your supervisor, you should set the agenda (state what you want to discuss at the meeting) and provide written work for comment at least two weeks in advance of the meeting. At every meeting, you should take notes of the key points discussed, what advice or feedback was given, what you have agreed to do prior to the next meeting and agree the date of the next meeting. It is good practice to send a copy of this summary to your supervisor.

A seminal study that examined the supervision of postgraduate students (Phillips, 1984) shows that supervisory style is important. Phillips found that the more supervisors left their students to get on with their work, intervening only when specifically asked for help, the shorter the length of time before the students became independent researchers. She argues that too much contact and cosseting delays the necessary weaning process.

From this, you can see that the ideal relationship is one where the researcher is initially tutored by the supervisor and eventually becomes a respected colleague. Thus, they start as master and apprentice, and end up as equals. Therefore, it is important that you and your supervisor are well matched. This is not so difficult if you know the academic staff at the institution already. If you have chosen to continue your studies at the same university or college, you may have been stimulated by a particular subject and a particular lecturer, and wish to approach that person to be your supervisor. If you are registering for a degree at an institution that is new to you and you do not know the staff, you may have only a few days in which to talk to potential supervisors and other students.

The longer the period of research, the more important it is that the relationship between the supervisor and the supervisee is resilient enough to cope with every stage in the research process. Drawing on the findings of Phillips (1984), Figure 1.2 summarises this process.

The emotional commitment involved in conducting research should not be underestimated. Research involving independent inquiry requires considerable intellectual activity and, often, considerable stress. This is especially true of doctorates, where a major piece of research is conducted over several years. Your initial enthusiasm and interest might turn into frustration, boredom or writer's block, and you could begin to question your ability to

continue. However, with the help of your supervisor, you can minimise the likelihood of serious stress through careful planning and time management, and eventually reach the final phase when your main concern is to get the research finished.

Vox pop What has been the biggest challenge of your research so far?

Lee, first year PhD student investigating foreign direct investment in international business

Well, it's a real rollercoaster doing a PhD – sometimes you're up and sometimes you're down. You need to be committed and stubborn!

Keeping myself motivated. There's a point at which your enthusiasm for the subject wanes – you stop thinking this is novel, new and a challenge. It gets a bit solitary and you need some positive reinforcement. It's difficult to get from the other PhD students because we're all studying different topics and there's so little time to meet. Then I discovered meetup.com and found a group of people who design their own products and talking to them really brought back the feeling that what I'm doing is worthwhile.

Kevin, third year PhD student investigating the personalisation of products and services

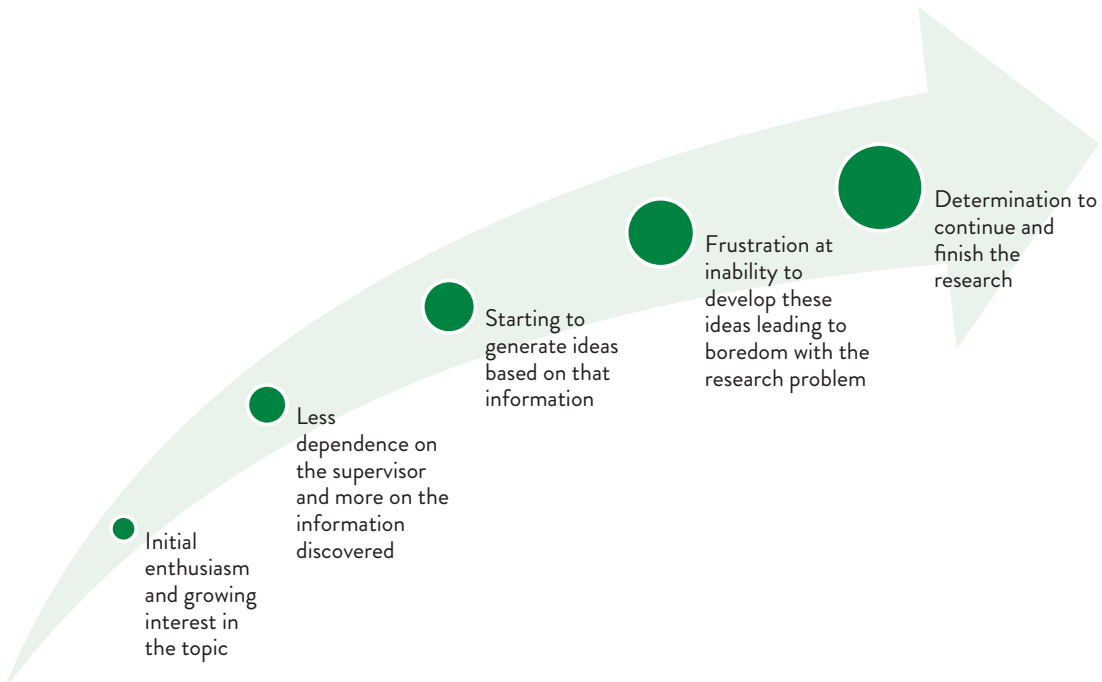


Figure 1.2 Changing attitudes shown by students during their research

1.6.3 Supervision models

There are a number of different supervision models, and it would be a mistake to think exclusively in terms of one supervisor for each researcher. Although one supervisor per student is typically the model at the undergraduate level and on taught Master's programmes, it is usual to have at least two supervisors for MPhil and doctoral research. At some institutions, there

may be a committee. You may find that the administrative, pastoral and academic roles of supervision are delegated to different individuals, which reduces the risk of failure by allowing the student's progress to be monitored closely.

An alternative approach is *de facto* supervision. This model encourages the researcher to develop a number of different surrogate supervisors, possibly in other establishments, who can offer skills lacked by the main supervisor. This is particularly useful where company-based projects are concerned and both academic and consultancy skills are required.

In some disciplines, group and team projects are a widely used approach. Research students are often clustered round a major research issue and each student is part of the team. This allows specific areas of work within the same problem area to be the responsibility of individual researchers. Such approaches are research-skills-based. On the other hand, business and management research in the social sciences is more likely to involve solitary, knowledge-based activities and include a relationship with one or more supervisors.

1.6.4 Other sources of support

Apart from the support provided by your supervisor(s), other potential sources of support include peer support (fellow students), mentors, work colleagues, family and friends. You can find sources of peer support outside your institution by networking with other researchers at academic conferences and events for doctoral students. You should also attend any taught sessions offered, such as research methods courses, research ethics training sessions, academic writing workshops and language support courses.

The isolation that can sometimes be felt by students while conducting their research projects can be reduced by developing support sets. A set comprises approximately five students and a tutor and meets for a full day every one or two months. Each person is given an hour or so of the time available, during which the group focuses on a particular project or problem. This provides an opportunity to use the group as a sounding board, in addition to exchanging experiences and ideas. It also enables group members to support and encourage one another.

Set members need to be working in loosely related areas, in order to increase the chances of cross-fertilisation of ideas without undue competition. The main requirement is that there are sufficient numbers of students attached to a department or faculty to produce viable group sizes. They might be supplemented by company managers who are not registered for a degree, but who wish to conduct their own in-company research. Support sets can be a feature of more traditional research activities in the social sciences and need not be founded exclusively on process. They should be seen as being additional to normal supervision arrangements and are particularly valuable in the early stages of a research project.

1.7 Characteristics of good research

Methodological rigour refers to the appropriateness and intellectual soundness of the research design, and the systematic application of the research methods.

Many of the characteristics of good research can be developed by adopting a methodical approach. **Methodological rigour** is very important and refers to the appropriateness and intellectual soundness of the research design and the systematic application of the methods used. Therefore, it requires a careful, detailed, exacting approach to conducting the research. Litman (2012) suggests that a good research project will include the following:

- one or more well-defined research question(s)
- a description of the context and existing information about the issue
- consideration of various perspectives
- presentation of evidence, with data and analysis in a format that can be replicated by others
- discussion of critical assumptions, contrary findings, and alternative interpretations
- cautious conclusions and discussion of their implications
- adequate references, including original sources, alternative perspectives, and criticism.

The characteristics of a good research project vary according to the philosophical assumptions that underpin your research. These assumptions are discussed in Chapter 3 and

are very important at all academic levels. A soundly based research design should allow a degree of flexibility to enable you to pursue new developments in the topic if they are relevant to the study and you have sufficient time. In subsequent chapters, we will explain how this can be achieved. At this stage, it is useful to have an overview of what makes a good research project. Therefore, in Table 1.4, we compare the main characteristics of good and poor projects.

Table 1.4 Characteristics of good and poor research projects

Criteria	Good project	Poor project
Research problem and scope	Sharply focused Related to academic debate	Unclear and unfocused
Literature review	Critical evaluation of relevant, up-to-date literature Linked to focused, feasible research questions	A list of items Relevance unclear Little or no evaluation Research questions missing, impractical or unfocused
Methodology	Cohesive design Excellent review of research design options Linked to the literature	Little appreciation of research design No justification of choice Not linked to the literature
Analysis and discussion	Clear findings discussed in an analytical manner that generates new knowledge and insight Linked to the literature	Unclear findings, unrelated to research questions Little or no attempt to discuss in relation to literature review
Conclusions	Conclusions clearly linked to research questions Attention given to implications and limitations	Some conclusions but not linked to research questions Implications and limitations of results not addressed
Referencing	All sources cited in the text and full bibliographic details listed at the end	Plagiarism through omission or inadequate referencing
Communication	Clear flow of ideas Appropriate spelling and grammar	Difficult to follow Many spelling and grammar mistakes

Vox pop What has been the biggest challenge in your research so far?

Refika, first year PhD student investigating pupils' perceptions of their cultural, national and global identities

One of my worries is, what if it's not worth doing in the end? I don't want to spend my time writing a very long thesis that will only be read by my examiners. I come from a small town so I'm like a little fish in a small river. When I return, I would like to be able to tell my story of an exciting journey to a big ocean.

1.7.1 Identifying a research problem/issue

When deciding on a particular research problem or issue to investigate, do not focus solely on the immediate outcome(s) of your research, but think about how you might be able to develop your work. For example, if you are a student, you might want to examine an issue in a

particular industry where you hope to find employment when you graduate. For those pursuing research to further their careers, there is a good argument for choosing a research problem that will help you to build a reputation and become one of the experts in a particular field.

1.8 Conclusions

This chapter has examined the purpose and nature of research, and the ways in which it can be classified. We have given an overview of the different types of research and the factors that need to be considered at various levels. A research project offers an opportunity to identify and select a research problem to investigate independently under the guidance of a supervisor. It gives you the opportunity to apply theory or otherwise analyse a real business problem or issue. Your research needs to be systematic and methodical, and your dissertation or thesis will illuminate the problem or issue and contribute towards our greater understanding of it. To ensure you are satisfied with your research and achieve the outcomes you desire, you must develop a research strategy. The most important part of that strategy is to start writing from the onset. You should make sure that you keep careful records to ensure that other people's contribution to knowledge is not confused with yours. You will need to study this book carefully and the recommended reading that is relevant to your subject. 'The road to knowledge begins with the turn of a page' (Anonymous).

References for further reading

Barth, M. E. (2018) 'How international accounting research influences policy and standard setting', *Journal of International Accounting Research*, Summer 17(2), pp. 1–11.

Creedy, J. (2001) 'Starting research', *The Australian Economic Review*, 34(1), p. 116.

Hamidi, H. (2018) 'Research possibilities in the field of human resource development in small - medium enterprises in developing countries: A review and research agenda, *Global Business and Management Research: An International Journal*, 10(2) Special Issue, pp. 146–56.

Litman, T. (2012) *Evaluating Research Quality: Guidelines for Scholarship*, Victoria Transport Policy Institute. Available at: http://www.vtpi.org/resqual.pdf

Ott, D. L. and Michailova, S. (2018) 'Cultural intelligence: A review and new research avenues', *International Journal of Management Reviews*, 20(1), pp. 99–119.

Phillips, E. M. (1984) 'Learning to do research', *Graduate Management Research*, Autumn, pp. 6–18.

Phillips, E. M. and Pugh, D. S. (2010) *How to Get a Ph.D.* Buckingham: Open University Press.

Tenzer, H., Terjesen, S., and Harzing, A.-W. (2017) 'Language in international business: A review and agenda for future research', *Management International Review*, 57(6), pp. 815–54.

Activities

1. Select two academic journals from your discipline in the library and construct a table that classifies articles according to whether the research is exploratory, descriptive, explanatory or predictive.
2. Construct a second table that classifies the same articles according to whether the research is quantitative or qualitative.
3. Now construct a third table that classifies the same articles according to whether the research is applied or basic.
4. Finally, construct a table that classifies the same articles according to whether the research is deductive or inductive.
5. Reflect on the results shown in your four tables and write notes on similarities and differences in these classifications. Summarise your notes in the form of a diagram.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter, and sections 15.2, 15.3, 15.4 and 15.16 in particular, which relate specifically to this chapter.

2

Dealing with practical issues

Learning objectives

When you have studied this chapter, you should be able to:

- determine the knowledge, skills and personal qualities researchers need
- use techniques for generating research topics
- negotiate access to data and consider ethical issues
- plan how to manage the research project
- identify any funding constraints.

2.1 Introduction

A successful researcher establishes a firm base on which to develop his or her research study. Projects do not fail because researchers are lazy, incompetent or unmotivated, but because they have not developed the knowledge, skills and personal qualities needed, or recognised the importance of project management. Good time management combined with your practical and intellectual skills is what determines the quality of your research.

In this chapter, we examine the main practical issues associated with doing research. At an early stage you must choose a research topic and start reading the literature on that topic to find a particular research problem or issue to investigate. Not only do you need to have a clear idea of what you are going to investigate, but it is essential that you have access to the relevant data and sufficient funds to cover any costs. You must also find out about your institution's research ethics policy and other relevant regulations. Conducting a research project requires a realistic timetable and an efficient system for managing the research. This means planning a timetable that will allow you to use what time you have productively.

2.2 Knowledge, skills and personal qualities

Conducting research in business and management requires certain knowledge, skills and personal qualities with different attributes needed at different stages in the research. The main stages in the research process can be summarised as:

- research topic stage
- research problem stage
- research design stage
- data collection stage
- data analysis and interpretation stage.

Figure 2.1 Stages in the research process

A **research topic** is the general area of research interest.

A **research problem** is the particular problem or issue that is the focus of the research.

A **research question** is the specific question relating to the research problem that is addressed by the research.

Data are known facts or things used as a basis for inference or reckoning.

Primary data are data generated from an original source such as your own experiments, surveys, interviews and focus groups.

Secondary data are data collected from an existing source such as publications, databases and other records.

The first step is to determine the general subject area that interests you and is relevant to your programme of study. We will call this the research topic stage. The research problem stage involves searching the literature on that topic (we discuss this in Chapter 5). It might incorporate exploratory research to identify a research problem or issue that is small enough to be investigated and develop the specific research questions to be addressed by the study. You will remember that a **research topic** is the general area of research interest, a **research problem** is the particular problem or issue that is the focus of the research, and a **research question** is the specific question related to the research problem that the research will address.

The focus of the research design stage is on preparing a detailed plan that shows how the study will be conducted using a methodology and methods that fit your paradigm. We discuss research paradigms and research design in Chapters 3 and 4. To investigate your research questions, you will need to collect some research data. You will remember that data are known facts or things used as a basis for inference and reckoning. Data can be described as **primary data** (data generated from an original source) or **secondary data** (data collected from an existing source). Before you start the data gathering and analysis stages (see Chapters 7, 8, 9, 10, 11 and 12), you will need to address ethical issues, which we discuss later on in this chapter.

Figure 2.1 shows a more detailed model of the stages in the research process than the one shown in Chapter 1.

Little has been written on the issues arising at each stage in the research process. Howard and Sharp (1994) identify 20 factors that have a beneficial, neutral or adverse effect on research projects, while Easterby-Smith, Thorpe and Jackson (2012) classify the qualities

required of researchers under the headings of knowledge/awareness, skills and abilities, and personal qualities. A study of eight successful researchers (Hussey, 2007) brought these factors together by examining the process of the research and the skills, knowledge and personal qualities needed at each stage. The main findings were as follows:

- Knowledge of research – Knowledge of research was particularly beneficial during the literature search, research design and writing stages. Business knowledge provided a context for negotiating access and enriched the analysis of data and illuminated the conclusions.
- Personal skills – Good administrative skills were particularly needed during the literature searching stage. Communication skills were most important when negotiating access and collecting data. Negotiating access and dealing with ethical issues tended to be regarded as challenges to be overcome and had little effect on the process of the research. Not surprisingly, communication skills were also of great benefit at the writing stage and when presenting conference papers. Researchers near the beginning of their careers regarded conferences as opportunities for networking, obtaining feedback and getting papers published in conference proceedings, while established academics tended to focus on writing articles for publication in academic journals rather than attending conferences. IT skills were beneficial during the data collection and data analysis stages.
- Personal qualities – Creativity was most important when identifying the research problem and research questions. Motivation was rated highly during the literature search, data analysis and writing stages. Perseverance was most needed at the data collection and writing stages. Participants referred to the discipline required in conducting interviews, administering questionnaires and maintaining a consistently rigorous approach to every aspect of data collection. Time management was influential throughout the research, with every stage adversely affected by lack of time, particularly the writing stage.

It would appear that appropriate knowledge, project management, communication skills and perseverance are key features of successful research.

Vox pop

What has been the biggest challenge in your research so far?

Having no lectures and seminars means I have to decide what to read and how to use my time – it's a big jump into independence.

Gurdeep, first-year PhD student investigating the development of brand love strategies in marketing

What has been the high point of your research so far?

Well, it's the other side of the coin – not having lectures and seminars means I have freedom over my time and that makes it easier to try and find a part-time job.

A critical and early stage of your research is choosing a topic, reading the literature on that topic, identifying a research problem and related research questions. This is something students at all levels need to do. The main steps are:

1. Select a topic that interests you and/or of which you have some knowledge. Then identify a business problem related to that topic by reading previous studies and reflecting on current issues being discussed in media, on campus or at work. Check with your supervisor whether you can choose a topic that is not directly related to your degree programme. You might be able to think of some very interesting topics, but they need to be feasible. If you are an undergraduate or taught Master's student, you will want to design a research project that will help you achieve a high grade.
2. Ensure that you have the resources to conduct the research and that you have access to the research data you will analyse. This will mean considering the methods you will use to collect and analyse your research data. Subsequent chapters of this book cover a range of methods.

3. Generate an overarching research question that the study will investigate. Subsequently, you are likely to develop one or more subsidiary research questions that are feasible and focused (indicate the scope and set the parameters). Doctoral students should be wary of posing impressive research questions that are too wide ranging or too difficult to investigate in depth.
4. Finally, discuss your research questions with your supervisor, family, friends and anyone else you can. See if it makes sense to them. If it does, you have a research question and you can then decide on how to address it.

A very common method used to generate a research question in business and management research is to look for gaps in the literature. Most authors of academic articles highlight the limitations of their work and suggest areas for further research. For example, if your chosen research topic is international marketing, you can search for articles on that subject and skim read them to see whether any particular areas have been overlooked or whether certain theories or perspectives have been ignored. You can then formulate a research question.

Problematisation is an approach that is likely to be of interest to postgraduate and doctoral students when searching for gaps in the literature. The objective is 'to know how and to what extent it might be possible to think differently, instead of what is already known' (Foucault, 1985, p. 9). This can be a challenging task. However, a well-argued approach is described by Sandberg and Alvesson (2011, p. 267), the aim of which is 'to identify, articulate, and challenge different types of assumptions underlying existing literature and, based on that, to formulate research questions that may facilitate the development of more interesting and influential theories'.

Table 2.1 shows two examples that illustrate the relationship between the research topic, the research problem and the research question.

Table 2.1 Examples of topics, research problems and related research questions

Topic	Example 1 Employee recruitment	Example 2 Finance
Research problem	Effect of new career-break scheme in Firm A on the recruitment and retention of skilled staff	Access to finance for small firms
Research questions	How has the new career-break scheme contributed to employment in Firm A?	How do small firms meet their needs for finance (in a particular industry, geographical location, time period, etc.)?

Vox pop What has been the biggest challenge in your research so far?

Adel, recently completed a PhD in management accounting

Identifying a relevant research topic and valid research question at the start.

2.3 Generating a research topic

You may have found a research topic already because you have a particular interest in one of the subjects you have studied, or perhaps a topic has been allocated to you. Alternatively, perhaps you are worried because you have not yet found a research topic. Sometimes there is a conflict between what you would like to do and what is feasible. The level of research and the outcome you desire often determines the research you will conduct. If you are pursuing an academic career, you need to think whether the topic you choose will provide you with a research niche upon which to build an impressive reputation. At the other end of the scale, the time constraints you face as an undergraduate or a student on a taught Master's programme make it unlikely that you will be able to conduct an interview survey of the directors

of the world's top companies. Even a seasoned researcher with an enviable reputation would find such a project a challenge. If you are having difficulty in choosing a research topic, the best advice is to start by thinking of a general subject area that interests you and is relevant to your programme. You could then try some of the techniques for generating a research topic that we describe next.

2.3.1 Brainstorming

Brainstorming is a problem-solving technique that involves the spontaneous contribution of ideas from one or more interested people with a view to solving a problem. It is useful because it is very simple and generates alternatives from which informed choices can be made. You will need to write down all the ideas that come up and then review them by deciding what you mean by each idea. For example, if you were interested in financial reporting, you could review the idea by asking yourself the following questions:

Brainstorming is a problem-solving technique that involves the spontaneous contribution of ideas from one or more interested people with a view to solving a problem. It can be used to generate research topics.

- What is financial reporting?
- Do I mean internal or external financial reporting?
- Which organisations produce financial reports?
- Is there a particular aspect of financial reporting I am interested in?
- Am I interested in the regulation of financial reporting?
- Am I interested in voluntary disclosures?
- Am I interested in narrative reporting?
- Am I interested in the communication aspects?

Once you have begun to focus your ideas about financial reporting, you could turn your attention to such questions as:

- What is reported?
- When is it reported?
- To whom is it reported?
- What is the purpose of reporting?
- Are there any ethical issues?

Another way of approaching the problem might be to examine the various ways in which your research study might be conducted. If you are still unable to generate a research topic, the following techniques could be of help.

2.3.2 Morphological analysis

Morphological analysis is a useful technique for increasing your pool of potential research topics by identifying the key dimensions and attributes of a topic, placing them in a matrix and adopting a 'mix and match' approach. First, you define the key dimensions (elements) of the subject, which you set out as the column headings. Remember to restrict yourself to the main dimensions of your chosen subject only. Next, list the attributes (characteristics) of each dimension or the ways in which it can occur in the appropriate column. You find new ideas by searching the matrix for new and feasible combinations, and you should find you have generated a range of potential research topics to consider.

Morphological analysis is a problem-solving technique that can be used to generate research topics by identifying the key dimensions and attributes of a subject, placing them in a matrix and adopting a 'mix and match' approach.

In the example in Table 2.2, we have used the general subject area of research. We have defined our key dimensions as the type of research, the methodology and the unit of analysis.

The result of your analysis might indicate a deductive research project that uses a survey methodology and focuses on a body of individuals as its unit of analysis (for example, a questionnaire survey of students). Another analysis might suggest an inductive research project that uses a case study and focuses on an individual as its unit of analysis (for example, an investigation into the experiences of a whistleblower). A third analysis might generate a

Table 2.2 Morphological analysis for the topic: research

Type of research	Methodology	Unit of analysis
Exploratory	Cross-sectional study	An individual
Descriptive	Experimental study	An event
Analytical	Longitudinal study	An object
Predictive	Survey	A body of individuals
Quantitative	Action research	A relationship
Qualitative	Case study	An aggregate
Deductive	Collaborative research	
Inductive	Ethnography	
Applied	Grounded theory	
Basic		

predictive research project that uses experiments with individuals; perhaps a project where you test how sleep deprivation affects the performance of students with babies under two years old in a mock test.

2.3.3 Mind maps

A **mind map** is an informal diagram of a person's idea of the key elements of a subject that shows connections and relationships.

Another way of generating research topics is to use diagrams. There are a number of ways of constructing diagrams, depending on your purpose. A **mind map** is an informal diagram of a person's idea of the key elements of a subject that shows connections and relationships. The process is not particularly systematic and focuses on key aspects, rather than detail. These key aspects are jotted down haphazardly.

Figure 2.2 shows an example of a mind map that focuses on the general subject of research. We used it to help us decide what to cover in our book. We started the map by writing the word 'research' and adding associated terms as they came to mind, gradually working outwards and drawing connecting lines to indicate relationships. We only stopped because space was limited, but you can see that this process can be continued until you have identified several potential ideas for your project. Of course, this sort of activity does mean you need to have some prior knowledge of the subject.

Figure 2.2 Mind map for the topic: research

2.3.4 Relevance trees

A **relevance tree** is a diagram that can be used to generate research topics by dividing a broad subject area into increasingly smaller clusters of related subsidiary areas. It has a hierarchical structure as shown in Figure 2.3, which shows an example of a relevance tree stemming from the broad subject area of 'communication'. Using our relevance tree, we identified a number of potential research topics; for example, use of body language in formal meetings or, at a more general level, the different forms of two-way communication used in the workplace.

A **relevance tree** is a diagram that can be used to generate research topics by dividing a broad subject area into increasingly smaller clusters of related subsidiary areas.

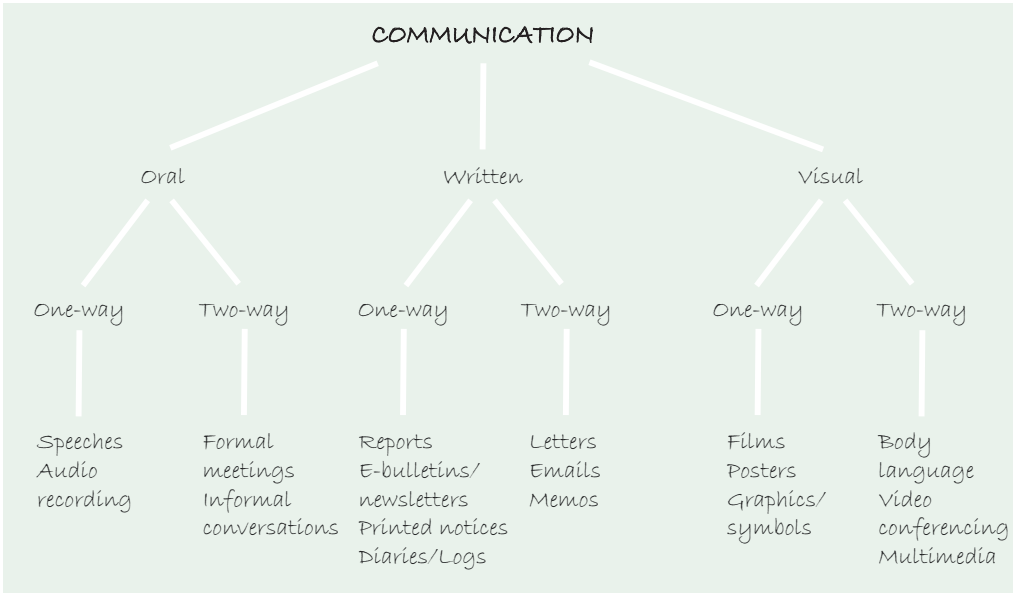


Figure 2.3 Relevance tree for the topic: business communication

2.3.5 Analogy

The final technique for generating a research topic that we are going to describe takes a different approach. **Analogy** involves designing a research study in one subject area by importing ideas and procedures from another area where you consider there are similarities. Thus, you use the research developments in one area to illuminate how you could conduct your own study. It is also possible to develop a research topic if you are aware of methods of analysis that have been used in one study and that can be applied in your own work. The use of existing analytical techniques in a completely new and different area can result in a very interesting study that contributes to our knowledge of the subject.

Analogy is a means of designing a research study in one subject area by importing ideas and procedures from another area where there are similarities.

Vox pop What has been the biggest challenge in your research so far?

Naim, undergraduate student investigating problems faced by entrepreneurs when starting a business

Choosing a topic was hard – I don't mean the subject itself but the specific issue – and then realising that I needed to do some work straightaway and not leave it until the week before like other coursework.

If you are having a problem identifying a research topic and/or a specific problem or issue to investigate, have a look at the advice in Chapter 15 (section 15.4).

2.4 Negotiating access to data

Access to data is often a major concern for researchers at all levels. Before you start your research, you must be certain that you can collect the research data you need to address your research questions. If you are doing a placement or internship as part of a degree or you are working while you study, your job might give you access to sources that will provide you with research data. Other students need to find their own sources and negotiate access to them. For example, if you have decided to collect your research data by designing a questionnaire and posting or emailing it to potential respondents, you will need to determine what types of people to send it to and obtain their names and contact details.

You may want to conduct a study that requires access to one or more organisations. The first step is to make use of any contacts you may already have. For example, your family and friends might be able to introduce you to an organisation that might be interested in your research. Remember that they will only be able to supply an introduction and it will be up to you to negotiate the terms of access.

If the above fails, you might have to approach organisations without an introduction. Send a letter enclosing an outline of your research proposal, suitably modified for the organisation. The letter must be addressed to an appropriate named person whose name you should be able to obtain from the firm's printed literature, its website or by ringing the firm and asking the switchboard operator. A well-composed letter addressed to the key person explaining why your project will be of interest to them is likely to be far more successful than 'cold calling'. It is advisable to follow up with a telephone call to that person if you do not receive a reply to your letter within 10 days.

Your letter should present your project in the form of a brief research proposal, usually no more than two pages of A4. Your proposal should set out clearly the benefits to the organisation and what access and information you will require. Remember that the organisation will not want an academic document with citations, but a clear, concise, non-technical explanation of what the project is about in report form. If you can demonstrate that your research could provide answers to problems their managers might be experiencing, you are more likely to be successful. Remember, the company will believe that it is doing you a favour, not vice versa, so be very sensitive in the requests you make. Once again, do your preliminary research so that you can focus your proposal on what is likely to be of interest to the company.

Vox pop What has been the biggest challenge in your research so far?

Chris, undergraduate student investigating environmental implications of logistics in the grocery market

Thinking of topics that interested me wasn't a problem, but I had to think of the practical implications. I had access to the company where my dad works, so that helped me make up my mind.

Talha, undergraduate student investigating customer satisfaction with banking services

Choosing a topic was hard. I did it backwards by starting from where I had access to data and then deciding on the topic. I didn't do an internship, so I didn't have any outside contacts. So, I decided to do a survey of students and then decided on a topic that was relevant to them.

2.4.1 Agreeing terms

If the firm is interested, the manager or director you contact is likely to suggest an informal discussion. This will allow him or her to assess you and your project in greater depth than can be gleaned from your proposal. You may find that certain restrictions are placed on your

research, such as how long you can spend in the organisation, the documents you can see, the methods you can use, the personnel you can interview and the questions you can ask.

It is important to be sympathetic to the norms and procedures of the firm you approach. Some organisations might be willing to agree terms verbally on the telephone or at an informal meeting, while others require all the issues to be agreed in writing with formal terms of reference. Even if a verbal agreement is made, we recommend that you write a letter confirming exactly what has been agreed, with copies to the relevant members of staff in the organisation.

Obtaining permission to publish from your research is not usually an issue at the undergraduate level as it is unlikely that you intend to publish your results externally. However, if you are a doctoral student wanting to pursue an academic career, you will need to explain that the research will be used for your degree and seek prior permission from the organisation. It is important to clarify who owns the data you have collected. If you have agreed to provide a research report or summary in exchange for access, you may have to write a special version as your dissertation or thesis is likely to be too academic for managerial use. Beware of offering the organisation an interim report as this will be time-consuming and expensive.

2.4.2 Personal safety

It is important to consider your personal safety when conducting research. You will be exposing yourself to new situations and meeting people of whom you have no previous knowledge. Fortunately, few problems arise, but it is important that you are aware of potential dangers and take the necessary steps to minimise them.

If you are negotiating access with a well-known organisation, your safety is reasonably well assured, but with small, unknown organisations or individual interviews 'on site', caution is required. You should ensure that you have the full name, title and contact address of anyone you intend to visit. Attempt to establish their credibility beforehand by finding out if they are known to any of your colleagues and checking with your original source for the contact. If you have any doubts, ask your supervisor or a colleague to accompany you.

2.4.3 Courtesy

Showing courtesy is essential and you must remember to thank individuals and organisations for their assistance with your research, verbally at the time, and afterwards by letter. If you have promised to provide copies of transcripts of interviews or a summary of your final report to participants, make sure that you do so promptly. If your work is published, you should send a copy to those in the participating organisation(s) who have helped you and to individual participants where this is practical.

2.5 Research ethics

It is important to ensure that your research is conducted in a professional manner and it complies with the relevant regulations and ethical standards adopted by your university or college. Ethics refers to the moral values or principles that form the basis of a code of conduct. In this section, we focus on research ethics, which is concerned with the manner in which researchers conduct their studies and report their findings or results. Do not confuse it with business ethics, which relates to concepts of right and wrong conduct by individuals and organisations. The history of research into business ethics is well documented by Ma (2009) and Calabretta, Durisin and Ogliengo (2011). If you are considering business ethics as a potential research topic, these articles are a good place to start as they explain the development of business ethics, the issues that have been explored and directions for future research.

Research funding bodies, such as the Economic and Social Research Council (ESRC) and the European Union (EU) have contributed to awareness of research ethics by providing guidelines, and those funded are required to demonstrate how they have met those guidelines. In addition, *The Missenden Code of Practice for Ethics and Accountability* (Daly, 2002) provides guidelines in the context of the commercialisation of research in institutions of higher education in the UK (Box 2.1).

Box 2.1 The Missenden code of practice for ethics and accountability

1. All universities should have an institutional Ethics and Accountability Panel or Committee.
2. Staff, students and the local community should have representation on the Committee.
3. The Committee should take advice from those with a professional expertise in ethics.
4. The Committee should vet all substantial donations, sponsorship and funding that the University applies for or is offered.
5. The Committee should *inter alia* ensure that all sources of funding for any research carried out in the University's name are acknowledged in all publications.
6. Where the Committee accepts a case for limitation on the freedom to publish it should attach an explanatory note to this effect.
7. The brief of the person within the University with responsibility for attracting external 'third mission' funding should have a strong ethical element.
8. The University's policy on Intellectual Property Rights should be disseminated as widely as possible by case studies and be made an integral part of job induction and training programmes.
9. Sponsored research should bear a full share of the institution's infrastructure costs.
10. The right of academic staff to publish research findings should be the primary consideration of any contract between industry and academia. Commercial considerations should never be allowed to prevent the publication of findings that are in the public interest or which add significantly to the body of knowledge in a field.
11. The University should retain the rights of staff to publish without hindrance except where a specific written provision has been made with the agreement of all parties' – to include all research students, research assistants and assistant staff involved. This should be explicitly mentioned in all staff contracts.
12. Those obtaining sponsorship for research should not be given undue favour in promotion decisions.
13. Universities should declare details of all investments.
14. Universities should consider the creation of a register of interests for all members of the university.

Source: www.missendencentre.co.uk. Reproduced with permission.

Many universities have their own ethics committees and publish their own research ethics guidelines. Ethics committees will expect you to demonstrate that that you intend to conduct your research in accordance with the principles in their guidelines. It goes without saying that one of these principles will cover the need for honesty and transparency in communications with all parties involved and that participants should not be encouraged to perform immoral, illegal or other reprehensible acts. In some cases, they might stipulate that the research should be of mutual benefit to researcher and participants or some form of collaboration or active participation should be involved. Other key principles usually include:

- providing participants with sufficient information to give informed consent when deciding to take part in the research
- ensuring that participants are not subject to coercion when agreeing to take part in the research or penalty for not participating
- making participants aware that they are free to withdraw from the research at any time without giving a reason and without a prejudice
- protecting any personal data provided by participants by ensuring confidentiality and anonymity
- storing that data securely by protecting files with passwords and keeping backup copies
- respecting the participants' dignity, privacy and values

- avoiding direct or indirect harm to the participants and themselves, including physical harm, harm to self-development, self-esteem, career, or employment prospects
- avoiding misleading, misunderstanding, misrepresenting or falsely reporting the research findings
- ensuring that any professional or personal affiliations that could influence the research, including conflicts of interest and sponsorship, are declared.

We will discuss the practical issues raised by some of these points next.

2.5.1 Voluntary participation

Voluntary participation is one of the most important ethical principles. It means that if the research involves human participants, coercion should not be used to force them into taking part. In academic research, it is also advisable to avoid offering financial or other material rewards to induce people to take part, as this will lead to biased results.

Potential participants should be given information about what is required if they agree to take part and how much time it will take. This ensures that if they agree to take part, they are giving their informed consent. Sometimes, consent is delayed because the potential participants need to ask permission from their line managers, or your request has to be approved by a committee. This may take time and, if you are not successful, you will need more time to identify others. If the research has an experimental design, a balance must be struck between giving sufficient information to permit informed consent and avoiding jeopardising the purpose of the research.

Although it is not likely that participants in business and management research will be exposed to physical risks, it is important to avoid causing distress, stress or other psychological harm. Avoiding causing harm to participants is important for ethical reasons, but also because you could be sued if you harm someone.

If you are planning an internal or external email survey, it is assumed that that those who respond consent to do so. This is known as implicit consent. It is important to remember that you need permission before conducting survey via email as it is unethical to send unsolicited mass emails.

2.5.2 Anonymity and confidentiality

In principle, you should offer **anonymity** and **confidentiality** to all the participants in your research. Giving participants the opportunity to remain anonymous means assuring them that they will not be identified with any of the opinions they express. In questionnaire surveys, this could contribute to a higher response rate and increased honesty; in interviews, it encourages greater freedom of expression and more open responses. However, in some studies, it may be very important to state the name or position of participants because their opinions can only be appreciated in the context of their role. In such circumstances, it is imperative that the participant gives his or her consent. Another example of where permission must be sought is where you wish to name the author of an internal document.

Anonymity is the assurance given to participants and organisations that they will not be named in the research.

Confidentiality is the assurance given to participants and organisations that the information provided will not be traceable to the individual or organisation providing it.

Sometimes it is possible to resolve problems of anonymity by agreeing on confidentiality, which we discuss next, which focuses on the data collected rather than the identity of the participant. If confidentiality is a condition of giving you access to information, you will need to assure participants that the data you collect will be used in such a way that the information is not traceable to any particular individual. For example, your dissertation or thesis need not name the company or companies where you have negotiated access to data. It is sufficient to refer to the organisation as an engineering company, a construction company or a food retailer (or company A, B or C), and so on. Similarly, with individuals, in many cases they can be identified by their position (or interviewee A, B or C), and so on, as they cannot be identified if the name of the company is not disclosed.

When writing to potential participants or at the top of any questionnaire you plan to distribute, you should include a sentence such as:

> Neither your name nor the name of your company will be associated with your responses. Unless you have given permission otherwise, your contact details and all data you provide will be treated in the strictest confidence.

You should discuss the issues of anonymity and confidentiality with your supervisors and the organisation(s) where you intend to collect your data as soon as possible to clarify these issues. If strict confidentiality is one of the conditions of access, you might be able to agree with the individuals and organisation concerned that no one but your supervisor(s) and examiners will have access to your research, and it will not be placed in the library or published in any way. Obviously, this would prevent you from writing or presenting any academic papers or articles on your research.

Figure 2.4 shows an example of how some of the key ethical principles were applied in an accompanying letter for an online survey.

Survey on the (expected) value of university–industry relationship

Dear participant,

First of all, many thanks for taking the time to support this crucial part of my PhD research.

The study has **ethical approval** from [name of university]. **Participation in the study is entirely voluntary**; you can withdraw from the survey at any point of time without giving reason and without implications for you. Please be assured that the **information you provide will remain strictly confidential and anonymous**. Answers will only be reported in aggregate so that no individual or organisation will be identifiable from any publication presenting the results of the survey. By responding to the questionnaire, your consent to take part in the study is assumed. If you would like to have further information about the project, please contact me via email [email address of researcher] or telephone [telephone number of researcher].

It is very important that you answer all questions, even if some appear similar, to ensure reliable and valid measurement.

Thank you very much again for your time and your valuable contribution to my PhD research.

Yours sincerely,

[Signature]
[Name]
PhD student at [Name of university]

[Photograph]

This study aims to better understand...

1. How academics perceive the (expected) value of relationships with businesses and how the benefits of other stakeholders influence this perception
2. How relationship characteristics such as shared expectations, trust and commitment influence the perceived value
3. How the perceived value influences the academics' satisfaction, future expectations and intentions

Figure 2.4 Example of a participant information letter

Source: Reproduced with kind permission from Thorsten Kliewe.

2.5.3 Ethical dilemmas

You may have spent some time negotiating access to an organisation in order to conduct your research. Naturally, you will be grateful to them for their help and will spend some time developing a good relationship, but what would you do if during the course of your research you found out that the company was doing something illegal? For example, imagine you are conducting research in a small factory in an economically depressed area that employs a hundred people. During your research you observe that proper safety guards are not fitted to the machines, but you know that fitting them would bankrupt the company and put people out of work. This poses a challenging ethical dilemma. Here are some more examples:

- Anonymity and confidentiality – Although it is normal to offer anonymity and confidentiality to participants, you might receive information that you think should be passed on to someone else. For example, perhaps you are conducting research into the reasons for high wastage levels of materials in a production process and, while interviewing employees, you discover that part of the wastage is due to one of them stealing goods.
- Informed consent – Although it is ethical to inform potential participants of the purpose of the research before they agree to participate, this could present problems in gaining access and obtaining valid responses. For example, if you were to inform participants you

were intending to study their working patterns, they might change their behaviour, which would distort your findings.

- Dignity – It would not be ethical to embarrass or ridicule participants, but unfortunately, this is easily done. The relationship between the researcher and the phenomenon under study is often complex and it is important to remember that participants might see you as someone with knowledge that they do not have or someone in authority. For this reason, it is important to be courteous and make sure they know they have a choice and will not be coerced into answering sensitive questions.
- Publications – The career of an academic is developed through publications and the success of a research student is achieved through the acceptance of their dissertation or thesis. History shows that there are some who are willing to invent data, falsify their results or pass off other people's work as their own to get published, which is highly unethical. However, it is also unethical to exaggerate or omit results in order to present a more favourable picture. A more complex situation arises when your publication casts a bad light on an individual, group or organisation. This can arise if you are conducting a comparative study, in which case you must discuss your results with great sensitivity.

As you can imagine, there are no easy answers to ethical dilemmas. Some commentators believe that ethical codes should be established for business research; others believe that rules are too rigid and leave loopholes for the unscrupulous; therefore, it is better to follow ethical principles. It has been argued that it is sometimes necessary to be vague about the purpose of the research, and even covert in collecting data, in order to achieve findings of value. You need to discuss these issues with your supervisor in the context of the code of research ethics at your university or college before you embark on your research. Remember, it is your responsibility as a researcher to:

- conform to generally accepted scientific principles
- protect the life, health, privacy and dignity of participants in your study
- assess the risk to participants
- take precautions to ensure your own safety
- obtain permission before sending mass emails.

The checklist in Box 2.2 offers a useful starting point for students. Some of these questions expose a number of dilemmas that we explore when we look at the design of a research project and the methods for collecting data.

Box 2.2 Checklist for ethical research

1. Have you obtained explicit or implicit consent from participants to take part in the research?
2. Have you used coercion to persuade people to participate?
3. Will the research process or the findings harm participants, those about whom information is gathered or others not involved in the research?
4. Have you stored personal/confidential data about participants (people and organisations) securely?
5. Have you ensured that participants (people and organisations) are anonymous?
6. Have you obtained permission from participants before taking audio or visual recordings of them?
7. Have you obtained permission from the organisation before sending mass emails?
8. Are you following accepted research practice in your conduct of the research, analysis and when drawing conclusions?
9. Are you adhering to community standards of conduct?
10. Have you agreed to destroy all data once your research has been assessed?

2.6 Managing the research project

Research is a time-consuming activity, and you will need to devise a plan for managing your research project to ensure that you meet your aims and objectives. Although a few lucky individuals are in a position to conduct studies purely out of personal interest, most research requires specific outcomes. If you are a student, this will be a good grade for your dissertation or the award of a doctorate for your thesis, together with transferable skills that improve your employability in the private or public sector, or a journal publication that will help you in your academic career. Conducting research for your dissertation or thesis is likely to be the largest assignment you have ever undertaken. Therefore, managing this important project means making a note of the submission date and setting a timetable for each stage in the process that ensures you will comfortably meet the deadline.

2.6.1 Setting a timetable

Conducting research for your dissertation or thesis is likely to be the largest assignment you have ever undertaken. Therefore, managing this important project means making a note of the submission date, setting a timetable for each stage in the research process, and checking your progress regularly to ensure that you will meet the deadline. Table 2.3 offers a useful guide for estimating how long each stage in the research process will take in your timetable. Remember that the amount of time for completing your research depends on the qualification you are working towards and the regulations in your institution. Of course, these figures are only indicative. You will need to adjust this basic timetable to reflect your research design and allow additional time for resolving any problems. A major weakness of Table 2.4 is that it implies that research takes place in orderly, discrete and sequential stages. Throughout this book you will find reminders that this is definitely not the case! Although we encourage you to be methodical in your approach, you will find that all research contains stages that overlap. For example, you might need to go on collecting information about current research in your chosen field right up to the final draft to ensure that you present an up-to-date picture. In addition, we must emphasise that although the writing-up stage is shown as a distinct activity at the end of the research process, you must get into the good habit of writing up your notes straightaway. This means that you will start to write up your research, albeit in draft form, as soon as you start your project. When you have decided on the structure for your dissertation or thesis, you can amend and refine your notes, and place them in the appropriate chapters. It is important not to underestimate how long the writing-up stage takes, even when you have good notes and references on which to base your research report.

Table 2.3 Approximate time for main stages of research

Stage	% of time
Choose a topic and search the literature to identify a research problem	10
Review the literature and define the research questions	20
Design the research and write the proposal	10
Collect the research data	20
Analyse and interpret the research data	20
Complete the writing of the dissertation or thesis	20
	100

You need to agree your timetable with your supervisor and make arrangements with any individuals or organisations participating in your study. You may find that you need to negotiate access with more than one person in the organisation and you should therefore plan to allow plenty of time for this stage. It is likely that the individuals concerned will be helping you with your research in addition to doing their normal jobs. Therefore, the time they are able to allocate to your research interests will be limited and must be arranged at their convenience.

You may find it useful to look at some of the reasons for long completion times or, in the worst scenario, failure to complete. For a start, if you are inexperienced, you will find that everything takes longer than you expect. Therefore, it is important to plan your time carefully, with advice from your supervisor. If you are an undergraduate student, you will only have a matter of months in which to complete your dissertation. You will probably need to balance your research activities against the demands of an industrial placement and/or your final-year studies. If you are a postgraduate or doctoral student without funding, you will probably need to juggle the demands of paid work with your research; indeed, you might be lecturing to students yourself. At any level, if you are a mature student, you could have both paid work and family life to fit in.

An undergraduate or taught Master's dissertation is normally completed within one academic year. Table 2.4 shows the approximate length of the registration period for postgraduate research degrees, but you should check the regulations in your institution, as times vary.

Table 2.4 Approximate length of research degrees

	Minimum	Maximum
MPhil thesis		
Full time	18 months	36 months
Part time	30 months	48 months
PhD thesis (transfer)		
Full time	33 months	60 months
Part time	45 months	72 months
PhD thesis (direct)		
Full time	24 months	60 months
Part time	36 months	72 months

Many Master's students go on to study for a doctoral degree. However, knowing that they have several years in which to complete their research, they often overlook the importance of planning. The result is a slow start, which is a very common reason for late completion. A second common reason is perfectionism. Some students find it difficult to bring things to a conclusion. They are never satisfied with their results and are always thinking of ways in which to improve them, even before they have written them up. Thus, the writing-up stage is always postponed. Such students find it hard to see whether improvement really is necessary and whether it is desirable to spend so much time on that stage of the research to the detriment of later stages.

A third reason for late completion is that some students are distracted from the main research problem. Some students find the software programs for searching the literature, saving references, extracting data from databases, analysing qualitative or quantitative data, and designing tables, graphs and reports so absorbing that they do not give sufficient attention to the substance of the research. Other problems can occur if the student is not sufficiently focused and collects too much literature or too much research data and does not allow enough time for analysis. Sometimes there has been insufficient collation and analysis of the data and the student does not realise this deficiency until he or she begins to write up and has to break off to complete this earlier stage, often resulting in a delay of months rather than weeks.

An experienced supervisor will be aware of these and other problems. The best way to overcome them is to agree a realistic timetable with your supervisor that shows the dates by which the various stages in the research process should be completed. It is important to do this at the earliest possible stage. Many students find it extremely helpful to know that they are expected to reach certain stages at certain times as this removes some of the pressure of managing their time and organising their research.

If you are having difficulty starting your research because you are confused about what you are expected to do or you are worried about how to manage your research, have a look at Chapter 15 (sections 15.2, 15.3, 15.4 and 15.5).

2.6.2 Organising materials

It will not take you too long to realise that a large part of research is concerned with organising materials, such as journal articles, industry reports, newspaper articles, completed questionnaires, transcripts of interviews and notes you have made. Everyone devises their own system, but we find it useful to start off by sorting the materials into their different types and file them according to this classification.

Save PDF copies of the articles and other publications you have collected under the name of the author and the date of the publication as this will give you an alphabetical list. There are several excellent software packages that allow you to collect your references and often be able to download references and abstracts from libraries. For a PhD, you may have several hundred articles; for an undergraduate project, only a dozen or so. No matter how many you collect, it is important that they are stored systematically so that you can easily find them. Materials, such as questionnaires and transcripts of interviews, should be numbered, dated and filed in a separate folder in numerical order. In Chapter 8, we discuss the analysis of qualitative data and you will see that, to a large extent, the success of this rests on the efficient storing and referencing of primary materials. We give some examples in that chapter on how this can be achieved. Remember to make regular backups of your files to reduce the risk of losing your work.

During your research you will probably collect a certain amount of miscellaneous information, such as odd notes or quotations or cuttings, which could be important when you are writing your dissertation or thesis. Once you have decided on a draft structure for your dissertation or thesis, which you should do as early as possible, you can set up a file for each anticipated chapter and place these miscellaneous materials in the most appropriate chapter. It is important to start writing up notes and draft chapters from the onset. Once you have received feedback from your supervisor, make improvements. You need to be serious about the quality of your writing as you will be judged by your written communication skills. A poorly crafted dissertation, thesis, conference paper or article can destroy what might have been a well-designed and carefully executed study. We give considerable guidance on writing in subsequent chapters, but we strongly advise you to start writing notes and draft chapters now. You should continue to write, review and revise your work so that your final draft will represent the highest quality in terms of substance, structure, grammar and spelling.

Keeping records is a very important component in the management of your research. In Chapter 5, we discuss an important aspect of your research known as the literature review and how to reference articles, books and other hard or soft copy publications properly. It is essential that you keep a full bibliographic record of every item you read which might be useful in your own research. You can keep your bibliography in a simple *Microsoft Word* document in alphabetical order by author's name or use one of the software packages supplied by your institution. We explain this in more detail in Chapter 5.

You will need to set up a filing system for your correspondence so that you can find emails and letters when you wish to refer to them. It is also important to maintain a record of contacts' names, addresses, telephone numbers and other details in a secure place. A computerised record system is particularly useful if you are planning to send out a number of standard letters as the names and addresses can be merged with the standard letter at the time of printing (mail merge). Finally, one further folder you may wish to set up is one in which you can store instructions for using the library catalogue, e-resources and software packages. This is also a good place to keep information on library opening times, health and safety requirements in laboratories and maps of locations you might need to visit.

2.6.3 Networking

In this context, networking simply means setting up and maintaining links with individuals in business and academic life over the course of your research. We have already discussed the importance of negotiating access and the courtesies required. Remember that all the contacts you make could be useful at some future date. Research is not a simple linear process of moving from one stage to the next, but often involves retracing your steps. The contacts you have made and maintained will assist you to do this.

There is nothing worse when you are writing up your research to find that you have not collected an essential statistic from a company or one of your interviews is incomplete. If you

wrote to the individuals who have helped you along the way, thanking them for their assistance, it is easier to go back to them for the missing data. Similarly, if you have sent them any reports or articles resulting from your research, you are more likely to be successful if you approach them at a later date with a request to conduct further research.

It is also important to establish and maintain links with academic colleagues in your own and other institutions. These might be people interested in the same or a similar area of research, you meet on campus, on courses or at conferences with whom you can exchange articles and talk about your ideas and problems. You might also be able to exchange early drafts of your dissertation or thesis for mutual comment and criticism.

2.7 Funding the research

Research is not a cost-free activity, and it is important to consider the funding implications when planning your research. Even if you were to conduct all your research in your university or college library, you might incur minor expenses such as photocopying or printing costs. If you visit other libraries and institutions, you will incur more travelling costs. If you are conducting interviews as part of your research, you will need to cover the cost of travel and subsistence. If you are using a questionnaire, you might need to pay for paper, printing and postage, or pay a service provider for an online survey. Of course, this does not take into account your time, which in most cases is non-chargeable. Unfortunately, research funds are difficult to obtain, and it is your responsibility to check that you can cover your costs before you conduct your research. There is a wide range of potential sources of funding and you should allow plenty of time for writing funding proposals: deadlines for applications are often tight and there is considerable competition for funds. You might want to consider some of the sources we discuss next.

2.7.1 University funding

University funding usually takes the form of bursaries and grants for students from which you can fund any expenses you incur while conducting your research. Alternatively, you might be able to help on an existing large research project and in return receive a salary and/or have your expenses for your own project reimbursed. You might be able to use the part of the project you are working on as the basis for your dissertation or thesis. However, there are some drawbacks to this sort of arrangement, as you will have to demonstrate that the research you submit for your degree is your own work and not that of the group. In addition, you could find the demands of the work you are doing for the group supplant your own needs to complete your dissertation or thesis. Sometimes the arrangement also includes some teaching, but if you can agree suitable terms, you not only benefit from the financial rewards and access to data, but also from working with more experienced researchers.

Your university or college should also be able to direct you to potential sources of funding from national governments and the EU. However, you should bear in mind that obtaining them is very competitive. Moreover, writing a successful proposal is difficult for an inexperienced researcher and you will need help from your supervisor(s).

Vox pop What has been the high point of your research so far?

Lee, first-year PhD student investigating foreign direct investment in international business

The best moment was after I was interviewed for a graduate teaching position and knew I'd got the funding for my PhD. Before the interview I was thinking they'd never accept me, but I really enjoyed the interview. We [the applicants] had to give a presentation on why we deserved to be funded and I decided not to mention money at all. Instead I told them about what I did for my Master's dissertation and my ambition to be an academic. I feel I've really got a vocation to teach.

2.7.2 Commercial sources of funding

If you have a job or your degree programme includes an industrial placement, you have the opportunity to design a work-based study and your employer might be willing to reimburse any expenses you incur. Even at doctoral level, you might be able to persuade a present or potential employer to cover your costs if you can demonstrate that your research will be useful to the business as well as contributing to your degree. Receiving funding from commercial sources has a number of disadvantages. Sponsors are more interested in solving their own problems than the academic requirements of your programme and you could find that you are expected to conduct two parallel studies with a business report for your employer or commercial sponsor in addition to your dissertation or thesis. Therefore, you should weigh up very carefully the benefits of covering your research costs against the additional pressure this extra work will give you.

If you do not have the benefit of an interested employer, you might be able to find a business sponsor to help fund your research. You might be very fortunate and have contact with an individual who wants the research done because he or she is particularly interested in the topic (for example, a relation or a family friend) or because he or she is conducting a larger project and is willing to meet the costs of your research if it feeds into the larger study (for example, your supervisor). If you obtain funding from such a source, you must check the ownership of the data you generate and your independence.

2.7.3 Funding from professional bodies and charities

Many of the professional bodies associated with business and management (for example, the professional institutions that represent accountancy, banking, human resource management, marketing and purchasing) offer funding for research. Competition is keen and your proposed research needs to be carefully designed and relevant to the current research interests of the professional body to which you are applying. You will find it useful to include the name(s) of your supervisor(s) in the proposal, especially if that person is a member of the potential sponsoring body. You might also be able to obtain funding from charities and associations, although strict criteria often have to be met. Modest amounts to cover limited expenses such as travelling, postage and printing are less difficult to obtain.

2.8 Conclusions

This chapter has been about preparing yourself for starting your research. We have given advice on critical issues, such as sources of finance, and also explained more academic issues such as generating a research topic and the skills and experiences you require at different stages of a project. It is important when planning your research that you take a comprehensive view of your study. The editors of the *Academy of Management Learning and Education* (Köhler, Landis and Cortina, 2017) claim that many researchers have little knowledge of the current best practices for research design, statistical analysis, and writing their final report. Even if you are not intending to publish your research in an academic journal, you will need to develop a range of knowledge and skills if you are to succeed at every stage in your research. If you are interested in writing conference papers and articles, we cover this in Chapter 14.

It is important that you appreciate that research is more than an investigation. It is also an activity that calls for efficient project management. There is no doubt that time is a major enemy of all researchers and if you do not have a detailed, realistic timetable, you run the risk of missing your deadline. If you miss a critical deadline, you may not get a second chance. We have emphasised the need to develop your organisational skills. Once you start your research, you do not want to be slowed down because you have not kept careful records or stored your notes and draft chapters properly. Efficient organisation also means that you are more likely to stick to the schedule you have set. Unfortunately, some students ignore matters relating to research ethics, such as informed consent, anonymity and confidentiality, until they are confronted with them. These considerations are extremely important, and you could find that your research proposal has to be approved by your institution's ethics committee before you can proceed.

References for further reading

Calabretta, G., Durisin, B. and Ogliengo, M. (2011) 'Uncovering the intellectual structure of research in business ethics: A journey through the history, the classics, and the pillars of Journal of Business Ethics', *Journal of Business Ethics*, 104(4), pp. 499–524.

Daly, R. (2002) *The Missenden Code of Practice for Ethics and Accountability – The Commercialisation of Research in Universities: An Ethical Intervention*. Great Missenden: The Missenden Centre for the Development of Higher Education.

Easterby-Smith, M., Thorpe, R. and Jackson, P. (2012) *Management Research*, 4th edn. London: SAGE.

Foucault, M. (1985) *The Use of Pleasure: History of Sexuality*, Vol. 2. New York: Vintage Books.

Howard, K. and Sharp, J. A. (1994) *The Management of a Student Research Project*. Aldershot: Gower.

Hussey, R. (2007) 'The application of personal construct theory in international accounting research', *Journal of Theoretical Accounting Research*, 2(2), pp. 34–51.

Köhler, T., Landis, R. S. and Cortina, J. M. (2017) 'From the editors: Establishing methodological rigor in quantitative management learning and education research: The role of design, statistical methods, and reporting standards', *Academy of Management Learning & Education*, 16(2), pp. 173–92.

Ma, Z. (2009) 'The status of contemporary business ethics research: Present and future', *Journal of Business Ethics*, 90(Supplement 3), pp. 255–65.

Sandberg, J. and Alvesson, M. (2011) 'Ways of constructing research questions: Gap-spotting or problematization?' *Organization*, 18(23–4), pp. 1–22.

Activities

1. Generate a mind map that explores the funding implications of your research and how you can overcome any problems. Discuss your mind map with other students, your lecturers or potential supervisor to evaluate how realistic your assumptions are and to share solutions.
2. Use any two of the techniques described in this chapter to generate a research topic. Discuss the nature of the topic you have generated with other students and whether it would make a feasible research project.
3. In pairs, act out a situation where one of you takes the role of someone seeking access to an organisation to conduct research and the other is the senior manager who has the power to grant your request. If possible, record or video the interview and analyse the process.
4. You are conducting research in a charity that saves the lives of many children. The organisation has an excellent reputation and receives substantial government funding. During the course of your research you discover that irregular payments have been made to people outside the organisation. The financial controller explains that if the charity did not make these payments, their workers would not get access to certain parts of the world where law and order has broken down. Moreover, if the charity workers did not get this access, children would die. How do you deal with this ethical problem?
5. Draft a section for your CV that describes the knowledge and transferrable skills you will acquire from your research project that will enhance your employability.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter, and sections 15.2, 15.3, 15.4 and 15.7 in particular, which relate specifically to this chapter.

3

Identifying your research paradigm

Learning objectives

When you have studied this chapter, you should be able to:

- describe the main features of positivism
- describe the main features of interpretivism
- compare the assumptions of these two main paradigms
- discuss the strengths and weakness of pragmatism
- identify your research paradigm.

3.1 Introduction

Now that you have begun to understand the nature of research and we have dealt with some of the practical issues, we are ready to look at the philosophical issues that underpin research. This chapter introduces a number of concepts that will help you to extend your knowledge of how research is conducted. We introduce the ideas in a way that allows you to develop your knowledge incrementally and you will soon be using your extended vocabulary with confidence. Your new understanding will provide a valuable framework for expressing your ideas about your proposed research when you talk to your supervisor and other researchers, and it will also help you absorb information from any preliminary reading you are doing.

If you are an undergraduate or a student on a taught Master's programme, you will probably face two major constraints when doing your research. The first is the relatively short period of time you have in which to conduct your research and the second is the size constraint. Therefore, you may not need to explore the philosophical issues in this chapter in any great depth. Nevertheless, it is important that you are aware of the assumptions you are making when conducting your research. However, if you are doing a Master's degree by research or you are a doctoral student, you need greater understanding of research philosophies and should use the references in this chapter as a guide to further reading. Indeed, at doctoral level, you may find that a significant part of your thesis is concerned in establishing the appropriateness and credibility of the assumptions you have made.

3.2 The two main paradigms

A **research paradigm** is a philosophical framework that guides how scientific research should be conducted. Philosophy is 'a set or system of beliefs [stemming from] the study of the fundamental nature of knowledge, reality, and existence' (Waite and Hawker, 2009, p. 685). Ideas about reality and the nature of knowledge have changed over time; for example, people used to believe that the world was flat and that the sun went around the earth. Therefore, it is not surprising that over time new research paradigms have emerged in response to the perceived inadequacies of earlier paradigms. This is captured in Kuhn's definition: 'Paradigms are universally recognised scientific achievements that for a time provide model problems and solutions to a community of practitioners' (Kuhn, 1962, p. viii).

A **research paradigm** is a framework that guides how research should be conducted, based on people's philosophies and their assumptions about the world and the nature of knowledge.

For many hundreds of years there was only one research paradigm because the 'scientific achievements' referred to by Kuhn (1962) stemmed from one source. Today we refer to that source as the natural sciences to distinguish them from the social sciences. The emergence of the social sciences led to the development of a second research paradigm.

According to Smith (1983), until the late 19th century, research had focused on inanimate objects in the physical world, such as physics, which focuses on the properties of matter and energy and the interaction between them. The systematic methods used by these scientists involved observation and experimentation, and they applied inductive logic to discover explanatory theories that could be used for prediction. Their beliefs about the world and the nature of knowledge were based on **positivism**, which has its roots in the philosophy known as realism. Positivism was developed by theorists such as Comte (1798–1857), Mill (1806–1873) and Durkheim (1859–1917).

With the advent of industrialisation and capitalism, researchers began to turn their attention to social phenomena. A phenomenon (plural phenomena) is an observed or apparent object, fact, or occurrence. Initially, the new social scientists used the methods established by the natural scientists, but the suitability of the traditional scientific methods was challenged by a number of theorists, which led to a debate that lasted many decades (Smith, 1983). The alternative to positivism can be loosely labelled as **interpretivism**,[1] which is based on the principles of idealism, a philosophy associated with Kant (1724–1804) and subsequently developed by Dilthey (1833–1911), Rickert (1863–1936) and Weber (1864–1920).

A recent survey by Joullié (2016) examines the six major themes of Western philosophy taught to management students: heroism, rationalism, positivism, romanticism, existentialism, and postmodernism. His findings suggest that they all have recognisable philosophical origins, but there is little agreement about which is the most appropriate. The recognition of a paradigm can depend on the accepted paradigm in a particular discipline, the country in which the research is set and the

1. Some authors refer to phenomenology (as we did in earlier editions of this book), but we have decided to use interpretivism as it suggests a broader philosophical perspective.

period in which the research takes place. It is argued that there are multiple paradigms in cross-cultural research (Romani *et al.*, 2018), which can provide the researcher with greater insights. However, a study of Chinese management suggests that scholarly fields differ in their level of development, and these differences will be reflected in research norms and practices (Boyd, 2018).

In the following section we focus on the two main paradigms, but we suggest that you explore the possibilities for your project before deciding on your paradigm. The following advice will assist you make the decision:

- Look at the high-quality academic journals that publish articles in your discipline and determine whether there is a preference for a particular paradigm.
- Attend research seminars and conferences in your discipline and talk to the authors about their choice of paradigm.
- Discuss your ideas with your supervisor and find out which paradigm he or she favours.

3.2.1 Positivism

Positivism is a paradigm that originated in the natural sciences. It rests on the assumption that social reality is singular and objective, and is not affected by the act of investigating it. The research involves a deductive process with a view to providing explanatory theories to understand social phenomena.

Quantitative data are data in a numerical form.

As you can see from the historical developments outlined above, positivism provided the framework for the way in which research was conducted in the natural sciences, and the scientific methods are still widely used in social science research today. **Positivism** is underpinned by the belief that reality is independent of us and the goal is the discovery of theories, based on empirical research (observation and experiment). Knowledge is derived from 'positive information' because it can be scientifically verified. In other words, it is possible to provide logical or mathematical proof for every rationally justifiable assertion (Walliman, 2011). Today, researchers conducting business research under a paradigm that stems from positivism still focus on theories to explain and/or predict social phenomena. They still apply logical reasoning so that precision, objectivity and rigour underpin their approach, rather than subjectivity and intuitive interpretation. Because positivists believe reality is independent of us, they assume the act of investigating social reality has no effect on that reality (Creswell, 2014).

Under positivism, theories provide the basis of explanation, permit the anticipation of phenomena, predict their occurrence and thus allow them to be controlled. Explanation consists of establishing causal relationships between the variables by establishing causal laws and linking them to a deductive or integrated theory. Thus, social and natural worlds are both regarded as being bound by certain fixed laws in a sequence of cause and effect. You will remember from Chapter 1 that a variable is an attribute of a phenomenon that can change and take different values, which are capable of being observed and/or measured; and a theory is a set of interrelated variables, definitions and propositions that specifies relationships among the variables. Since it is assumed that social phenomena can be measured, positivism is associated with quantitative methods of analysis based on the statistical analysis of **quantitative research data**.

3.2.2 Interpretivism

Interpretivism is a paradigm that emerged in response to criticisms of positivism. It rests on the assumption that social reality is in our minds, and is multiple and subjective. Therefore, social reality is affected by the act of investigating it. The research involves an inductive process with a view to providing interpretive understanding of social phenomena within a particular context.

Since **interpretivism** developed as a result of the perceived inadequacy of positivism to meet the needs of social scientists, it is important to understand the main criticisms of positivism. Box 3.1 sets out the main arguments.

Box 3.1 Main criticisms of positivism

- It is impossible to separate people from the social contexts in which they exist.
- People cannot be understood without examining the perceptions they have of their own activities.
- A highly structured research design imposes constraints on the results and might ignore other relevant findings.
- Researchers are not objective, but part of what they observe. They bring their own interests and values to the research.
- Capturing complex phenomena in a single measure is misleading (for example, it is not possible to capture a person's intelligence by assigning numerical values).

Interpretivism is underpinned by the belief that social reality is not objective but highly subjective because it is shaped by our perceptions. The researcher interacts with that being researched because it is impossible to separate what exists in the social world from what is in the researcher's mind (Smith, 1983; Creswell, 2014). Therefore, the act of investigating social reality has an effect on it. Whereas positivism focuses on measuring social phenomena, interpretivism focuses on exploring the complexity of social phenomena with a view to gaining interpretive understanding. Therefore, rather than adopt the quantitative methods used by positivists, interpretivists adopt a range of methods that 'seek to describe, translate and otherwise come to terms with the meaning, not the frequency of certain more or less naturally occurring phenomena in the social world' (Van Maanen, 1983, p. 9). These important differences lead to a very broad conclusion that interpretive research is any type of research where the findings are not derived from the statistical analysis of quantitative data (Corbin and Strauss, 2008). Instead, the findings are derived from qualitative methods of analysis, which are based on the interpretation of **qualitative research data**.

Qualitative data are data in a nominal (named) form.

3.2.3 Approaches within the two main paradigms

Just as realism gave way to positivism and idealism gave way to what we are loosely referring to as interpretivism, many new paradigms have emerged over the years and few researchers now adopt the pure forms of the main paradigms. New paradigms are distinguished by differences in the philosophical assumptions on which they rest. You might find it helpful to think of positivism and interpretivism as the extremities of a continuous line of paradigms that can exist simultaneously, as illustrated in Figure 3.1. As you move along the continuum, the features and assumptions of one paradigm are gradually relaxed and replaced by those of the next (Morgan and Smircich, 1980).

Figure 3.1 A continuum of paradigms

In addition to reading about different paradigms that were developed towards the end of the 19th century and beyond (for example, hermeneutics, phenomenology, existentialism, critical rationalism, linguistics, conventionalism), you may also come across a number of terms that describe different approaches with the main paradigms. You will find the term 'paradigm' is used somewhat inconsistently in the literature because it has different meanings for different people in different disciplines, in different parts of the world and over different periods of time. For example, it can be argued that the version of paradigms described by Kuhn (1962) is less restrictive than the version described by Burrell and Morgan (1979). To help clarify the uncertainties, Morgan (1979) suggests the term paradigm can be used at three different levels:

- at the philosophical level, where the term is used to reflect basic beliefs about the world
- at the social level, where the term is used to provide guidelines about how the researcher should conduct his or her endeavours
- at the technical level, where the term is used to specify the methods and techniques that ideally should be adopted when conducting research.

Table 3.1 shows some of the more common terms used to describe approaches within the two main paradigms. You should be aware that the terms under a particular category are not necessarily interchangeable, as they were coined by researchers wishing to distinguish their approach from others. In some cases, the term is being used at the social level (for example, a subjectivist approach) or at the technical level where it refers to a particular method for collecting and/or analysing data (for example, a qualitative approach). If you are an undergraduate student, these nuances might not be important, but postgraduate and doctoral students are usually required to argue the appropriateness of the paradigm and the terms they are using.

Table 3.1 Approaches within the two main paradigms

Positivism	Interpretivism
Quantitative	Qualitative
Objective	Subjective
Scientific	Humanist
Traditionalist	Phenomenological

3.3 Philosophical assumptions of positivism and interpretivism

Before you can design your research project, you must consider the philosophical assumptions that underpin positivism and interpretivism so that you can determine whether your orientation at this stage is broadly positivist or broadly interpretivist. This could change as you progress with your studies. Drawing on the literature, we summarise the assumptions that underpin the pure forms of the two main paradigms in Table 3.2.

Table 3.2 Philosophical assumptions of the two main paradigms

Assumption	Positivism	Interpretivism
Ontological assumption (the nature of reality)	Social reality is objective and external to the researcher.	Social reality is subjective and socially constructed.
	There is only one reality.	There are multiple realities.
Epistemological assumption (what constitutes valid knowledge)	Knowledge comes from objective evidence about observable and measurable phenomena.	Knowledge comes from subjective evidence from participants.
	The researcher is distant from phenomena under study.	The researcher interacts with phenomena under study.
Axiological assumption (the role of values)	The researcher is independent from phenomena under study.	The researcher acknowledges that the research is subjective.
	The results are unbiased and value-free.	The findings are biased and value-laden.
Rhetorical assumption (the language of research)	The researcher uses the passive voice, accepted quantitative words and set definitions.	The researcher uses the personal voice, accepted qualitative terms and limited a priori definitions.
Methodological assumption (the process of research)	The researcher takes a deductive approach.	The researcher takes an inductive approach.
	The researcher studies cause and effect, and uses a static design where categories are identified in advance.	The researcher studies the topic within its context and uses an emerging design where categories are identified during the process.
	Generalisations lead to prediction, explanation, and understanding.	Patterns and/or theories are developed for understanding.
	Results are accurate and reliable through validity and reliability.	Findings are accurate and reliable through verification.

If you are still developing your understanding of research, you will probably find this quite difficult. To help you with your analysis, we will provide some explanations of the terms used in the table. The first three assumptions are interrelated and if you accept one of them within a particular paradigm, you will find the other two assumptions for that paradigm are complementary.

3.3.1 Ontological assumption

The ontological assumption is concerned with the nature of reality:

- Positivists believe social reality is objective and external to the researcher. Therefore, there is only one reality, and everyone has the same sense of reality.
- Interpretivists believe that social reality is subjective because it is socially constructed. Therefore, each person has his or her own sense of reality and there are multiple realities. This notion of reality as a projection of our imagination is captured by Mercier (2009, p. 214): 'Life is not what we live; it is what we imagine we are living.'

3.3.2 Epistemological assumption

The epistemological assumption is concerned with what we accept as valid knowledge. This involves an examination of the relationship between the researcher and that which is researched:

- Positivists believe that only phenomena that are observable and measurable can be validly regarded as knowledge. They try to maintain an independent and objective stance.
- On the other hand, interpretivists attempt to minimise the distance between the researcher and that which is researched. They might be involved in different forms of participative inquiry. This polarity between the two approaches has been captured by Smith (1983, pp. 10–11), who argues that 'in quantitative research facts act to constrain our beliefs; while in interpretive research beliefs determine what should count as facts'.

3.3.3 Axiological assumption

The axiological assumption is concerned with the role of values:

- Positivists believe that the process of research is value-free. Therefore, positivists consider that they are detached and independent from what they are researching and regard the phenomena under investigation as objects. Positivists are interested in the interrelationship of the objects they are studying and believe that these objects were present before they took an interest in them. Furthermore, positivists believe that the objects they are studying are unaffected by their research activities and will still be present after the study has been completed. These assumptions are commonly found in research studies in the natural sciences, but they are less convincing in the social sciences, which are concerned with the activities and behaviour of people. Various studies have shown that the process of inquiry can influence both researchers and those participating in the research.
- In contrast, interpretivists consider that researchers have values, even if they have not been made explicit. These values help to determine what are recognised as facts and the interpretations drawn from them. Most interpretivists believe that the researcher is involved with that which is being researched.

3.3.4 Rhetorical assumption

We now move on to the rhetorical assumption, which is concerned with the language of research. This is particularly important when you write your research proposal and your final dissertation or thesis. These documents should be complementary to your paradigm, but they must also be written in a style that is acceptable to your supervisors and examiners.

- In a positivist study, it is usual to write in a formal style using the passive voice. For example, instead of writing, 'As part of my research, I observed a group of employees…' in your dissertation or thesis you will write, 'As part of the research, observations were made of a group of employees…' This is because you should try to convey the impression that your research was objective, that you followed rigorous procedures and any personal opinions and values you possess were not allowed to distort the results. You will use the future tense in your proposal. For example, 'Observations of a group of employees will be made'. However, there has been a move away from the passive voice in recent years and increasing numbers of researchers in Europe and North America now favour the active voice.

There is also some debate over whether it is acceptable to use 'we' instead of 'I' when there is only one researcher. Clearly, unless the work was done as a team, it is misleading to use 'we' and you run the risk that the examiner thinks that someone else was involved in what is intended to be an individual assignment.

- In an interpretive study, the preferred style is usually the active voice as it reflects the immediacy of the research and the researcher's involvement. For example, 'As part of my research, I observed a group of employees…'

Our advice is to review the literature in your discipline to identify the norms and then find out what is acceptable to your supervisor. Irrespective of your paradigm, remember that you need to use the future tense in your project proposal and the present (or past) tense in your dissertation or thesis.

3.3.5 Methodological assumption

The methodological assumption is concerned with the process of the research:

- If you are a positivist, you are likely to be concerned with ensuring that any concepts you use can be operationalised; that is, described in such a way that they can be measured. Perhaps you are investigating a topic that includes the concept of intelligence, and you want to find a way of measuring a particular aspect of intelligence. You will probably use a large sample (see section 3.4.1) and reduce the phenomena you examine to their simplest parts. You will focus on what you regard are objective facts and formulate hypotheses. Your analysis will look for association between variables and/or causality (one variable affecting another).
- If you are an interpretivist, you will examine a small sample, possibly over a period of time. You will use a number of research methods to obtain different perceptions of the phenomena, and in your analysis you will be trying to understand what is happening in a situation and looking for patterns which could be repeated in other similar situations.

3.3.6 A continuum of paradigms

Morgan and Smircich (1980) offer a typology that helps us think about the diverse views held by social scientists. Table 3.3 illustrates two of the core assumptions and the associated research methods for the six categories they identify.

Table 3.3 Typology of assumptions on a continuum of paradigms

	Positivism ← → Interpretivism					
Ontological assumption	Reality as a concrete structure	Reality as a concrete process	Reality as a contextual field of information	Reality as a realm of symbolic discourse	Reality as a social construction	Reality as a projection of human imagination
Epistemological stance	To construct a positivist science	To construct systems, process, change	To map contexts	To understand patterns of symbolic discourse	To understand how social reality is created	To obtain phenomenological insight, revelation
Research methods	Experiments, surveys	Historical analysis	Interpretive contextual analysis	Symbolic analysis	Hermeneutics	Exploration of pure subjectivity

Source: Based on Morgan and Smircich (1980, p. 492).

Starting at the extreme positivist end of the continuum (which Morgan and Smircich refer to as the objectivist end), there are those who assume that the social world is the same as the physical world. Their ontological assumption is that reality is an external, concrete structure which affects everyone. As the social world is external and real, the researcher can attempt to measure and analyse it using research methods such as laboratory experiments and surveys.

At the second stage of the continuum, reality is regarded as a concrete process where 'the world is in part what one makes of it' (Morgan and Smircich, 1980, p. 492). The third stage is where reality is derived from the transmission of information that leads to an ever-changing form and activity. At the fourth stage, 'the social world is a pattern of symbolic relationships and meanings sustained through a process of human action and interaction' (Morgan and Smircich, 1980, p. 494). At the fifth stage, individuals through language, actions and routines create the social world. At the sixth, and extreme interpretivist end of the continuum (which Morgan and Smircich refer to as the subjectivist end), reality is seen as a projection of human imagination. Under this assumption, there might be no social world apart from that which is inside the individual's mind.

Vox pop

What has been the biggest challenge in your research so far?

My relationship with my supervisor. His view is that there's only one way to do research and even my post-modernist approach has to follow what seems to me to be his positivist formula. My formula is to build theory, and it's very hard working in isolation, completely on my own.

Raymond, second year PhD student investigating organisational change from a discursive perspective

What has been the high point of your research so far?

Giving a seminar on the ideas behind my research to other PhD students and getting a lot of support.

3.4 Comparing positivism and interpretivism

So far we have tended to focus on the differences between the two main paradigms, but some argue that this is a false dichotomy: 'Even though there is a substantial rift between the two paradigms, there are many more similarities than there are differences' (Onwuegbuzie and Leech, 2005, p. 271). For example, both paradigms:

- use research questions to drive the research
- use various methods to collect quantitative and/or qualitative research data
- use various methods to summarise or otherwise reduce the research data
- apply techniques to analyse the data
- discuss the results or findings
- draw conclusions.

The particular paradigm you adopt for your research will be partly determined by your assumptions, but it will be influenced by the dominant paradigm in your research area and the nature of the research problem you are investigating. It is important to remember that one paradigm is not 'right' and the other 'wrong', but you may find that a particular paradigm is more acceptable to your supervisors, examiners or the editors of journals in which you wish to publish your research. It may not be clear as to why they favour a particular paradigm, as in some cases they are merely following a tradition in the discipline.

To help you discuss your decision with your supervisor, Table 3.4 compares the main features of the two paradigms, which we have polarised in order to contrast them.

Table 3.4 Features of the two main paradigms

Positivism tends to:	Interpretivism tends to:
· Use large samples	· Use small samples
· Have an artificial location	· Have a natural location
· Be concerned with hypothesis testing	· Be concerned with generating theories
· Produce precise, objective, quantitative data	· Produce 'rich', subjective, qualitative data
· Produce results with high reliability but low validity	· Produce findings with low reliability but high validity
· Allow results to be generalised from the sample to the population	· Allow findings to be generalised from one setting to another similar setting

As we have already suggested, it is helpful to think of the two main paradigms as being at opposite ends of a continuum. Regardless of which paradigm you employ, it is important to pay attention to all its features and ensure there are no contradictions or deficiencies in the way you design your research. The table introduces some new terms and concepts, which we will now discuss.

3.4.1 Sample size

A **sample** is a subset of a population.

A **random sample** is an unbiased subset of the population that is representative of the population because every member had an equal chance of being selected.

A **population** is a precisely defined body of people or objects under consideration for statistical purposes.

A **sample** is a subset of a population. In a positivist study, the sample is chosen to be representative of the population from which it is drawn. Therefore, care is taken to ensure that the sample is unbiased in the way it represents the phenomena under study (a **random sample**, for instance). A **population** is any precisely defined body of people or objects under consideration for statistical purposes. Examples of a set of people in a business research project might be the working population of a particular country; all skilled people in a particular industry; all workers of a certain grade in a particular business, or all trainees in a particular department of that business. A collection of items might be all green saloon cars registered in a particular year in a particular region, or one day's production of medium-sliced wholemeal bread at a particular factory.

Sample size is related to the size of the population under consideration. There is no need to select a sample if it is feasible to study the entire population. In Chapter 10, we describe the methods for selecting a representative sample and the minimum size that allows positivist researchers to generalise the results from the sample to the population. This is not an issue for interpretivists because their goal is to gain rich and detailed insights of the complexity of social phenomena. Therefore, they can conduct their research with a sample of one.

3.4.2 Location

Location refers to the setting in which the research is conducted. For example, a positivist might design an experiment in a laboratory where it is possible to isolate and control the variables being investigated. It would be important to investigate the research problems in an artificial setting if you were investigating the effect of lack of sleep on drivers or the effect of alcohol on drivers or shift workers, as it would not be safe to do it in the workplace. However, most positivist research in the social sciences today is based on secondary data (published data) or in natural locations (for example, the workplace). Some researchers refer to this as field research, a term that illustrates the longevity of the link with the methods of the natural scientists. An example of field research is a study that evaluates the impact of a new training scheme on the productivity levels in a factory. One of the challenges of conducting research in a natural setting is deciding how to control for the influence of other variables, such as noise and temperature levels or the activities of other employees.

A **theory** is a set of interrelated variables, definitions and propositions that specifies relationships among the variables.

3.4.3 Theories and hypotheses

The normal process under a positivist paradigm is to study the literature to identify appropriate **theories** so that you can develop a **theoretical framework** and **hypotheses** for your study. A theory is a set of interrelated variables, definitions and propositions that specifies

relationships among the **variables**. A hypothesis is an idea or proposition that is developed from the theory, which you can test using statistics. For example, contingency theory (Fiedler, 1964) contends that that there is no 'best' way to manage an organisation because effective management is contingent on the fit between the organisation and its environment, and the fit between the organisation's subsystems. It is also contingent on the appropriateness of the management style to the nature of the work group and their tasks. Just taking one of these factors, you might decide to test the hypothesis that there is a relationship between effective management (the dependent variable) and the amount of information the manager has about the tasks undertaken by subordinates (the independent variable). You would have to decide how to measure the two variables first and then collect the data and use a statistical test for association.

Under an interpretivist paradigm, you may not wish to be restricted by existing theories or there might not be any existing theory. Therefore, you would carry out your investigation to describe different patterns that you perceive in the data or to construct a new theory to explain the phenomenon. If the research was an exploratory study, the findings could be used to develop hypotheses that are tested in a subsequent main study.

A **theoretical framework** is a collection of theories and models from the literature which underpins a positivist study. Theory can also be generated from some interpretivist studies.

A **hypothesis** is a proposition that can be tested for association or causality against empirical evidence.

A **variable** is a characteristic of a phenomenon that can be observed or measured.

Empirical evidence is data based on observation or experience.

3.4.4 Quantitative and qualitative data

In contrast to a number of researchers, we prefer to reserve the use of the terms quantitative and qualitative to describe data rather than paradigms. This is because the data collected in a positivist study can be quantitative (that is, data in a numerical form) and/or qualitative (that is, data in a nominal form such as words, images, and so on).

In a positivist study, it is likely that the purpose of collecting qualitative data is to ensure that all key variables have been identified or to collect information that will be quantified prior to statistical analysis. This contrasts with a study designed under an interpretivist paradigm, where there is no intention of analysing data statistically and therefore no desire to quantify qualitative research data. Some researchers blend the qualitative and quantitative data to such an extent that it is difficult to determine which paradigm is being used. We advise students to be wary of doing this, as it may not be acceptable to your supervisors and examiners.

If you adopt a positivist paradigm, it is essential that your research data are highly specific and precise. Because measurement is an essential element of the research process under this paradigm, you must apply considerable rigour to ensure the accuracy of the measurement. Under an interpretivist paradigm, the emphasis is on the quality and depth of the data collected about a phenomenon. Therefore, the qualitative data collected by interpretivists tend to be rich in detail and nuance (that is, levels of meaning).

Bonoma (1985) argues that all researchers desire high levels of data integrity and results currency. Data integrity describes characteristics of research that affect error and bias in the results, while results currency refers to the generalisability of results. Bonoma claims that positivist methods, such as laboratory experiments, are higher in data integrity than the methods used by interpretivists. However, methodologies used by interpretivists, such as case studies, tend to be high in results currency because they have contextual relevance across measures, methods, paradigms, settings and time. In any research project, there is likely to be a trade-off between data integrity and results currency. In other words, data integrity can only be achieved by sacrificing results currency.

3.4.5 Reliability

Reliability refers to the accuracy and precision of the measurement and the absence of differences if the research were repeated. Therefore, it is one aspect of the credibility of the findings; the other is validity. You need to ask yourself whether the evidence and your conclusions will stand up to close scrutiny. For a research result to be reliable, a repeat study should produce the same result. For example, if you found that a group of workers who had attended a training course doubled their previous productivity levels, your result would be reliable if another researcher replicated your study and obtained the same results. Replication is very important in positivist studies.

Reliability refers to the accuracy and precision of the measurement and absence of differences in the results if the research were repeated.

Whereas reliability tends to be high in positivist studies, under an interpretivist paradigm, reliability is often of little importance or could be interpreted in a different way. The

qualitative measures do not need to be reliable in the positivist sense. However, importance is placed on whether observations and interpretations made on different occasions and/or by different observers can be explained and understood. As interpretivists believe that the activities of the researcher influence the research, replication, in the positivist sense, would be difficult to achieve. Therefore, the emphasis is on establishing protocols and procedures that establish the authenticity of the findings.

It is often possible to design a research study where reliability is high, but validity, which we discuss in the next section, is low. For example, perhaps you are attempting to establish the criteria on which bank managers decide to grant overdrafts to customers. There are some very rational criteria, such as income levels, security of employment, past evidence of repayment and home ownership, and it is possible that repeated questionnaire surveys of bank managers would demonstrate that these are the important criteria. However, observation or in-depth interviews might establish other criteria that are equally important. These could be apparently less rational criteria, such as the bank manager not liking the look of the applicant or how he or she speaks.

3.4.6 Validity

Validity is the extent to which a test measures what the researcher wants it to measure and the results reflect the phenomena under study.

Validity refers to the extent to which a test measures what the researcher wants it to measure and the results reflect the phenomena under study. Research errors, such as faulty procedures, poor samples and inaccurate or misleading measurement can undermine validity. For example, perhaps you are interested in whether employees in a particular company understand their company's pension scheme. Therefore, you ask them to calculate their pension entitlements. However, you do not know whether their answers reflect their understanding of the scheme, whether they have read the scheme, how good they are at remembering the details of the scheme, or their ability to make calculations.

There are a number of different ways in which the validity of research can be assessed. The most common is face validity, which simply involves ensuring that the tests or measures used by the researcher do actually measure or represent what they are supposed to measure or represent. Another form of validity that is important in business research is construct validity. This relates to the problem that there are a number of phenomena that are not directly observable, such as motivation, satisfaction, ambition and anxiety. These are known as hypothetical constructs, which are assumed to exist as factors that explain observable phenomena. For example, you might observe someone perspiring and trembling before an interview. However, you are not actually observing anxiety, but a manifestation of anxiety.

With hypothetical constructs, you must be able to demonstrate that your observations and research findings can be explained by the construct. It would be easy to fall into the trap of claiming that employees achieve high levels of productivity because they love their work, when in fact they are working hard because they are anxious about the security of their jobs during a period of economic recession. We discuss the question of reliability and validity again in Chapter 10.

3.4.7 Generalisability

Generalisability is the extent to which the research findings (often based on a sample) can be extended to other cases (often a population) or to other settings.

Generalisability is the extent to which the research findings (often based on a sample) can be extended to other cases (often a population) or to other settings (Vogt and Burke Johnson, 2011). If you are following a positivist paradigm, you will have selected a sample and you will be interested in determining how confident you are in stating that the characteristics found in the sample will be present in the population from which you have drawn your sample (see Chapter 10).

However, Gummesson (2000) argues that using statistics to generalise from a sample to a population is just one type of generalisation; interpretivists may be able to generalise their findings from one setting to a similar setting. He holds the view that it is possible to generalise from a very few cases, or even a single case, if your analysis has captured the interactions and characteristics of the phenomena you are studying. Thus, you will be concerned with whether the patterns, concepts and theories that have been generated in a particular environment can be applied in other environments. To do this, you must have a comprehensive and deep understanding of the activities and behaviour you have been studying.

3.5 Pragmatism

We have emphasised that the two main paradigms represent the two extremes of what can be described as a continuum of paradigms and that paradigms are based on mutually exclusive philosophical assumptions about the world and the nature of knowledge. Most students will find their paradigm falls broadly within one of the two main paradigms. This is also true for experienced researchers, who might modify their philosophical assumptions over time and move to a new position on the continuum. Thus, the assumptions of the researcher's paradigm provide the philosophical framework that underpins the choice of methodology and methods in the majority of business and management research.

However, **pragmatism** is a paradigm that contends that the nature of the research question should determine the research philosophy and advocates the use of mixed methods. **Mixed methods** research involves using methods from more than one paradigm to collect, analyse and integrate qualitative and quantitative data in the same study. Rather than be 'constrained' by a single paradigm, pragmatists advocate that researchers should be 'free' to mix methods from different paradigms, selecting methods on the basis of their usefulness for answering the research question(s). They argue that by ignoring the philosophical debate about reality and the nature of knowledge, the weaknesses of one paradigm can be offset by the strengths of the other. This pluralist approach is an attempt to 'cross the divide between the quantitative and the qualitative and the positivist and the non-positivist' (Curran and Blackburn, 2001, p. 123).

Pragmatism contends that the research question should determine the research philosophy and that methods from more than one paradigm can be used in the same study.

Mixed methods research refers to the pragmatic use of methods drawn from different paradigms to collect, analyse and integrate qualitative and quantitative data in the same study.

Multiple methods research refers to the use of more than one method drawn from the same paradigm as in methodological triangulation.

In some disciplines, such as information systems, 'diversity in research methods is considered a major strength… [and] can help develop rich insights into various phenomena of interest that cannot be fully understood using only a quantitative or a qualitative method' (Venkatesh, Brown and Bala, 2013, p. 21). Drawing on his interpretation of other writers, Creswell (2014) sets out the strictures of pragmatism and compares them with his views of mixed-methods research. We discuss three of the knowledge claims he extracts below:

- *Pragmatism is not committed to any one system of philosophy and reality.* This is certainly one of the main claims by pragmatists, but your supervisor and examiners may not be sympathetic to this view if they believe that without a commitment to one paradigm, there is no framework to support your methodology. Our advice is to consider the views of your supervisor (and your eventual examiners) very carefully before declaring yourself a pragmatist in your proposal. You may find that what you are trying to do is use more than one method from the same paradigm, rather than abandon your assumptions completely. To avoid misunderstandings, we suggest you use the term mixed methods when referring to the pragmatic use of methods drawn from different paradigms, multiple methods when referring to the use of more than one method drawn from the same paradigm, as in methodological triangulation. We discuss triangulation in Chapter 4.
- *Individual researchers have freedom of choice.* Although one is always sympathetic to claims of academic freedom, having a choice should not lead to an absence of rationality in your choice of research design and rigour in the application of your methods. If you are seeking a higher qualification or research publications, you may find that those who evaluate your research have strong opinions on what is good research. Certainly, you have a choice, but you should know why you make a particular choice.
- *Pragmatists believe we need to stop asking questions about reality and the laws of nature.* A quick search of the literature will produce numerous articles that ask questions about reality, but few of them come up with satisfactory answers. Most students will need to demonstrate their understanding of the debate and be able to defend the position they adopt.

In several parts of this chapter, we have used the terms **method** and **methodology**, and this is a good point at which to distinguish between them. A method is a technique for collecting and/or analysing data. As a general term, methodology refers to the study of methods (for example, a student on a taught course might study research methodology). However, in the context of a specific study, it refers to the approach to the process of the research, encompassing a body of methods (for example, the methodology chapter in a proposal, dissertation or thesis that describes and justifies the overall research strategy and methods). In some cases, a research strategy embodying a particular set of methods has become established through widespread use in particular disciplines (for example, grounded theory, which we discuss in Chapter 9).

A **method** is a technique for collecting and/or analysing data.

A **methodology** is an approach to the process of the research, encompassing a body of methods.

3.6 Conclusions

We have introduced a number of concepts in this chapter that might be new to you. It is essential for you to understand your research paradigm, as this provides a framework for designing your study. The two main paradigms are positivism and what can be loosely referred to as interpretivism. In this chapter, we have examined how the core ontological, epistemological, axiological, rhetorical and methodological assumptions of the two main paradigms differ. Positivism and interpretivism lie at opposite ends of a continuum of paradigms with a range of other paradigms between them. Two key features that characterise research findings are reliability and validity. Reliability refers to being able to obtain the same results if the study were replicated. Reliability is likely to be higher in a positivist study than in a study designed under an interpretivist paradigm. Validity refers to the research findings accurately representing what is happening in the situation. Validity is likely to be higher in an interpretivist study than a positivist study.

If you are doing research at Master's or doctoral level, you will need to explain your paradigm and justify your methodology and methods. Methodological triangulation is where the research design includes complementary methods from within the same paradigm. It is essential that triangulation is an integral part of the design and not an attempt to rectify a poorly designed study and you are not advised to mix methods from opposing paradigms.

Once you have identified your paradigm, you can determine which methodology and methods will be appropriate. This will mean you have reached the research design stage and you will be in a position to develop your research proposal. If you are doing research at the undergraduate level, it is likely that you will not have to concern yourself too much with paradigms and will concentrate instead on managing the research process, collecting the data and analysing them. This is covered in subsequent chapters.

References for further reading

Bonoma, T. V. (1985) 'Case research in marketing: Opportunities, problems, and a process', *Journal of Marketing Research*, XXII, May, pp. 199–208.

Boyd, B. K. (2018) 'Paradigm development in Chinese management research: The role of research methodology', *Asia Pacific Journal of Management*, 35(3), pp. 805–27.

Burrell, G. and Morgan, G. (1979) *Sociological Paradigms and Organisational Analysis*. London: Heinemann.

Corbin, J. and Strauss, A. (2008) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 3rd edn. Thousand Oaks, CA: SAGE.

Creswell, J. W. (2014) *Research Design*, 4th edn. Thousand Oaks, CA: SAGE.

Curran, J. and Blackburn, R. A. (2001) *Researching the Small Enterprise*. London: SAGE.

Fiedler, F. E. (1964) 'A contingency model of leadership effectiveness', *Advances in Experimental Social Psychology*, 1, pp. 149–90.

Gummesson, E. (2000) *Qualitative Methods in Management Research*, 2nd edn. Thousand Oaks, CA: SAGE.

Joullié, J.-E. (2016) 'The philosophical foundations of management thought', *Academy of Management Learning & Education*, 15(1), pp. 157–79.

Kuhn, T. S. (1962) *The Structure of Scientific Revolutions*. Chicago, IL: University of Chicago Press.

Mercier, P. (2009) *Night Train to Lisbon*. London: Atlantic Books.

Morgan, G. (1979) 'Response to Mintzberg', *Administrative Science Quarterly*, 24(1), pp. 137–9.

Morgan, G. and Smircich, L. (1980) 'The case of qualitative research', *Academy of Management Review*, 5, pp. 491–500.

Onwuegbuzie, A. J. and Leech, N. L. (2005) 'Taking the "Q" out of research: Teaching research methodology courses without the divide between quantitative and qualitative paradigms', *Quality and Quantity: International Journal of Methodology*, 39(3), pp. 267–96.

Romani, L., Barmeyer, C., Primecz, H. and Pilhofer, K. (2018) 'Cross-cultural management studies: State of the field in the four research paradigms', *International Studies of Management & Organization*, 48(3), pp. 247–63.

Smith, J. K. (1983) 'Quantitative v qualitative research: An attempt to classify the issue', *Educational Research*, March, pp. 6–13.

Van Maanen, J. (1983) *Qualitative Methodology*. London: SAGE.

Venkatesh, V., Brown, S. A. and Bala, H. (2013) 'Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems', MIS Quarterly, 37(1), pp. 21–4.

Vogt, W. P. and Burke Johnson, R. (2011) *Dictionary of Statistics & Methodology – A Nontechnical Guide for the Social Sciences*, 4th edn. Newbury Park, CA: SAGE.

Waite, M. and Hawker, S. (eds) (2009) *Oxford Paperback Dictionary and Thesaurus*. Oxford: Oxford University Press.

Walliman, N. (2011) *Your Research Project – Designing and Planning Your Work*, 3rd edn. London: SAGE.

Activities

1 You have a set of weighing scales that always register 5 kilos above your actual weight. Your friend has a set of scales that measures her weight accurately, but sometimes shows it as 7 kilos above or below her true weight. Explain how these occurrences can be regarded as issues of reliability and/or validity.

2 You are planning a research study that will investigate the feelings of the devoted fans of a local sports team in situations when it wins and when it loses. Compare the advantages and disadvantages of the two main paradigms for this purpose and decide which approach would give you the best understanding.

3 The marketing director of a company promoting health clubs asks you to assess the effectiveness of a recent advertising campaign they ran in a magazine. Compare the advantages and disadvantages of the two main paradigms for this purpose. Then decide whether the marketing director will expect a qualitative or quantitative analysis, and which would be the easiest paradigm for you to adopt.

4 Thousands of years ago, a Buddhist monk called Chuang Tzu wrote: 'I dreamt I was a butterfly, flitting around in the sky; then I awoke. Now I wonder, am I a man who dreamt he was a butterfly, or am I a butterfly dreaming I am a man?' Decide which of the five core assumptions associated with the main paradigm this addresses and how you would you answer Chuang Tzu's dilemma.

5 Paradigm quiz

Indicate whether you agree (tick the box) or disagree (put a cross in the box) with the following statements. There are no right or wrong answers and the exercise should not be taken too seriously!

a) Quantitative data are more scientific than qualitative data. ☐
b) It is important to state your hypotheses before collecting data. ☐
c) Surveys are probably the best way to investigate business issues. ☐
d) A phenomenon can be measured reliably unless it cannot be investigated. ☐
e) A good knowledge of statistics is essential for all approaches to business research. ☐
f) Case studies should only be used for exploratory research. ☐
g) Using participant observation to collect data is of little value in business research. ☐
h) Laboratory experiments should be used more widely in business research. ☐
i) It is impossible to generate theories from research into business issues. ☐
j) Researchers must remain objective and independent from the phenomena they study. ☐

Interpretation:

More ticks than crosses = positivist
More crosses than ticks = interpretivist
Equal number of each = undecided

Once you have finished, critically reflect on why this quiz might not be very effective in diagnosing your paradigm.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter, and sections 15.2, 15.8, 15.10, 15.11 and 15.12 in particular, which relate specifically to this chapter.

4

Designing the research

Learning objectives

When you have studied this chapter, you should be able to:

- describe the main methodologies associated with positivism
- describe the main methodologies associated with interpretivism
- compare the strengths and weaknesses of methodologies
- discuss the strengths and weaknesses of triangulation
- choose a methodology that reflects your paradigm.

4.1 Introduction

You will remember from Chapter 3 that a research paradigm is more than just a philosophical framework; it also guides how research should be conducted. Therefore, once you have identified your paradigm, you can take the first step in designing your research, which is to choose a methodology that reflects the philosophical assumptions of your paradigm.

This chapter offers a guide to some of the most widely used methodologies and the connection with the paradigm. We discuss the methodologies under the two main paradigms, positivism and interpretivism, but you should remember that some can be adapted for use under either paradigm. We start with an overview and then describe the methodologies traditionally associated with positivism. These have been developed to support a deductive process, where generalisations lead to prediction, explanation and understanding. We then examine the methodologies associated with interpretivism, which support an inductive process, where patterns and/or theories are developed to understand phenomena. In some studies, there might be scope to employ multiple methods. Therefore, we also discuss the advantages and disadvantages of using triangulation.

4.2 Link between paradigm and methodology

You will remember from the previous chapter that, unless you are a pragmatist, your research paradigm is the philosophical framework that guides how your research should be conducted. Therefore, your paradigm is closely linked to your research design, which refers to the choices you will make in terms of the **methodology** and **methods** that you will use to address your research question(s). There are a number of methodologies and a wide range of methods for collecting and analysing primary or secondary data and you need to adopt a cohesive approach to ensure that your research design meets the philosophical assumptions of your paradigm. **Primary data** are research data generated from an original source such as your own experiments, questionnaire survey, interviews and focus groups. On the other hand, **secondary data** are research data collected from an existing source such as publications, databases and other records, all of which could be available in hard copy or electronic form.

A **methodology** is an approach to the process of the research, encompassing a body of methods.

A **method** is a technique for collecting and/or analysing data.

Primary data are data generated from an original source such as your own experiments, surveys, interviews and focus groups.

Secondary data are data collected from an existing source such as publications, databases and other records.

If you are designing a study under a positivist paradigm, you may not have to expend much energy in justifying your methodology and methods. This is because positivism still tends to dominate in many areas of business research, although the number of studies designed under an interpretivist paradigm is increasing. If you are designing a study under an interpretivist paradigm, you might find it necessary to provide a stronger rationale for your methodology and give a more detailed explanation of your methods to convince your supervisor and/or research committee that your study will be rigorous and methodical.

A seminal article by Morgan and Smircich (1980) suggests that it is useful to think of the two main paradigms as representing the two extremities of a continuum of paradigms where there are only minor differences between adjacent paradigms. Therefore, your paradigm and associated methodology and methods might represent a blending of some of the philosophical assumptions. Nevertheless, a coherent research strategy will ensure that the choices broadly reflect the core assumptions of one of the two main paradigms. If you are having trouble identifying your paradigm, you can take comfort from Creswell (2014), who suggests that the knowledge claims, strategies and methods used by the researcher determine the tendency of the research approach. He suggests:

- The issue or concern to be addressed needs to be considered fully and the research needs to be designed that best matches the problem.
- The researcher needs to consider his or her skills and experience, and assess which approach best complements these attributes.
- The researcher needs to consider the audience to whom the findings from the research will be addressed.

Vox pop What has been the biggest challenge in your research so far?

Nesrine, fourth year PhD student investigating supply chain agility

Discovering that my original plan to design a quantitative study, which is the norm in my topic area, wasn't possible because there wasn't enough literature to support one of my main hypotheses. I then had to switch paradigms and design a qualitative study that would develop theory.

Table 4.1 lists some of the main methodologies used in the social sciences, some of which are adaptable for use under either paradigm. This is not an exhaustive list and we advise you to examine others you come across when studying previous research on your chosen topic.

Table 4.1 Methodologies associated with the main paradigms

Positivism ←	→ Interpretivism
Experimental studies	Hermeneutics
Surveys	Ethnography
Cross-sectional studies	Participative enquiry
Longitudinal studies	Action research
	Case studies
	Grounded theory
	Diversity and equality studies

4.3 Methodologies associated with positivism

4.3.1 Experimental studies

An **experimental study** is a methodology used to investigate the relationship between variables, where the independent variable (IV) (for example, noise levels) is deliberately manipulated to observe the effect on the dependent variable (DV) (for example, the productivity of factory workers). Experimental studies permit causal relationships to be identified. The experiment is conducted in a systematic way in a laboratory or a natural setting.

An **experimental study** is a methodology used to investigate the relationship between variables, where the independent variable is deliberately manipulated to observe the effect on the dependent variable.

A **confounding variable** is a third variable that influences both the independent variable and the dependent variable and may suggest a false correlation between them.

One of the advantages of conducting experiments in an artificial setting is that the researcher is better able to eliminate certain variables or keep some variables constant. This is necessary because one of the main challenges is to control any confounding variables. A **confounding variable** is a third variable that influences both the IV and the DV and may suggest a false correlation between them. For example, a subject's behaviour might alter merely as a result of being watched or because he or she is in an unfamiliar environment. Field experiments are conducted in a natural setting (for example, a factory or an office). Although field experiments offer the advantage of that natural setting, you may not have such strong control over confounding and extraneous variables. For example, if your study involves an investigation of the relationship between productivity and motivation, you might find it difficult to exclude the effect on productivity of other factors such as a heatwave, a work-to-rule, a takeover or problems the worker might be experiencing at home.

If you choose to conduct an experimental study, the nature of the research problem and the access you have managed to negotiate are likely to play a significant role in determining the specific design. The main choices are as follows:

- Repeated-measures design – The experiment is repeated under different conditions. For example, perhaps you are interested in assessing employees' performance in operating complicated machinery under noisy conditions. You could ask the employees (the subjects of the experiment) to operate the machinery when it was noisy and measure the time

taken to perform a particular task and the number of errors. You might ask the same employees to conduct the same task under quiet conditions. If the results are not the same, and all other variables have been controlled, it would be reasonable to assume that the change in performance is due to the level of noise. One problem with this approach is that an employee's performance might be better on the second occasion because they have rehearsed the task by doing it the first time. On the other hand, they might perform less well the second time because they have become bored. These are examples of the order effect and the easiest of several solutions to this problem is to ensure there is sufficient time between experiments to remove any ordering effects.

- Independent-samples design – Two groups are selected. For example, one group of employees operates the machinery under noisy conditions and the other operates the same machinery under quiet conditions. This provides data from two independent samples, which can be compared. The major problem with this approach is that there could be other differences between the two samples, such as the age, experience and training of the employees. To avoid such inequalities, the employees can be allocated randomly to each group.
- Matched-pairs design – This is a more rigorous approach, which attempts to eliminate other differences between the two groups, by matching pairs of employees and allocating one to each group. Of course, there might be some difficulty in identifying which characteristics should be matched and ensuring that there are enough employees to obtain a sufficient number of matched pairs.
- Single-subject design – This is useful when only a few subjects are available, but this makes it difficult to make generalisations. However, despite this drawback, findings from such a study can be useful in providing knowledge about the phenomena under study in that particular context.

There are three main factors to consider when selecting which of these designs is appropriate for your experimental study:

- Number of groups – You will compare at least two groups or look for variations within one group.
- Nature of the groups – It will be important to know how the group is formed (for example, by using random allocation or matched cases).
- Timing of the experiments – In our earlier example of a repeated-measures design to measure the effect of noise levels on performance, the experiment was conducted twice, but it could have been repeated several times on different occasions. However, this is not always possible, and you might be limited to collecting evidence from the same groups at one point in time only.

Once you have decided on the type of experimental design, you need to determine the size of your sample. One criterion to use is what you intend to do with the data. Coolican (2009) suggests that when the experimental independent variable can be assumed to have a similar effect on most people, the optimum sample size is about 25 to 30. Experimental studies in a laboratory or in a natural setting (field experiments) present specific challenges to the researcher. If you choose to conduct an experimental study, you will need to recognise the limitations of the methodology.

It can be very difficult to arrange experiments in business research due to the difficulty in finding suitable subjects with the time to participate. Many laboratory experiments have been criticised because they use students as surrogates in an attempt to overcome this problem. Experiments also suffer from the criticism that they focus very narrowly on particular variables and are conducted in an artificial setting, thus failing on both counts to reflect the real world. Despite these drawbacks, it can be argued that some activities are best controlled in a laboratory (for example, testing the influence of alcohol or drugs on work tasks involving using machinery or driving).

Blumer (1980) argues that laboratory procedures are artificial and the relationship between the researcher and the participants will have a certain level of authoritarianism. Therefore, the experiments do not give a faithful representation of social action in everyday life. Couch (1987) rejects many of these criticisms and claims that laboratory experiments

can be used fruitfully in an interpretivist study if care is taken with the research design. He recommends that the situation should be structured so that participants pay only minimal attention to the researcher. If possible, a mini-social world of short duration, but with a high level of authenticity, should be created in the laboratory. This might require an elaborate layout and the researcher to be involved in a particular role within the phenomenon being studied. The analysis of the data will be based on video recordings and transcriptions, and the findings compared with those from field studies.

4.3.2 Surveys

A **survey** is a methodology designed to collect primary or secondary data from a sample, with a view to generalising the results to a population.

A **population** is a precisely defined body of people or objects under consideration for statistical purposes.

A **sample** is a subset of a population.

Archival research is a study of secondary data from sources such as publications, databases and other records.

In a positivist study, a **survey** methodology is used to collect primary or secondary data from a **sample**, with a view to analysing the data statistically and generalising the results to a population. A **population** is a precisely defined body of people or objects under consideration for statistical purposes. If the population is large, it could be impractical or too expensive to collect information about every member. Therefore, a random sample is chosen to provide an unbiased subset of the population and statistical methods are used to test the likelihood that the characteristics of the sample are also found in the population. We will be looking at the various sampling methods in Chapter 10. If the population is small, it is possible to collect data about every member of the population and it is not necessary to select a sample. If you are planning to analyse secondary research data, we suggest you avoid using the term 'secondary research' as it is the data you are distinguishing as secondary while your analysis will produce original findings. Instead, it might be more appropriate to describe your study as **archival research**, which is a study of secondary data from sources such as manuscripts and documents, internal and public records, audiovisual materials, databases and other records.

Surveys can be divided into two types, according to their purpose:

- The purpose of a descriptive survey is to provide an accurate representation of phenomena at one point in time or at various times (for example, a consumer survey to investigate customers' views on new products or services being developed by the business; an attitude survey to investigate the views of employees on a new productivity scheme).
- An analytical survey is conducted to determine whether there is a relationship between pairs of variables or multiple variables. If you wish to carry out this type of survey, you will need to develop a theoretical framework from the literature so that you can identify the dependent and independent variables in the relationship. This might sound a bit technical now, but we will be explaining this in subsequent chapters.

Traditionally, surveys are associated with a positivist methodology, but they can also be used under an interpretivist paradigm (for example, in-depth interviews with women holding positions in senior management to investigate their views on gender equality in the workplace). If you are an interpretivist, selecting a sufficiently large and unbiased sample for the survey is not crucial, because the aim of the research is to gain insights from the cases in the sample rather than generalise from the sample to the population. Therefore, you could ask for volunteers to participate in the research, which would not be appropriate under a positivist paradigm.

There are several methods for collecting survey data for a positivist study, including postal and online questionnaires, telephone and face-to-face interviews. A structured questionnaire will be used so that all participants are asked the same questions in the same order. We will compare these methods in Chapter 10.

4.3.3 Cross-sectional studies

A **cross-sectional study** is a methodology used to investigate variables or a group of subjects in different contexts over the same period of time.

Cross-sectional studies are designed to obtain research data in different contexts, but over the same period of time. They are often used to investigate economic characteristics in large surveys of organisations or people. Typically, the organisations represent a range of industries, and the researcher would look for similarities and differences between industries. In studies focusing on people, the research would look for similarities and differences between groups of people. For example, if you are investigating the association between labour turnover and productivity, you could select a sample of work groups where you know that labour turnover or productivity differ. You could then collect data relating to a group of workers from factory A and a group of workers doing the same jobs in factory B and conduct statistical tests to test for significant differences between the two groups.

Cross-sectional studies are conducted when there are time constraints or limited resources. The data are collected once, over a short period of time, before they are analysed and reported. Thus, cross-sectional studies provide a snapshot of research phenomena. One of the problems with this research strategy is how to select a sample that is large enough to be representative of the population. A second problem is how to isolate the phenomena under study from all the other factors that could influence the correlation. Finally, cross-sectional studies do not explain why a correlation exists; only that it does or does not exist. On the other hand, cross-sectional studies are inexpensive and are conducted simultaneously, so that there is no problem of change taking place due to the passage of time.

4.3.4 Longitudinal studies

A **longitudinal study** is often associated with a positivist methodology, but it can also be used under an interpretivist paradigm. It is the study of variables or a group of subjects over a long period of time. The aim is to examine the dynamics of a research problem by investigating the same variables or group of people several times (or continuously) over the period in which the problem runs its course. This can be a period of several years. Repeated observations are taken with a view to revealing the relative stability of the phenomena under study; some will have changed considerably while others will show little sign of change. Such studies allow the researcher to examine change processes within a social, economic and political context. Therefore, it should be possible to suggest likely explanations from an examination of the process of change and the patterns that emerge from the data.

A **longitudinal study** is a methodology used to investigate variables or a group of subjects over a long period of time.

Because of the smaller sample size, it is easier to negotiate access and produce significant results for a longitudinal study of an organisation than for a cross-sectional study. However, once started, the study must be continued and there is the problem of losing subjects during the course of the study. Moreover, this methodology is very time-consuming and expensive to conduct. It is unlikely to be appropriate for research students on taught courses as it requires the researcher to be involved for a number of years for the advantages to be enjoyed. However, it might be possible to conduct a longitudinal study using secondary data. The government and other bodies publish a considerable amount of data on various social and economic factors, such as employment, home ownership, household income and expenditure. By concentrating on a specific area, you could investigate whether there have been significant changes over a period of time and how these changes might be explained. In Chapter 12, we explain a technique known as time series analysis, which is a useful method for analysing quantitative data from a longitudinal study.

A longitudinal study under an interpretivist paradigm would focus on qualitative data. Stebbins (1992) describes a chain of studies and what he refers to as concatenated exploration. Each link in the chain is an examination or reexamination of a related group or social process, or an aspect of a broader category of groups or social processes. The early studies in the chain are mainly exploratory, but as the chain of studies progresses, grounded theory is generated (discussed later in this chapter). He argues that the chain of qualitative case studies improves the applicability and validity of the findings. In addition, the researcher gains in knowledge and understanding of the subject as the research develops, and can take account of social processes instead of concentrating only on individuals.

4.4 Methodologies associated with interpretivism

4.4.1 Hermeneutics

Hermeneutics is a methodology that focuses on the interpretation and understanding of text in the context of the underlying historical and social forces. It assumes that a relationship exists between the direct conscious description of experience and the underlying dynamics or structures. Hermeneutics was originally concerned with interpreting ancient scriptures, but the approach was formalised, and its scope broadened, by Dilthey (1976) and others. Although it is still associated with the interpretation of historical texts, hermeneutics has been applied to research in law, where the reasons behind judgments or statutes are sought.

Hermeneutics is a methodology that focuses on the interpretation and understanding of text in the context of the underlying historical and social forces.

Taylor (1990) links hermeneutics with repertory grid technique, which is a method used to provide mathematical representation of the perceptions and constructs used by an

individual to understand and manage his or her world. We discuss this method in more detail in Chapter 9. Taylor's rationale is that the five criteria for text established by Ricoeur (1981) can be rewritten for the data generated by repertory grid technique:

- Words and numbers convey meaning.
- Numbers are chosen according to a structured rationale.
- There is a relationship between this structured rationale and the intended meaning.
- The work of this intended meaning is a projection of a world.
- The uncovering of this meaning is through the mediation of self-understanding.

Taylor stresses the importance of the researcher as an interpreter and a reiterative process of relabelling and reanalysing the data in a hermeneutic circle, since the meaning of any part of the text cannot be understood without reference to other parts, the complete text and the historical and social context. Although hermeneutics is not a widely used methodology in business research, Taylor's unusual approach illustrates the importance of being flexible in classifying methodologies and methods and the value of creativity.

4.4.2 Ethnography

Ethnography is a methodology in which the researcher uses socially acquired and shared knowledge to understand the observed patterns of human activity.

Ethnography[1] is a methodology derived from anthropology (the study of people, their societies and their customs) in which the researcher uses socially acquired and shared knowledge to understand the observed patterns of human activity. The aim of ethnography is to interpret the social world in the same way as the members of that particular world do. The main method of data collection is participant observation, where the researcher becomes a full member of the group being studied. The research normally takes place over a long period of time (often many months), which makes it difficult for students on taught courses. The research takes place in a clearly defined natural setting, such as a factory, and involves direct participation in the activities taking place.

The literature offers a number of suggestions for researchers conducting ethnographic studies, which we summarise into the following stages:

- Build trust as early as possible.
- Become as involved as you can with the phenomena, but maintain an analytical perspective.
- Develop strong contacts with a few key informants.
- Gather data from as many different sources as possible, using multiple methods.
- Capture participants' views of their experiences in their own words, but remember the limitations of their perspectives.
- Write up field notes as soon as possible after leaving the setting and do not talk to anyone until you have done so.
- Be descriptive when taking your field notes and draw diagrams of physical layouts.
- Include your own experiences, thoughts and feelings as part of your field notes.
- As fieldwork draws to a close, concentrate on making a synthesis of your notes.

A considerable number of disciplines have used ethnography, and business is no exception. Some of them are reviewed by Gill and Johnson (2010). However, there are a great many schisms and Denzin and Lincoln (2011) consider that ethnography is one of the most hotly debated approaches in qualitative research today. These divisions have led to a number of different styles of ethnography, which depend on the skills and training of the researcher, and the nature of the group with which the ethnographer is working.

1. *Ethno-* means folk and *-graphy* means description.

Students conducting ethnographical studies face a number of problems. First, you have to select an organisation in which your particular research interests are present and negotiate access. Second, you have to develop a high degree of trust in those you work with to ensure that you collect the data. Third, if you are using full participation to do your research, you must cope with being a full-time member of a work group as well as doing the research. Finally, there is the issue of whether the particular setting or group best reflects the research interests and whether it will be possible to generalise from the findings. Despite these difficulties, there are a number of advantages. You obtain first-hand experience of the context being studied. Direct observation aids your understanding and interpretation of the phenomena under study, and participation in events might lead those being observed to reveal matters to you or in front of you that might not be known otherwise. When writing up your research, it is important to capture the experiences that the group has gone through by quoting the participants' own words and describing the context in which they were uttered.

4.4.3 Participative inquiry

Participative inquiry is a methodology that involves the participants as fully as possible in the study, which is conducted in their own group or organisation. The research can be initiated by a member of the group and the participants are involved in the data collection and analysis. The participants also determine the progress and direction of the research, which allows the researcher to develop questions and answers as a shared experience with a group as co-researchers.

Participative inquiry is a methodology that involves the participants as fully as possible in the study, which is conducted in their own group or organisation.

Concerns about the traditional model of research, which implies an authority imbalance in the relationship between the researcher and the researched, and the associated ethical issues, have led to the development of a strategy that increases the involvement of participants. The objective is to produce higher quality data, but also to address the philosophical arguments and the democratic right of individuals to participate in a study. De Venney-Tiernan *et al.* (1994) contend that the methodology can be employed successfully by novices and those who do not consider themselves to be academics.

Reason (1994) identifies three types of approach:

- In a study based on cooperative inquiry, all those involved in the research are co-researchers, whose thinking and decision-making contribute to generating ideas, designing and managing the project, and drawing conclusions from the experience; they are also co-subjects who participate in the activity being researched.
- In participatory action research, the aim is to challenge the power relationship in society. Such studies are often concerned with capturing the knowledge and experiences of oppressed groups.
- The third approach is action research (or action science), which we describe next.

The basis for all these approaches is that the researcher sees human beings as co-creators of reality through participation, experience and action (Denzin and Lincoln, 2011).

4.4.4 Action research

Action research is a methodology used in applied research to find an effective way of bringing about a conscious change in a partly controlled environment. Thus, the main aim of action research is to enter into a situation, attempt to bring about change and to monitor the results. For example, you might use it in a study aimed at improving communications between management and staff in a particular organisation. The philosophical assumptions underpinning action research are that the social world is constantly changing, and the researcher and the research are part of this change. The term was coined by Lewin (1946) who saw the process of inquiry as forming a cycle of planning, acting, observing and reflecting.

Action research is a methodology used in applied research to find an effective way of bringing about a conscious change in a partly controlled environment.

It is usual to conduct action research within a single organisation and, in some respects, it is similar to a case study (we discuss case studies in section 4.4.5). The planning stage is concerned with identifying the objective it is intended to achieve, and how this can be done. The first phase of action is implemented, and its effects observed and reflected on before modifying the overall plan, if appropriate. The close collaboration that is required between the

researcher and the client organisation poses a number of problems. Some action research is not far removed from a problem-solving consultancy project. From the beginning, the researcher and the client must be agreed on the aims of the study. There will be mutual control of the research and analysis of the results. The final action plan to be implemented is usually the client's responsibility, supported by the researcher. The research report is often published jointly.

There is considerable debate among academics as to the nature of this methodology. Although the key features are involvement of the researcher and improvement in a practice, improvement in the practitioners' understanding of that practice and improvement of the situation in which the practice takes place, these alone do not make for good research. It has been argued that some projects labelled action research are closer to consultancy or journalism. To avoid such criticism, some researchers prefer the term action science. Gummesson (2000) describes the main characteristics of action science as follows:

- Action science always involves two goals: to solve a problem for the client and make a contribution to science.
- The researcher and the client should learn from each other and develop their competencies.
- The researcher must investigate the whole complex problem, but make it simple enough to be understood by everyone.
- There must be cooperation between the researcher and the client, feedback to the parties involved, and continuous adjustment to new information and new events.
- Action science is primarily applicable to the understanding and planning of change in social systems and thus is a suitable research and consulting strategy for business organisations.
- The corporate environment and the conditions of business must be understood before the research starts.
- The methodology should not be judged solely by the criteria used for the paradigm, but by criteria more appropriate for this particular methodology.

4.4.5 Case studies

A **case study** is methodology that is used to explore a single phenomenon (the case) in a natural setting using a variety of methods to obtain in-depth knowledge.

A **case study** is a methodology that is used to explore a single phenomenon (the case) in a natural setting using a variety of methods to obtain in-depth knowledge. The importance of the context is essential. The case can be a particular business, person, group, event, process or other phenomenon. Detailed information is collected about the chosen case, often over a very long period of time. One or more cases can be selected.

Yin (2009, p. 18) defines a case study as an empirical inquiry that:

- investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident
- copes with the technical distinctive situation in which there will be many more variables of interest than data points
- relies on multiple sources of evidence, with data needing to converge in a triangulating fashion (we discuss triangulation in section 4.5)
- benefits from the prior development of theoretical propositions to guide data collection and analysis.

Although we have categorised case studies as a methodology used by interpretivists, you can see from this that they can also be used by positivists, depending on the choice of methods used and the extent of prior theory.

Case study research can be based on a single case. For example, an exploratory case study might be conducted where there are few theories or a deficient body of knowledge. Another example is an opportunist case study where the opportunity to examine a phenomenon arises because the researcher has access to a particular business, person or other case. Although

such a study might be limited to just a few aspects of organisational life, the results can be extremely stimulating and original and this type of case study is popular with undergraduates and students on taught Master's programmes. A research design based on multiple case studies is sometimes referred to as comparative case studies.

Ryan, Scapens and Theobald (2002) identify four main approaches:

- a descriptive case study, where the objective is restricted to describing current practice
- an illustrative case study, where the research attempts to illustrate new and possibly innovative practices adopted by particular companies
- an experimental case study, where the research examines the difficulties in implementing new procedures and techniques in an organisation and evaluating the benefits
- an explanatory case study, where existing theory is used to understand and explain what is happening.

The main stages in case study research are as follows:

1. Selecting the case – It is not usually necessary to find a representative case or set of cases because you will not be attempting statistical generalisations to show that you can generalise from your sample to a larger population. However, you might be attempting theoretical generalisations where you propose that the theory applied in one set of circumstances can be generalised to another. You may wish to select a critical case that encompasses the issues in which you are most interested. You might also decide that you require more than one case. Similar cases will help to show whether your theory can be generalised, and dissimilar cases will help to extend or modify any theory. In a multiple case design, 'the cases should serve in a manner similar to multiple experiments, with similar results (a literal replication) or contrasting results (a theoretical replication) predicted explicitly at the outset of the investigation' (Yin, 2009, p. 60).
2. Preliminary investigations – This is the process of becoming familiar with the context in which you are going to conduct your research. Some researchers believe that it is best to keep your mind free of any prior beliefs and to learn from the naturalistic evidence at this stage. Others disagree with this approach and consider that the researcher approaches the project with either explicit or implicit theories. To determine your approach, it can be helpful to reflect on your paradigm and consider the purpose of your research.
3. Data collection – You will need to determine how, where and when to collect data. The methods used to collect data in a case study include documentary analysis, interviews and observation. Eisenhardt (1989, p. 534) advises that it is usually best to 'combine data collection methods such as archive searching, interviews, questionnaires and observations. The evidence can be qualitative (e.g. words), quantitative (e.g. numbers) or both'.
4. Data analysis – You have a choice of within-case analysis or cross-case analysis. If you use the former, it is essential that you become totally familiar with the material. This should enable you to build up separate descriptions of events, opinions and phenomena, which can be used to identify patterns. If you use cross-case analysis, you might choose to draw out any similarities and differences to help you identify common patterns.
5. Writing the report – Writing up case study material can be challenging in terms of determining an appropriate structure and demonstrating that your analysis and conclusions can be linked to the masses of data you will have collected. Students often find a chronological structure is the easiest to adopt, as this means they can relate the unfolding of events as they occur. In an interpretivist study, it is essential that you quote extensively from the data you have collected. Diagrams are often helpful for explaining the patterns you see emerging.

Although a case study methodology has many advantages, access to a suitable case can be difficult to negotiate and the research is very time-consuming. It can also be difficult to decide on the scope of the study. Although you might have chosen to focus on a particular organisation or group of individuals, they do not exist in a vacuum, but interact with the rest of society. Moreover, your case will have a history and a future, and you will find it difficult to understand the events in a particular period of time without knowledge of what went before and what might follow.

4.4.6 Grounded theory

Grounded theory is a systematic, iterative process for the joint collection, coding and analysis of data with a view to developing inductively derived theory.

Grounded theory is an iterative approach to the joint collection, coding and analysis of data using a systematic set of procedures to develop an inductively derived theory about phenomena. It was conceived by Glaser and Strauss (1967) in reaction to positivist studies that start with a theoretical framework, establish hypotheses and collect data for testing those hypotheses. Glaser and Strauss considered that such an approach could lead to early closure where the researchers only collect data relevant to their theories and ignore data that could be useful for explaining what is happening. Grounded theory does not depend on a priori theories, but uses the data generated by the phenomena being studied to generate a theory.

According to Silverman (2013) the main stages in grounded theory are:

- an attempt to develop initial categories that illuminate the data
- the use of theoretical sampling to confirm these initial theoretical categories by including many different social settings in an attempt to 'saturate' the categories with many appropriate cases in order to demonstrate the importance of the categories
- constant comparison as new data are used to modify the categories and develop them into a general analytic framework with relevance outside the research setting.

Originally developed for behavioural research in nursing, grounded theory is a methodology that has since been developed and used in many other disciplines. We look at the procedures in more detail in Chapter 9.

4.4.7 Diversity and equality studies

Diversity and equality studies are based on a number of different perspectives on social stratification, and focus on equal rights and treatment for all groups of people in society.

Ethnicity studies are used to investigate the experiences of ethnic groups in society.

Gender studies are used to investigate the experiences of men and women in society.

Feminist studies are used to investigate and seek understanding of phenomena from a feminist perspective.

Diversity and equality studies are based on a number of different perspectives on social stratification, and focus on equal rights and treatment for all groups of people in society. In a workplace setting, diversity refers to employees who might be different from each other in terms of age, disability, ethnicity, gender, religion or sexual orientation, for example. Diversity is often linked with inclusion strategies, which go beyond merely complying with legal requirements on equality to making the workplace an inclusive environment in which all employees are able to participate and achieve their potential. The main focus is on how to develop strategies that will add value to the enterprise, whilst also contributing to employee well-being and engagement. Closely associated with this is how to develop measures for monitoring diversity and inclusion effectively so that policies can be reported to key stakeholders. Although the approach to the research falls within the interpretivist paradigm, studies testing the effectiveness of particular measures are likely to be conducted under a positivist paradigm. We will now briefly discuss some of the subcategories within the diversity and equality perspective, bearing in mind that some studies examine more than one aspect of diversity.

Ethnicity studies focus on the experiences of different ethnic groups in society, often on particular ethnic minority groups. Unlike race, ethnicity does not necessarily provide visual cues. Therefore, ethnicity studies examine the different characteristics of ethnicity such as cultural heritage, political issues, language, identity and social groups. Race refers to how we categorise people by skin colour and physical appearance. As there is no biological foundation for race, race is socially constructed and, to a large extent, changes in response to historical and political events (Omi and Winant, 2015). The categories are hard to define, and definitions can vary from one country to another.

While **gender studies** are used to investigate the experiences of both men and women in society, **feminist studies** are used to investigate and seek understanding of phenomena from the perspective of the role of women in society vis-à-vis men. At a methodological level, feminist studies are concerned with challenging the traditional research paradigm from the perspective of the politics and ideology of the women's movement (Coolican, 2009). Thus, it challenges the traditional methods by which knowledge is generated and the source of the views of the world such knowledge reflects. Advocating a feminist methodology does not mean that the full range of methodologies is not open and useful to everyone. It is also possible to combine a feminist perspective with another methodology, such as Treleaven's (1994) use of both collaborative action research and feminist discourse analysis to study power and gender in the professional development of women in a particular university in Australia. The aim of the study was to identify better explanations for the marginal position of women working in higher education.

Hyde (1994) captures her initial understanding of using a feminist perspective in the following three principles:

- knowledge is grounded in the experiences of women
- the research benefits women
- the researcher immerses herself or himself in or exhibits empathy for the world being studied.

Adopting a feminist methodology can present both theoretical and practical problems. Gregg (1994) describes difficulties when she interviewed women who held contrasting opinions to her own. Sometimes there was 'a tension between accepting what the women said… and wanting to hold onto a particular feminist view, a vision of a feminist future as part of a commitment to social change' (Gregg, 1994, p. 53). It has been argued that the language of research can be a barrier. 'It is quite difficult for women to be speaking subjects – harder than for men – and that is true both for women as our research subjects and for us as researchers when we write and talk about our research' (DeVault, 1990, p. 112). Despite these difficulties, feminism brings a new perspective to research and offers insights and understanding of problems that might otherwise be unavailable.

4.5 Triangulation

Triangulation is the use of several sources of research data, multiple methods and/or more than one researcher to investigate the same phenomenon in a study.[2] This can reduce bias in data sources, methods and investigators (Jick, 1979). Easterby-Smith, Thorpe and Jackson (2012) analyse the potential elements of triangulation in research studies into four main types:

- Triangulation of theories – A theory is taken from one discipline and used to explain a phenomenon in another discipline. For example, use communication theory from the field of psychology to underpin a study of financial reporting in the field of accounting.
- Data triangulation – Data are collected at different times or from different sources in the study of a phenomenon. A simple example of data triangulation from different sources might be to ask a number of people to describe a red rose, such as those sold on Valentine's Day. You could get a perfectly adequate description by asking one person to describe the flower, but you would get a much broader picture if you asked several people to consider a different aspects of the rose, such as the colour, the fragrance, the shape of the flower, the texture of the petals, the glossiness of the leaves, the characteristics of the stem, and so on. You could also collect descriptions of red roses written by growers, wholesalers and florists marketing red roses. You could also investigate the symbolism of red roses. By collating the data from all these sources, you could get a much richer picture of the way the people experience red roses.
- Investigator triangulation – Different researchers independently collect data on the same phenomenon and compare the results.
- Methodological triangulation – More than one method is used to collect and/or analyse the data, but it is important to choose them from the same paradigm. A common example of methodological triangulation is to conduct an exploratory study to provide insights into new issues before conducting a questionnaire survey.

Triangulation is the use of several sources of data, multiple methods and/or more than one researcher to investigate the same phenomenon in a study.

Multiple methods research refers to the use of more than one method drawn from the same paradigm as in methodological triangulation.

Mixed methods research refers to the use of methods drawn from different paradigms to collect, analyse and integrate qualitative and quantitative data in the same study as in pragmatism.

It is important to draw a distinction between multiple methods and mixed methods research. We suggest you use the term multiple methods in the context of methodological triangulation where more than one method is drawn from the same paradigm. This contrasts with mixed methods research which refers to the pragmatic use of methods drawn from different paradigms to collect, analyse and integrate qualitative and quantitative data in the same study (see Chapter 3). Whereas mixed methods research is the subject of some debate,

2. The term 'triangulation' is used in surveying and navigation, where an area is divided into triangles and each triangle provides three reference points. This allows an object within a particular triangle to be located.

the use of methodological triangulation is generally accepted. For example, an analysis of five leading marketing journals concluded that 'multiple methods research offers a promising avenue for advancing the marketing discipline by providing robust findings that overcome the considerable risk of method bias' (Davis, Golicic and Boerstler, 2011, p. 473). Nevertheless, the same study found that less than 4% of articles published in the marketing journals over the previous 20 years had used multiple methods.

Most students can consider using triangulation. The use of multiple methods by a number of researchers studying the same phenomenon should lead to greater validity and reliability than a single method approach, providing they all reach the same conclusions (Denzin, 1978), but unless you are part of a research team, it is unlikely you will be able to use investigator triangulation. Some of the limitations of methodological triangulation are that replication is more difficult (particularly if qualitative data are generated) and data collection and analysis become more time-consuming and expensive.

If you are uncertain about which methodology to use, have a look at the advice in Chapter 15 (section 15.8).

4.6 Conclusions

This chapter, together with the previous chapter, should have given you a valuable framework for your study. Clarity about your paradigm is essential for the progress of your research as it determines your research design and choice of methodology. This, in turn, will lead you to a range of associated methods for collecting and analysing your research data. Therefore, we advise you to discuss the paradigm you will adopt and your choice of methodology with your supervisor at an early stage.

It is not uncommon in business research to use triangulation, particularly in terms of data triangulation and methodological triangulation. This allows you to take a broader, complementary view of the research problem or issue. However, triangulation must be an integral part of your research strategy; it cannot be used to rectify a poorly designed study. Before you can progress to this important milestone, you need to choose a research topic and start reading the literature so that you review the existing body of knowledge and find out how previous research was conducted. We explain this stage in Chapter 5.

References for further reading

Blumer, H. (1980) 'Social behaviourism and symbolic interactionism', *American Sociological Review*, 45, pp. 405–19.

Coolican, H. (2009) *Research Methods and Statistics in Psychology*, 5th edn. London: Hodder Arnold.

Couch, C. J. (1987) *Researching Social Processes in the Laboratory*. Greenwich: JAI Press.

Creswell, J. W. (2014) *Research Design*, 4th edn. Thousand Oaks, CA: SAGE.

Davis, D. F., Golicic, S. L. and Boerstler, C. N. (2011) 'Benefits and challenges of conducting multiple methods research in marketing', *Journal of the Academy of Marketing Science*, 39(3), pp. 467–79.

De Venney-Tiernan, M., Goldband, A., Rackham, L. and Reilly, N. (1994) 'Creating Collaborative Relationships in a Co-operative Inquiry Group', in Reason, P. (ed.) *Participation in Human Inquiry*. London: SAGE, pp. 120–37.

Denzin, N. K. (1978) *The Research Act: A Theoretical Introduction to Sociological Methods*, 2nd edn. New York: McGraw-Hill.

Denzin, N. K. and Lincoln, Y. S. (2011) *The SAGE Handbook of Qualitative Research*, 4th edn. Thousand Oaks, CA: SAGE.

DeVault, M. L. (1990) 'Talking and listening from women's standpoint: Feminist strategies for interviewing and analysis', *Social Problems*, 31(1), pp. 96–116.

Dilthey, W. (1976) *Selected Writings* (ed. and trans. H. P. Rickman). Cambridge: Cambridge University Press.

Easterby-Smith, M., Thorpe, R. and Jackson, P. (2012) *Management Research*, 4th edn. London: SAGE.

Eisenhardt, K. M. (1989) 'Building theories from case study research', *Academy of Management Review*, 14(4), pp. 532–50.

Gill, J. and Johnson, P. (2010) *Research Methods for Managers*, 4th edn. London: Paul Chapman.

Glaser, B. and Strauss, A. (1967) *The Discovery of Grounded Theory*. Chicago: Aldine.

Gregg, R. (1994) 'Explorations of Pregnancy and Choice in a High-Tech Age', in Riessman, C. K. (ed.) *Qualitative Studies in Social Work Research*. Thousand Oaks, CA: SAGE, pp. 49–66.

Gummesson, E. (2000) *Qualitative Methods in Management Research*, 2nd edn. Thousand Oaks, CA: SAGE.

Hyde, C. (1994) 'Reflections on a Journey: A Research Story', in Riessman, C. K. (ed.) *Qualitative Studies in Social Work Research*. Thousand Oaks, CA: SAGE, pp. 169–89.

Jick, T. D. (1979) 'Mixing qualitative and quantitative methods: Triangulation in action', *Administrative Science Quarterly*, 24(4), pp. 602–11.

Lewin, K. (1946) 'Action research and minority problems', *Journal of Social Issues*, 2, pp. 34–6.
Morgan, G. and Smircich, L. (1980) 'The case of qualitative research', *Academy of Management Review*, 5(4), pp. 491–500.
Omi, M. and Winant, H. (2015) *Racial formation in the United States*, 3rd edn. Abingdon: Routledge.
Reason, P. (1994) 'Three Approaches to Participative Inquiry', in Denzin, N. K. and Lincoln, Y. S. (eds) *Handbook of Qualitative Research*. Thousand Oaks, CA: SAGE, pp. 324–39.
Ricoeur, P. (1981) *Hermeneutics and the Human Sciences* (trans. J. B. Thompson). Cambridge: Cambridge University Press.
Ryan, B., Scapens, R. W. and Theobald, M. (2002) *Research Method and Methodology in Finance and Accounting*, 2nd edn. London: Thomson.
Silverman, D. (2013) *Doing Qualitative Research*, 4th edn. London: SAGE.
Stebbins, R. A. (1992) 'Concatenated exploration: Notes on a neglected type of longitudinal research', *Quality and Quantity*, 26, pp. 435–42.
Taylor, D. S. (1990) 'Making the most of your matrices: Hermeneutics, statistics and the repertory grid', *International Journal of Personal Construct Psychology*, 3, pp. 105–19.
Treleaven, L. (1994) 'Making a Space: A Collaborative Inquiry with Women as Staff Development', in Reason, P. (ed.) *Participation in Human Inquiry*. London: SAGE, pp. 138–62.
Yin, R. K. (2009) *Case Study Research – Design and Methods*, 4th edn. Thousand Oaks, CA: SAGE.

Activities

1 Select three different academic journals that publish research in your field of study. In each case, read the abstracts and list the different types of methodology used. Decide whether the editor of each journal favours positivist or interpretivist approaches.

2 The manager of a large business in your neighbourhood believes that the morale of employees is low. Select one positivist methodology and one interpretivist methodology that you could use to investigate the problem. List the advantages and disadvantages of each.

3 Imagine you are a member of a research committee about to interview students about their proposed research. One proposal uses triangulation. Prepare five questions you would ask to ensure that the student is aware of some of the dangers of this approach and the advantages.

4 You want to find out what brand of toothpaste people normally buy and why they use that brand. You have just conducted your first interview as part of an interpretivist study. List the information you can extract from the following transcript.

> Researcher: Why did you buy the brand of toothpaste you are using at present?
>
> Interviewee: Well, I usually get the one that's on special offer. It's not that money is tight – it's just what we choose to do. I tend to choose the one where there's money off, 25% extra free, two for the price of one, and so on. But last week the brand on special offer was a new one – I hadn't seen it before. It's really good because it has a strong minty taste and it's good for your gums as well. I don't like the ones with fancy stripes. This new one's good – I like it a lot. [Pause] What's it called, now? I can't remember the name of it at the moment. [Pause] That's funny because I clean my teeth twice a day, so I see the tube often enough! Anyway, my partner likes it too, so I think we'll buy it again, even if it's not discounted next time. When you get to my age it is important to look after your teeth, you know [laughs]!

5 Now consider a positivist approach to the same issue. You have decided to use a self-completion questionnaire to survey households in your area. Design a one-page questionnaire to find out what brand of toothpaste people normally buy and their reasons. Your first question will list various brands of toothpaste and ask the respondent to indicate the one he or she normally uses. You should base your subsequent questions on the information you can extract from the above interview transcript. Then compare the advantages and disadvantages of the two approaches you have taken in questions 4 and 5.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter and sections 15.2, 15.8, 15.10, 15.11 and 15.12 in particular, which relate specifically to this chapter.

5

Searching and reviewing the literature

Learning objectives

When you have studied this chapter, you should be able to:

- identify potential sources of secondary data
- search the literature
- use the Harvard system of referencing
- review the literature
- identify your main research question(s).

5.1 Introduction

Before you can start the process of searching and reviewing the literature, you need to have identified a research topic. Most students have no difficulty in doing this because they have a particular interest in an aspect of one of the subjects they have studied. In some cases, the topic is allocated. If you are having difficulty in identifying a research topic, try one of the techniques we explained in Chapter 2 to help you generate ideas. The task of searching and reviewing the literature represents a significant proportion of the total time you will spend on your research and you need to start both activities as soon as possible.

In this chapter, we will explain how to conduct a systematic literature search and a critical review of the literature that is relevant to your study. Most researchers do much of their searching on the electronic journal databases held by their university or college libraries, but the Internet can give access to other articles and scholarly papers. We recommend that you are selective about the websites you search, to ensure that you only collect information from authoritative sources. It is essential to keep accurate records so that you can acknowledge the sources of the information that provides the basis of your research. You will need to apply the rules of the bibliographic referencing system that is appropriate to your discipline and your supervisor. Once you have collected the literature that is relevant to your study, you will need to write a literature review that evaluates this body of knowledge. In this chapter, we will explain what this entails.

5.2 Searching the literature

You can start searching the literature as soon as you have your first ideas about a potential research topic. In a research context, the **literature** refers to the existing body of knowledge. Therefore, a **literature search** can be defined as a systematic process with a view to identifying the existing body of knowledge on a particular topic. Knowledge is disseminated through various types of publication, which can be in hard copy or digital form, and the data can be qualitative (such as text or illustrations) or quantitative (such as tables or statistics).

The **literature** is all sources of published data on a particular topic.

A **literature search** is a systematic process with a view to identifying the existing body of knowledge on a particular topic.

The purpose of the literature search is to collect as many relevant items of literature as possible and read them. In the process, you will learn more about the subject, which is necessary if you are going to identify a particular research problem to investigate. It will also help you to gain understanding of the methodologies used in previous research. The second half of the process is to write a critical review of the literature. This will provide an analysis of what is already known about the phenomena you are going to study, as well as identifying gaps and deficiencies in our knowledge, some of which your study will address. We discuss this in detail later on in this chapter. In order to ensure that your literature review is up to date, you will continue to search the literature until you submit your dissertation or thesis.

5.2.1 The literature

The literature refers to all sources of secondary data that are relevant to your study. Secondary data are data collected from an existing source, such as:

- e-resources, such as academic journal databases and the Internet
- research reported in books, articles, conference papers and reports
- books on the topic and on methodology
- coverage of business topics in professional journals, newspapers and other media
- government and commercially produced statistics and industry data
- archives
- statutory and voluntary corporate reports
- internal documents and records of organisations.

At undergraduate level, it might be acceptable to refer to textbooks, but at Master's and doctoral level, you must locate original sources of knowledge referred to by the authors. By exploring what others have contributed to your area of interest, you will be in a better position

to identify a particular research problem or issue to investigate. Your reading should help you understand the main issues within the topic as well as the methodologies used in previous studies. If you are a positivist, you will be looking for theories and models so that you can develop a **theoretical framework** and hypotheses for your study. You can see how your ideas compare with what has gone before, and develop existing ideas or create new ones. Your literature search will continue throughout your study, so that your literature review will reflect the current state of knowledge and provide a rationale for your research question.

A **theoretical framework** is a collection of theories and models from the literature which underpins a positivist study. Theory can be generated from some interpretivist studies.

5.2.2 Procedure for a systematic literature search

In Chapter 1, we defined research as being systematic and methodical and you can demonstrate this in your methodology chapter when describing how you conducted your literature search. Initially, the subject of your research is likely to be fairly broad, which means your search will be in general terms only. Box 5.1 shows a general procedure for conducting a systematic literature search.

Box 5.1 Procedure for a systematic literature search

- Draw up a list of sources (journal databases, subject-related websites, bibliographic catalogues and other lists your business librarian suggests).
- Define the scope of the search.
- Determine the keywords you will use for searching, including alternative spellings and synonyms.
- Search each source, keeping a record of your progress (for example: *Journal of Drinking Habits*: Searched 2001–2020 using keywords …) and full details of relevant publications so that you can read them later and, if relevant, reference them in your work.
- Only collect literature that is relevant to your research in terms of the topic, theory and methodology. In the academic literature, select articles from high-quality journals that review the literature, describe the methods used, discuss the results and draw conclusions.
- Start with the most recent publications and work back in time, using the references at the end of relevant publications to lead you to previous studies.
- When you start to recognise the references cited in other works, you are nearing the end of your first search.
- To keep up to date, continue searching the literature throughout the project.

5.2.3 Defining the scope

After you have drawn up a list of potential sources of literature to search, you need to define the scope of your search. This will help limit the material you collect to that which is relevant. Delimitations include:

- Time – for example, it might not be worthwhile searching more than five years back if the phenomenon you are interested in is some kind of new technology. Find an appropriate cutoff date; it can be adjusted if necessary.
- Geography – for example, a city, region, country or a comparison of two or more of these.
- Single or multidisciplinary approach – for example, the development of new software programs in accountancy.
- Single discipline, but multi-concept approach – for example, the role of employee appraisals in staff development.

The next step is to decide what sort of information you require. Academic and business journals and reports (and newspapers) are the most relevant places to look for information relating to topical issues and recent events, whereas these are unlikely to be covered by books. You might find that information about larger organisations is available in financial databases or on their websites, whereas information about smaller enterprises may only be available in internal documents, which might be confidential or difficult to obtain. However, by considering carefully what type of information you expect to find, you can restrict your search to those types only, thus saving yourself valuable time.

You will probably be able to find much of the information you need from your university or college library and databases. You need to read abstracts of articles and peruse the information from other sources; if the article or other item of literature is relevant to your research, you will need to print or download a full copy. If your library does not have access to a particular journal or database, it could mean visiting another library, for which there might be a fee. You need to allow plenty of time to allow for such delays.

5.2.4 Determining keywords

Once you have decided where to start searching, you must identify the **keywords** associated with your research topic that you will use to start off your first search. A keyword is a word or phrase that captures the essence of a conference paper, journal article or other item. They are used by software to search databases and by search engines to search websites. Although you will gradually develop more words from reading the literature you find, you may need some lateral thinking to get you started, such as alternative English spellings and synonyms. For example, if your research is going to focus on the marketing of lager and beer in the UK, you might start your search using keywords such as 'marketing' 'advertising', 'lager', 'beer' and 'UK'. As you develop your literature search you might want to widen your search by including 'alcoholic beverages' or narrow it to 'mild', 'bitter', 'real ale' or 'stout'.

A **keyword** is a word or phrase that captures the essence of a conference paper, article or other item. It is used by software to search databases and by search engines to search websites for items containing that keyword.

When searching, you need to bear in mind that you are seeking authoritative sources. Although you might find it helpful, your supervisors and examiners are not likely to consider sources such as lecture notes (from your institution or another) and open resources such as Wikipedia as authoritative; you will need to seek out the original sources, to which their authors refer. You need to adopt a systematic approach and general surfing of the Internet is not advised. We recommend that you take advantage of any tutorials run by your library on how to access and search the e-resources to which your institution subscribes. You can also try academic search engines such as *Google Scholar,* the websites of national and international professional bodies, government departments and other organisations with activities that are relevant to your research topic.

Vox pop What has been the biggest challenge in your research so far?

Ben, MBA student investigating the impact of the credit crunch on access to finance for SMEs

I found there was a lot of literature on my research topic. This gave me a challenge as to which information to use as I had very limited time to complete my dissertation.

In a simple search, you enter all your keywords together in the search box. However, you might be overwhelmed by the thousands of 'hits'. We advise you to investigate the advanced search options that are available. In many cases, this permits the use of what are known as Boolean proximity and adjacency operators. These simple words allow you to narrow the search or, in the case of too few 'hits', to broaden your search. Table 5.1 gives examples of the Boolean operators used in *ProQuest*, an e-resource that contains millions of articles from academic journals and other publications.

Table 5.1 Examples of Boolean operators used in *ProQuest*

Operator	Description
AND	Find all the words. When searching for keywords in "Citation and Document Text," AND finds documents in which the words occur in the same paragraph (within approx. 1000 characters) or the words appear in any citation field. Use W/DOC in place of AND when searching for keywords within "Citation and Document Text," or "Document Text" to retrieve more comprehensive results. *Example:* Internet AND education
AND NOT	Find documents which have the first word, but not the second word. *Example:* Internet AND NOT html
OR	Find any of the words. *Example:* Internet OR intranet
W/#	Find documents where these words are within some number of words apart (either before or after). Use when searching for keywords within "Citation and Document Text" or "Document Text." *Example:* computer W/3 careers
W/PARA	Finds documents where these words are within the same paragraph (within approx. 1000 characters). Use when searching for keywords within "Document Text." *Example:* Internet W/PARA education
W/DOC	Find documents where all the words appear within the document text. Use W/DOC in place of AND when searching for keywords within "Citation and Document Text" or "Document Text" to retrieve more comprehensive results. *Example:* Internet W/DOC education
NOT W/#	Find documents where these words appear but are not within some number of words apart (either before or after). Use when searching for keywords within "Citation and Document Text" or "Document Text." *Example:* computer NOT W/2 careers
PRE/#	Find documents where the first word appears some number of words before the second word. Use when searching for keywords within "Citation and Document Text" or "Document Text." *Example:* world pre/3 web

Source: ProQuest, Advanced search tips.

The advantages of online searching of academic and other databases include:

- ease of access from your computer, wherever you have an Internet connection
- currency, since printed versions of journals and other documents take longer to reach the library shelves
- cross-disciplinary searching, since journals specialising in different subjects are held in the same publishers' database
- flexibility, as you can carry out a free-text search using any combination of terms and subjects, and you can develop your search strategy as you progress to focus on a particular research problem or issue within the general topic area
- speed, since thousands of sources can be searched in seconds, compared with many hours searching a printed index and the library catalogue and then going to the library shelves to find the publication.

However, you need to bear in mind that searching can still be very time-consuming, particularly if you do not read what you are collecting and therefore do not focus your search at an early stage and adjust your search words accordingly. In addition, you will need to print the documents that are relevant to your research and this might incur some costs. You also need to remember that the results of your search will reflect the quality of the databases and other sources you search. You will know the end of your search is near when you start to recognise the references in the literature you are reading, but you should continue to search throughout your project to keep your knowledge up to date.

The following extended example is provided by Kevin, a PhD student investigating the personalisation of products and services. Table 5.2 shows his keywords and search terms.

The following illustrations show the results of Kevin's search of the ABI/INFORM Global database using *ProQuest* where he used a simple combination of his search terms (see Figure 5.1 which shows that 18 articles were identified) and subsequently a more sophisticated combination of search terms (see Figure 5.2 which shows that 74 articles were identified).

He summarised the literature searching process he followed in a flow chart, which is shown in Figure 5.3 (see p. 72).

Table 5.2 Kevin's keywords and search terms

Keyword	Search term
Engineer-to-order	Engineer-to-order OR ETO
Mass customisation	mass customi* OR customer co-design* OR customer co-creation*
Mass personalisation	mass personali*
Supply chain design	supply chain design* OR supply chain strate* OR supply chain architectur* OR supply chain manage* OR supply chain plan* OR SCM OR SCS OR supply chain manag* OR supply chain typolog* OR supply chain classi* OR Supply chain taxonom*
Product design	product develop* OR product design* OR product engineer* OR product architecture*
Flexible manufacturing	flexible manufactur*

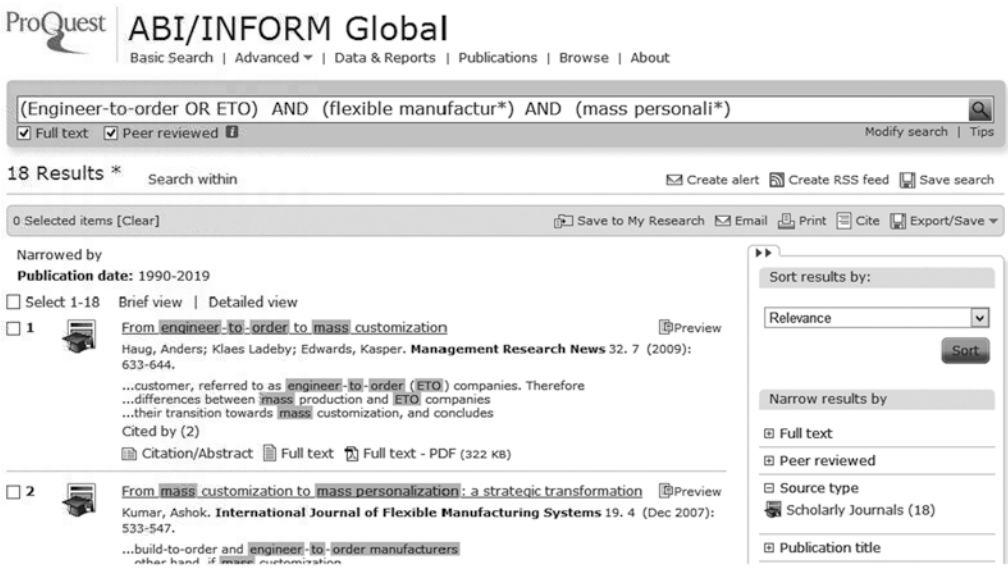


Figure 5.1 Example of results from an initial keyword search

Source: ProQuest.

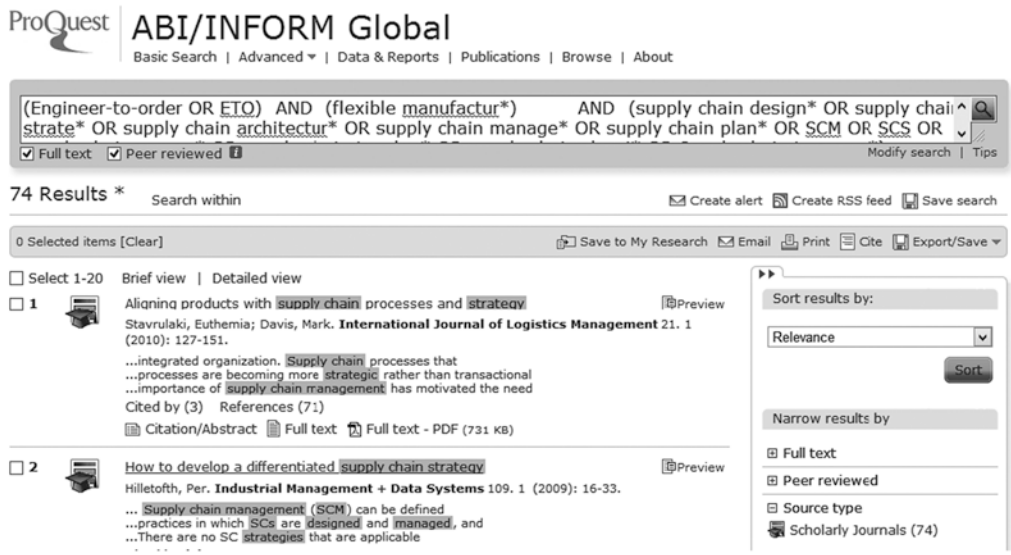


Figure 5.2 Example of results from a subsequent keyword search

Source: ProQuest.

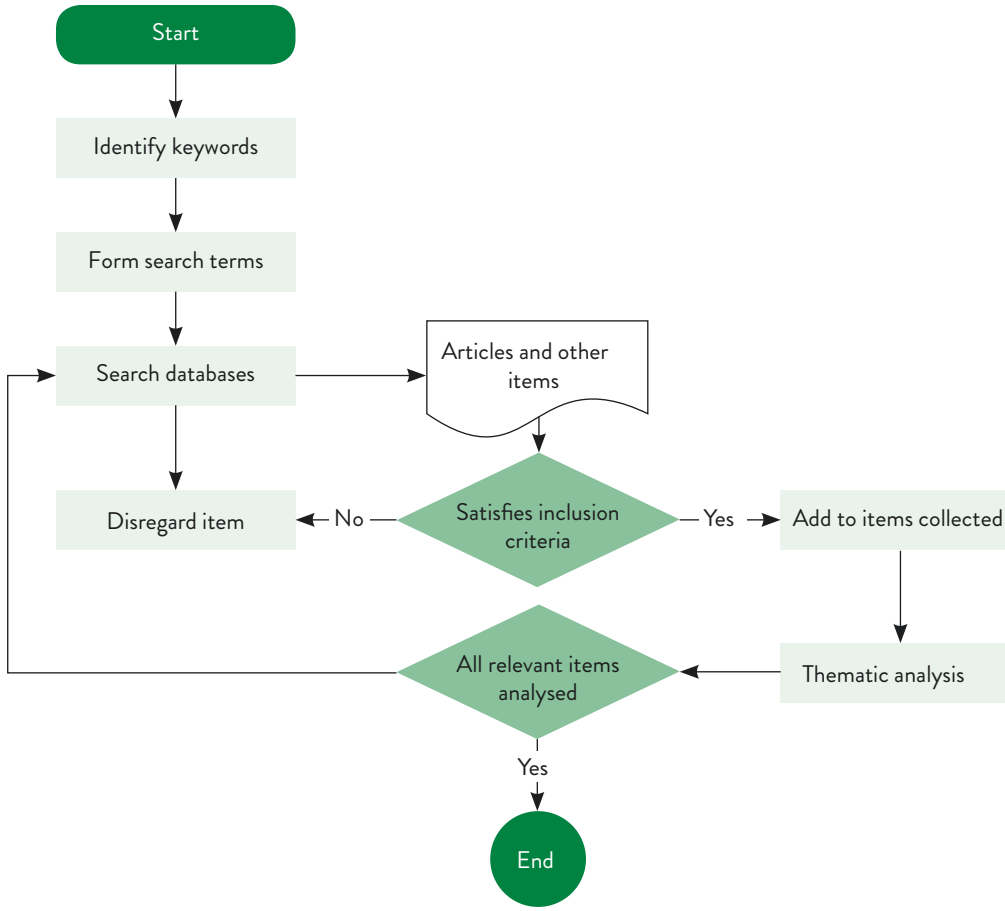


Figure 5.3 Flow chart of Kevin's literature search

In addition to the standard citation information, Kevin made notes in his own words on the following features of each article. This process represents the thematic stage in the process.

- Rationale – the motivation for the article and an explanation of the issues addressed
- Arguments and findings – the focus of the article (categorised thematically)
- Context – any information that causes bias or limits comparability or generalisation, such as location, sector, sampling method, sample size, response rate, unit of analysis
- Research method – the type of methodology adopted
- Critique – an evaluation of the methodology, arguments and conclusions.

With regard to the thematic analysis of the arguments and findings in each article, Kevin explains that the codes he used for categorising the themes were based on definitive keywords that summarised the topic. The themes were then used to perform meta-analysis, construct a theoretical model and code the empirical data. This helped ensure that his theoretical model was grounded in the literature and his subsequent analysis of the research data he collected could be linked to the literature. Of course, doctoral students are more likely to have the time to develop the skills to conduct this high level of analysis and undergraduate students and those on taught Master's programmes will not be expected to adopt such a detailed approach.

5.3 Referencing

It is important that you collect the data you will need for referencing. Finding relevant information in the first place is hard enough, but finding it again later on can be even harder if you are not careful. It is good practice to make a note of everything you find, even if you eliminate it later because it is not relevant after all. In the long run, this will save time by avoiding duplication and helping you with the selection and rejection of material. You will need to set up a filing system on your computer for storing copies of articles, notes and quotations (and a parallel system for hard copies you collect). You will soon find that your material can be collated into different categories, which you can place in folders with labels that help identify their contents.

Reference management software, such as *EndNote* and *Mendeley* which are free, helps you manage bibliographic data. The main features of most reference management software are:

- References from most e-resources can be 'dragged' into your personalised database.
- You can also import charts, diagrams and images.
- You can cite publications you have in your database as you write, and the software will generate a list of references at the end of your document when you are ready.
- You can choose from a number of alternative formats for presenting the references, which is useful if you subsequently write articles for submission to journals that have different house styles.

It is by no means essential to use reference management software and some researchers find them time-consuming for relatively small studies. The alternative is to keep a list of your references in an ordinary *Microsoft Word* document (or equivalent) and store it in alphabetical order by author's surname. We suggest you do this in the format that is required for your dissertation or thesis. Whichever method of record keeping you adopt, the main reasons for maintaining accurate records are to:

- identify a particular item accurately so that you can locate it again or order it through inter-library loan, and avoid duplication of effort
- develop links between authors, topics, types of study, main findings and year published by searching your records
- allow you to use a citation in the text of your work to acknowledge the source of information taken from other authors
- allow your supervisor, examiner and other readers to find full bibliographic details of the works of the authors you have cited.

Table 5.3 Data required for referencing

Books	Journal articles
Name(s) of author(s) or editor(s)	Name(s) of author(s)
Year of publication	Year of publication
Title of book	Title of article
Edition (if not the first)	Title of journal
Place of publication	Volume number and issue
Name of publisher	Page numbers

Table 5.3 gives examples of the data you need to record for a book or journal article.

Whether you are an undergraduate, Master's or doctoral student, you must ensure that you follow one of the standard systems for referencing. All systems provide rules for making citations and references.

5.3.1 Citations and references

A **citation** is an acknowledgement in the text of the original source from which information was obtained.

A **citation** is an acknowledgement in your text of the original source of information or ideas, whether reproduced exactly, paraphrased or summarised. This means the originator of theories, models and arguments, illustrations, diagrams, tables, statistics, and any other information that you are using in your work must be acknowledged. Citations are important because they:

- provide evidence of your literature searching and the range of your reading
- help you support your arguments using the authority of the source you have cited
- help the reader to distinguish between your work and the existing body of knowledge, thus avoiding accusations of plagiarism.

References are a list containing bibliographic details of the sources cited in the text.

References are a list containing the bibliographic details of the sources cited in the text. They are important because they:

- provide full bibliographic details that support the citations
- allow supervisors, examiners and other researchers to locate the source of the works you have cited.

We distinguish between a bibliography and a list of references because a bibliography can be a catalogue of publications, not a specific list of those that have been used and, therefore, cited. Some researchers use the terms interchangeably and you should check what the preferred terminology is in your institution.

There are two main groups of referencing systems: author–date systems, such as the *Harvard system* or the *American Psychological Association (APA) system*, and number-based systems, such as the *Vancouver system*. You will need to find out what is appropriate in your discipline and acceptable to your supervisor before deciding which method to adopt. The important thing to remember is to apply the rules consistently. This means you must first study the rules. Do not be tempted to copy someone else's style, as publishers often use adaptations to create their own house style. Of course, if you are submitting your work for publication, follow the journal's house style. The examples of the Harvard system we show in the next section are based on British Standards, BS 5605:1990.

5.3.2 The Harvard system

The Harvard system is widely used in most business and management research, and other social sciences. It is also used in anthropology and some of the life sciences. The APA system is more commonly used in North America. It is very similar to the Harvard system and both use the author–date system to acknowledge the source of information. Thus, citations in the text are

shown as the surname of the author(s) and the date of publication, plus the page number if a quotation is used (or any other exact reproduction of data, such as a table, diagram or illustration). If a printed document or online material is not paginated or not dated, indicate this by using n.p. (no page number) or n.d. (no date) as appropriate. When citing more than one source, you should place the author–date information in chronological order with the oldest first.

There is no single authority on the Harvard system of referencing, so we are following the style defined in the widely used guide by Pears and Shields (2019). If there are more than three authors, cite the name of the first author followed by *et al.* This is the abbreviation of the Latin phrase *et alia,* which means 'and the others' (hence the abbreviation is in italic followed by a full stop). If you are citing more than one author with the same surname, you should include their initials in the text to avoid confusion. Box 5.2 shows a range of examples of how to make citations under the Harvard system.

Box 5.2 Citations under the Harvard system

Authors' words are paraphrased

There is evidence that the needs of micro-companies are very similar to the needs of non-micro small companies, and regulators should be wary of introducing concessions that discourage micro-companies from filing full, audited accounts if they so wish (Collis, 2012).

Or

Collis (2012) provides evidence that the needs of micro-companies are very similar to the needs of non-micro small companies, and regulators should be wary of introducing concessions that discourage micro-companies from filing full, audited accounts if they so wish.

Authors' words are quoted

'Regulation should not give the impression that there is no benefit to micro-companies from filing full audited accounts. The results of this study demonstrate non-micro small companies and micro-companies have assurance and reporting needs in common, although the specific drivers differ between the two size groups' (Collis, 2012, p. 463).

Citation for up to three authors

Providing empirical evidence from the UK, Collis, Alkhatib and de Cesare (2018) identify the main costs and benefits of digital reporting.

Citation for four or more authors

Kitching *et al.* (2011) examined the value of the abbreviated accounts of small companies.

Multiple sources (in chronological order)

Other evidence indicates that small companies file voluntary audited accounts to maintain relationships with the bank (Collis and Jarvis, 2002; Collis, 2010; Collis, Jarvis and Skerratt, 2004).

A comprehensive example

Empirical evidence from the UK indicates that small companies file voluntary audited accounts to maintain relationships with the bank (Collis and Jarvis, 2002; Collis, 2010; Collis, Jarvis and Skerratt, 2004) and to send positive signals to lenders suppliers and customers that the business is well managed (Marriott, Collis and Marriott, 2006; Ojala *et al., 2016*). These findings are extended by Ojala *et al.* (2017), whose study in Finland reveals that there is less likelihood of tax return adjustments if small companies have a voluntary audit. The voluntary reporting literature is further extended by Collis (2012) who demonstrates that voluntary audit is the main predictor of the voluntary filing of full accounts by small companies in the UK.

Author with more than one publication in the same year

There were 5.7 million businesses in the private sector in the UK (BEIS, 2018a). Approximately 1.9 million of these businesses are companies, of which fewer than 1% are large (250 or more employees), 1.8% are medium (50–249 employees), 9.6% are small (10–49 employees) and

88.2% are micro (0–9 employees). Small and micro-companies make an important contribution to the economy by providing 34% of jobs and 32% of turnover (BEIS, 2018b, Table 3).

Secondary citation

Findings from an empirical study by Collis (2008) (cited in Collis, 2012) suggest that …

Under the Harvard system, the bibliographic details of the sources cited in the text are presented in the list of references in alphabetical order by author's name. This list is shown at the end of the document, which means you can still use numbered footnotes or endnotes for providing explanatory information that would interrupt the flow of your main text. The list of references is not included in your word count.

Box 5.3 shows examples of references (and their punctuation) for different types of publication under the Harvard system and Box 5.4 illustrates how they are presented in alphabetical order in the list of references at the end of the document. With e-resources, you need to add the URL for the item (the web link) and date you accessed the item. The latter is shown in square brackets. You are advised to copy and paste the URL rather than retype it, as a full stop, comma or slash in the wrong place can lead to problems for you or anyone else wanting to locate the item. We recommend that you test the URL before submitting your work to ensure that it does not need updating.

Box 5.3 Examples of references

Article in a journal

Collis, J. (2012) 'Determinants of voluntary audit and voluntary full accounts in micro- and non-micro small companies in the UK', *Accounting and Business Research*, 42(4), pp. 441–68.

Conference paper

Ojala, H., Kinnunen, J., Niemi, L., Troberg, P. and Collis, J. (2017) 'What turns the taxman on? Audit opinion and tax return adjustments in a voluntary audit environment', *Annual Symposium of The International Journal of Accounting*, Limassol, Cyprus, 8–10 June.

Online report

Collis, J., Alkhatib, E. and de Cesare, S. (2018) Costs and benefits to small companies of digital reporting. London: Association of Chartered Certified Accountants. Available at: https://www.accaglobal.com/content/dam/ACCA_Global/Technical/tax/Alkhatib%20et%20al%20Small%20Company%20Digital%20Reporting%20Jan%202018.pdf (Accessed 4 July 2019).

Book

Collis, J. and Hussey, R. (2021) *Business Research*, 5th edn. London: Macmillan Education.

Chapter in a book

Kitching, J., Kašperová, E. and Collis, J. (2013) 'The Bearable Lightness of the Administrative Burden: UK Financial Reporting Regulation and Small Company Performance', in Welter, F., Blackburn, R., Ljunggren, E. and Åmo, B. W. (eds.) *Entrepreneurial Business and Society – Frontiers in European Entrepreneurship Research*. Cheltenham: Edward Elgar.

Box 5.4 List of references under the Harvard system

References

BEIS (2018a) *Business Population Estimates for the UK and the Regions 2018*, Statistical Release 11 October. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/746599/OFFICIAL_SENSITIVE_-_BPE_2018_-_statistical_release_FINAL_FINAL.pdf (Accessed 4 July 2019).

BEIS (2018b) *Business Population Estimates for the UK and the Regions 2018*. Available at: https://www.gov.uk/government/statistics/business-population-estimates-2018 (Accessed 4 July 2019).

Collis, J. (2008) Directors' Views on Accounting and Auditing Requirements for SMEs, London: BERR. Available at: http://webarchive.nationalarchives.gov.uk/20090609003228/http:/www.berr.gov.uk/files/file50491.pdf (Accessed 4 July 2019).
Collis, J. (2010) 'Audit exemption and the demand for voluntary audit – a comparative analysis of the UK and Denmark', *International Journal of Auditing*, 14(2), pp. 211–31.
Collis, J. (2012) 'Determinants of voluntary audit and voluntary full accounts in micro- and non-micro small companies in the UK', *Accounting and Business Research*, 42(4), pp. 441–68.
Collis, J. and Hussey, R. (2021) *Business Research*, 5th edn. London: Macmillan Education.
Collis, J. and Jarvis, R. (2002) 'Financial information and the management of small private companies', *Journal of Small Business and Enterprise Development*, 9(2), pp. 100–10.
Collis, J., Alkhatib, E. and de Cesare, S. (2018) Costs and benefits to small companies of digital reporting. London: Association of Chartered Certified Accountants. Available at: https://www.accaglobal.com/content/dam/ACCA_Global/Technical/tax/Alkhatib%20et%20al%20Small%20Company%20Digital%20Reporting%20Jan%202018.pdf (Accessed 4 July 2019).
Collis, J., Jarvis, R. and Skerratt, L. (2004) 'The demand for the audit in small companies in the UK', *Accounting and Business Research*, 34(2), pp. 87–100.
Kitching, J., Kašperová, E. and Collis, J. (2013) 'The Bearable Lightness of the Administrative Burden: UK Financial Reporting Regulation and Small Company Performance', in Welter, F., Blackburn, R., Ljunggren, E. and Åmo, B. W. (eds.) *Entrepreneurial Business and Society – Frontiers in European Entrepreneurship Research*. Cheltenham: Edward Elgar.
Marriott, N., Collis, J. and Marriott, P. (2006) *Qualitative review of the accounting and auditing needs of small and medium-sized companies and their stakeholders*, London: Financial Reporting Council.
Ojala, H., Collis, J., Kinnunen, J., Niemi, L., and Troberg, P. (2016) 'The demand for voluntary audit in micro-companies: Evidence from Finland', *International Journal of Auditing*, 20(3), pp. 267–77.
Ojala, H., Kinnunen, J., Niemi, L., Troberg, P. and Collis, J. (2017) 'What turns the taxman on? Audit opinion and tax return adjustments in a voluntary audit environment', *Annual Symposium of The International Journal of Accounting*, Limassol, Cyprus, 8–10 June.

Note that in Box 5.4 we have using hanging paragraphs to present the list of references. This is not a requirement of the Harvard system and you may prefer to use block paragraphs. The main principle is that you should present the list in alphabetical order according to the name of the first author (use the AZ↓ tool in *Microsoft Word*). Do not use bullet points or number your list of references.

In this section, we have concentrated on the most common needs of students when using the Harvard system of referencing, but you can find many more examples in Pears and Shields (2019). We also advise you to check the referencing guide provided by your institution or your supervisor.

5.4 Reviewing the literature

Once you have collected the literature that is relevant to your study, you will need to write a **literature review**. A literature review is a critical evaluation of the existing body of knowledge on a topic, which guides the research and demonstrates that relevant literature has been located and analysed. It should build the case for your research questions.

A **literature review** is a critical evaluation of the existing body of knowledge on a topic, which guides the research and demonstrates that the relevant literature has been located and analysed.

At the proposal stage, a preliminary review of the literature helps develop your subject knowledge and provide a context for your research questions. A preliminary review is relatively brief and usually focuses on seminal works and the main theories (if appropriate to your paradigm). A **seminal work** is a landmark study that presented a new idea of great importance or influence in the field. When you write a full review of literature for your dissertation or thesis, you will also need to demonstrate an appropriate level of intellectual ability and scholarship. At that stage, your literature review will be large enough to occupy at least one chapter (more than one if the literature is large or your study has been designed as an exhaustive review of the literature).

A **seminal work** is a landmark study that presented a new idea of great importance or influence in the field.

5.4.1 Reading and analysing the literature

It can be very satisfying to know that you have a fine collection of literature neatly filed away (or piling up impressively in the corner), but you need to start reading and analysing the literature it in order to develop your research proposal and design your study. As you read, you will learn more about the subject and the methodologies used in previous research.

Vox pop What has been the biggest challenge in your research so far?

Najma, UG student investigating views on Internet banking

> The hardest part was reading all the journals!

It is important that you develop your skills as a critical reader. Drawing on Wallace and Wray (2011), Box 5.5 offers a checklist for reading the literature.

Box 5.5 Checklist for reading the literature

- What was the purpose of the study, and how does it differ from other studies and your research?
- How does the author define key terms and are these terms used consistently?
- What is the structure of the argument?
- How was the research conducted, and how do the methods differ from other studies and your research?
- What were the results/findings, and how do they differ from other studies and your research?
- What claims does the author make, and are they supported by appropriate evidence?
- Are there any underlying values that might be guiding the author and influencing these claims?
- Is there evidence to support any generalisations?
- What were the limitations and weaknesses of the study?
- Has any irrelevant material been included or has any necessary material been omitted?
- Does the author cite any literature that you need to locate and read?

You need to adopt a systematic approach when analysing the literature. Many researchers find it useful to start by identifying the themes in the articles they have collected and then conducting a thematic analysis. Without formally recognising it, you will have begun this process when generating your keywords for searching the literature. Once you have identified the main themes, you need to record the key details of the studies relevant to that theme in a spreadsheet. Both theoretical and methodology-related categories are likely to emerge as you read each article and you can break them down into various subgroups as appropriate.

The following extended example is provided by Esra'a, a PhD student researching digital financial reporting. She discovered that a range of IT studies had been based on the technology–organisation–environment framework (TOE) proposed by Tornatzky and Fleisher (1990). Figure 5.4 shows an extract of the results of her thematic analysis of these studies, and Figure 5.5 shows an extract of her subsequent analysis, which focuses on the Standard Business Reporting and XBRL studies in particular. Esra'a found this way of analysing and summarising the literature helped her immensely when discussing her work with her supervisor and later when structuring her literature review. As you can see, where there is more than one study in a particular category, she has listed the publications in chronological order to match the order in which she will cite them.

IT adoption	*Author (date)*	*Variables analysed*			*Data collection method, sample and setting*	*Data analysis method*
		Technology context	*Organisation context*	*Environment context*		
Electronic data interchange	Kuan & Chau (2001)	Perceived direct benefits* Perceived indirect benefits	Perceived financial cost * Perceived technical competence*	Perceived industry pressure* Perceived government pressure*	Questionnaire survey 575 small companies Hong Kong	Factor analysis and logistic regression
Web-based B2B e-commerce	Teo et al (2006)	Unresolved technical issues* Lack of IT expertise and infrastructure Lack of interoperability	Organisational change problems Project management problems Lack of top management support* Lack of e-commerce strategy* Cost-benefit assessment problems*	Unresolved legal issues Fear and uncertainty	Questionnaire survey 249 companies USA and Canada	Factor analysis, *t*-tests and multivariate discrimination analysis
Website e-commerce	Oliveira & Martins (2008)	Technology readiness* Technology integration* Security applications*	Perceived benefits of e-business* IT training programmes* Access to firm's IT system, internet and e-mail norms	Website competitive pressure*	Questionnaire survey 3155 small and 637 large companies Portugal	Multiple correspondence analysis and probit model
ERP	Pan & Jang (2008)	IT infrastructure Technology readiness*	Firm size* Perceived barriers*	Production and operations improvement* Product and service enhancement Competitive pressure Regulatory policy	Interview survey 99 companies Taiwan	Factor analysis and logistic regression
E-business	Zhu et al (2003)	Technology competence* IT infrastructure E-business know-how	firm scope* firm size*	Consumer readiness competitive Pressure* Lack of trading partner readiness*	Interview survey 3552 companies Germany, UK, Denmark, Ireland, France, Spain, Italy, and Finland	Confirmatory factor analysis, second-order factor modelling, logistic regression and analysis
E-business	Zhu et al (2004)	Technology readiness*	Firm size* Global scope* Financial resources*	Competition intensity Regulatory environment*	Questionnaire survey 612 companies USA, Brazil, China, Denmark, France, Germany, Japan, Mexico, Singapore, and Taiwan	Confirmatory factor analysis
E-business	Lin & Lin (2008)	IS infrastructure* IS expertise*	Organisational compatibility Expected benefits of e-business*	Competitive pressure* Trading partner readiness	Questionnaire survey 163 large companies Taiwan	Confirmatory factor analysis, and structural equation modelling
E-business	Oliveira & Martins (2010)	Technology readiness* Technology integration	IT training programmes	Website competitive pressure* Trading partners influence*	Interview survey 6964 companies International	*t*-tests, factor and cluster analysis
		Security applications	Access to IT system of the firm's internet and e-mail norms			
Cloud-computing	Picoto, Crespo & Kahn (2013)	Lack of interoperability Convenience* Compatibility*	Organisational innovativeness* IT Know-how Entrepreneurial Orientation*	Trust in supplier* Competitive pressure	Questionnaire survey 137 companies European countries	Partial least squares

Note: *Significant variable

Figure 5.4 Example of a thematic analysis of IT studies based on the technology–organisation–environment framework (extract)

Author (date)	*Other theoretical basis*	*Variables analysed*			*Data collection method, sample and setting*	*Data analysis method*
		Technology context	*Organisation context*	*Environment context*		
Doolin & Troshani (2007)	Stakeholder and social network theory	Relative advantage* Complexity* Trialability/Observability* Stability*	Innovation champion* Organisational readiness*	Market condition* Trading partner* Available information* Critical mass* Available support*	Interviews: Australia 1 local consortium 3 large accounting firms 3 software vendors 1 regulatory authority 1 large company 2 universities	Thematic approach
Cordery et al (2011)	Diffusion of innovation theory	Relative advantage* Compatibility* Complexity* Trialability*	Top management* support Organisation champion* Organisation size and resources*	Trading partners* Regulators and government* Market competition* Availability of information and support*	Interviews: New Zealand 2 regulatory agencies 1 government 1 vendor supplier 1 crown entity 1 public practitioner	Thematic approach
Henderson Sheetz & Trinkle (2012)	Diffusion of innovation theory and institutional theory	Relative advantage* Compatibility* Complexity*	Expertise Learning from external sources*	Mimetic pressure Coercive pressure Normative pressure	Survey: Cross countries 65 CIOs and CFOs of large listed companies	Multivariate analysis structural equation modelling
Mousa (2013a)	Diffusion of innovation theory	Relative advantage* Compatibility* XBRL complexity*	IT skills and expertise* Formalisation*	XBRL mandate* Critical mass* Access to external support and information*	Case study: HMRC, UK Document analysis and 3 interviews: Manager of online services, technical architect, process advisor	Thematic approach
Mousa (2013b)	Diffusion of innovation theory	Relative advantage* Compatibility* XBRL complexity*	IT skills and expertise* Formalisation*	XBRL mandate* Critical mass* Access to external support and information*	Case study: Companies House, UK Document analysis and 4 interviews: Senior project manager, head of development, business/systems analyst, director of accountancy profession	Thematic approach
Azam & Taylor (2013; 2015)	Diffusion of innovation theory	Relative advantage Compatibility* Complexity*	-	Competitive pressure Government pressure Communication in the industry*	Survey: Australia 54 CFOs of large listed companies	Factor analysis, multiple regressions
Lim & Perrin (2014)	Diffusion of innovation theory	Relative advantage* Compatibility* Complexity* Trialability* Observability* Perceived costs* SBR forms and reports quality*	Financial resources* Expertise* Top management support*	External pressure* External support* Software developers*	Literature review: Australia	Meta-analysis of the existing SBR/XBRL literature
Rostami and Nayeri (2015)	-	Easy understanding and fluency of system* Compliance of innovation with previous systems*	Successful implementation* Available human and financial resources Manpower skills and experience*	Regulatory agencies' pressure* Competitive pressure from peer Organisations*	Survey: 118 responses: 20 managers, 12 deputies, 21 senior experts and 65 experts	Confirmatory factor analysis

Note: *Significant variable

Figure 5.5 Example of a thematic analysis of SBR/XBRL studies based on the technology–organisation–environment framework (extract)

5.4.2 Writing the literature review

We have already explained that a literature review is a critical evaluation of the existing body of knowledge on a topic, which guides the research and demonstrates that relevant literature has been located and analysed. It should build the case for your research questions. Writing the literature review can seem a daunting task and you need to bear in mind what you are trying to achieve. The main purposes of a literature review are as follows:

- to demonstrate command of the subject area and understanding of the research problem by identifying previous studies and their contribution to knowledge
- to describe the relationship between previous studies and explain conflicts in the findings of contradictory previous studies
- to identify gaps and deficiencies in the literature and justify your research topic, design and methodology
- to demonstrate your literature searching skills and ability to summarise and synthesise the literature.

Creswell (2014) suggests that designing a map of the literature can be a useful preliminary step as it helps you summarise previous studies. You could use a mind map or a hierarchical diagram (see Chapter 2) to help you organise the literature and show where your study fits in. However, you also need to synthesise the literature, which means making connections between different items of literature in a way that provides a rationale for your study and how you will investigate the research problem.

Ryan, Scapens and Theobald (2002) offer a structured approach to analysing the literature, using a network diagram where the articles in the literature are represented as a series of nodes in an interlinked network of theoretical and empirical developments. Box 5.6 summarises the main steps.

Box 5.6 Procedure for generating a network of primary citations

1. From the literature you have collected, select all the articles that are published in what you consider are the top two or three journals among those represented. From these articles, select the most recent as you will analyse these articles first.
2. Examine each article and identify which of the previous studies or other items of literature mentioned is most important to the author's study. This is the primary citation for that article. Do the same for the other articles published that year.
3. Place all the primary citations for the most recent year as nodes in an oval text box at the bottom of your diagram and use Author (Date) to label them.
4. Repeat this process at five-yearly intervals to add new nodes to the diagram that reflect the year of publication. Draw links between nodes to identify the literary antecedents (similar to a family tree). Identify the node that lies at the core of the literature (the one with the most 'descendants') by putting it in a rectangular text box. This allows you to illustrate the theoretical framework that unites the literature.
5. The final step is to determine the motivation for each article, and the methodological rationale that links them.

Once you have reflected on your analysis, you are ready to start structuring and writing your review of the literature. We offer the following advice:

- Select only material that is relevant to the topic, industry, methodology, and so on.
- Identify themes and group the material.
- Define key terms and draw out the important features.
- Compare results and methods of previous studies.

- Be critical and demonstrate relevance to your research.
- Set the context for your study (a deductive approach suggests you will identify a theoretical framework and develop hypotheses).
- Identify gaps or deficiencies in the literature that your study will address.
- Conclude with your research question(s).
- Acknowledge other people's contribution to knowledge using the Harvard system of referencing.

It is important that you develop your skills as a critical writer. Drawing on Wallace and Wray (2011), Box 5.7 offers a checklist for writing a critical review of the literature.

Box 5.7 Checklist for writing a critical literature review

- Have you stated what you are trying to achieve clearly?
- Have you defined key terms and used them consistently?
- Have you created a logical structure that helps the reader to follow your argument?
- How was the research conducted and how do the methods differ from other studies and your research?
- Have you stated your claims clearly and are they supported by appropriate evidence?
- Are you aware of how your values are reflected in what you write, and have you made those values explicit where appropriate?
- Have you provided evidence to support any generalisations?
- Have you sustained focus, included all necessary material and avoided digressions and irrelevant material?
- Are your citations in the text and your list of references accurate and complete so that the reader can check your sources?

Vox pop What has been the biggest challenge in your research so far?

Mohamad, second year PhD student investigating failure of ICT projects in public sector organisations

Developing my conceptual [theoretical] framework. I've seen several theses where there's one chapter for the literature review and another chapter for the conceptual framework, but I can't see how to do that without a lot of repetition, and it looks as though you almost have to know what your findings are before you've done the study.

If you are having difficulty in finding a theoretical framework, have a look at the advice in Chapter 15 (section 15.6).

You need to ensure that you have included all the major studies that are relevant to your study. You might also consider it diplomatic to refer to any relevant publication by your supervisor(s) and external examiners. A previous study could be relevant because it focuses on the same or a similar research problem or issue to the one you have in mind. Sometimes students become disillusioned because they think there is no literature on the issue they want to investigate. For example, if you are investigating labour turnover in hotels in Poland, perhaps you will not be able to find any other similar studies. However, you may find research has been done on this topic in other countries, or there are studies of other HRM issues in Poland that illuminate your research. A second way in which previous research can be relevant is the methodology used. References to studies that have used the same methodology

you plan to use or references to studies that have used a different research methodology in a similar subject area are essential. If you decide the item is not relevant, put it in a safe place in case you change your mind later.

A critical analysis of the literature identifies and appraises the contribution to knowledge made by others and comments on any weaknesses. Comments might focus on such matters as the reliability, validity and generalisability of the findings, which we discussed in Chapter 4. The gaps and deficiencies in the literature are relevant because they suggest the specific areas where further research is needed. Most researchers highlight the limitations of their work and suggest avenues for future research. If you have difficulty in identifying a specific research problem or issue, consider:

- testing a theory in a different setting
- making a new analysis of existing data
- replicating a previous study to provide up-to-date knowledge.

Reviewing the literature involves locating, reading and evaluating previous studies as well as reports of casual observation and opinion (Gall, Gall and Borg, 2003). Therefore, a literature review is not merely a description of previous studies and other material you collected during your literature search but requires a critical analysis. Unfortunately, some students do not recognise this, as Bruce (1994) found out. She analysed the views of 41 students at an early stage in their studies and identified six ways in which they viewed the literature review. It is useful to think of these categories as being successive layers in a student's understanding of the nature and purpose of a literature review, with the deeper level of understanding captured by the last three descriptions:

- a list, with the primary focus on cataloguing what was read, rather than extracting and using the knowledge in the literature
- a search, with the emphasis on finding the extant (existing) literature
- a survey, where the researcher is interested in the knowledge in the literature, but does not relate it to his or her own activities
- a vehicle for learning, where the researcher considers he or she is improving his or her own personal knowledge on the subject
- a research facilitator, where the researcher improves not only his or her own knowledge, but the literature has an impact on the research project itself
- a report, which is a synthesis of the literature and the earlier experiences with which the researcher has engaged.

Box 5.8 shows a simple example of how to avoid summarising one article after another and turning your review into the equivalent of a shopping list.

Box 5.8 Avoiding a shopping list approach

Shopping list approach

Davis (2005) found that white rabbits bred more prolifically than those with dark coloured fur.
Smith (2006) argued that Davis (2005) did not define 'dark' fur.
Jones (2007) used five well-defined colours of rabbit and found evidence that white rabbits are the most prolific breeders.

Attempt at synthesis

The identification of the colour of a rabbit's fur as a predictor of fertility is controversial. Although it has been claimed that white rabbits are better breeders than rabbits of other colours (Davis, 2005), the reliability of this conclusion has been questioned on the grounds that non-white colours have not been clearly defined (Smith, 2008). Evidence from a recent study by Jones (2007) suggests that white rabbits are indeed more prolific breeders than the four other well-defined colours of rabbit.

Box 5.9 shows a checklist for a literature review that draws together the main issues.

Box 5.9 Checklist for the literature review

- Have you cited the most important experts in your field?
- Have you referred to major research studies which have contributed to our knowledge?
- Have you referred to articles in the most important academic journals in your area?
- Have you identified any major government or other institutional study in your research field?
- Have you identified studies that use the same paradigms and methodologies you propose?
- Have you identified serious criticisms of any of the studies conducted?
- Have you avoided plagiarism?

5.5 Avoiding plagiarism

Plagiarism is the act of taking someone's words, ideas or other information and passing them off as your own because you fail to acknowledge the original source.

Plagiarism is the act of taking someone's words, ideas or other information and passing them off as your own because you fail to acknowledge the original source. It is a form of academic misconduct that is taken very seriously, as it is the equivalent of stealing intellectual property. Plagiarism of this type is easily avoided if you follow the rules of one of the standard referencing systems, such as the Harvard system we have described. In this chapter, we have emphasised the absolute necessity of applying the rules of the referencing system you are using when writing your literature review, but we would now like to emphasise that this is necessary throughout your work, whether you are writing a research proposal, your final dissertation or thesis, or an academic conference paper or article from your research.

The reason why it is imperative to avoid plagiarism is that your supervisors, examiners and others evaluating your research need to distinguish between the contribution to knowledge made by others and the contribution made by your study. It is your responsibility to ensure that your work is meticulously referenced, that every quotation is enclosed in quotation marks and, whether it is text, a table, a diagram or other item that is reproduced, you show it exactly as it is in the original. This includes the punctuation, any emphasis (such as capital letters, italics or bold) and layout. This does not apply if you are using your own words or developing someone else's table, diagram or other item, where you still acknowledge the source but can present the data as you choose.

There are several extreme forms of academic plagiarism. One is to try to pass off an entire piece of work or part of a piece of work as your own that has been written by someone else. For example, a dissertation from an essay-mill website or one that has been written by a friend or relation at another institution. Your supervisor(s) will be well aware of this type of plagiarism, which is often easily identifiable due to the poor quality of the written work and the students' low level of understanding of the content.

Self-plagiarism is the act of reusing your own published words, ideas or other information and passing them off as new because you fail to acknowledge the original source.

Self-plagiarism is another form of plagiarism to avoid. Self-plagiarism is the act of reusing your own published words, ideas or other information. One example is to submit the same research report you had assessed as part of a previous course or degree programme as your dissertation or thesis for a subsequent award. In other words, you cannot receive credits for the same piece of research. There are other forms of self-plagiarism which are important if you are planning to publish your research. Therefore, we look at this again in Chapter 15 in the context of writing conference papers and journal articles. This should be of particular interest to doctoral students and others planning to publish their research.

Most universities now require students to submit their work via online systems that incorporate sophisticated plagiarism-detection software, so there is a high risk of getting caught if you cheat. It is not a defence to say you were not aware that you had committed plagiarism. Therefore, you need to familiarise yourself with the regulations (and penalties) that apply in your institution. If you are still in any doubt about what constitutes plagiarism, seek advice from your supervisor.

To help you avoid the pitfalls, Box 5.10 provides a checklist for referencing under the Harvard system.

Box 5.10 Checklist for referencing under the Harvard system

- Have I acknowledged other people's work, ideas and all sources of secondary data?
- Have I enclosed quotations in quotation marks and cited the author(s), date and page number in the original source?
- Have I acknowledged the source of all tables, diagrams and other items reproduced, including the number of the page in the original source?
- Have I applied the rules consistently?
- Have I included full bibliographic details for every source cited in my list of references?

5.6 Conclusions

Searching and reviewing the literature is a major part of your research and, although an intensive phase at the start of the project, will continue on a smaller scale until you submit your dissertation or thesis. Therefore, it is essential to start as soon as possible. This will be when you have chosen a general topic that is relevant to your programme; it does not matter that you have not yet identified a particular research problem or issue to investigate, because you will identify this from studying the literature and identifying the need for your study. Most students will be required to incorporate a preliminary literature review in their research proposal, and this will be essential if you are applying for funding. All students will need to write a comprehensive critical literature review for their dissertation or thesis.

Searching the literature is time-consuming. It is rarely a problem locating literature but often a matter of not becoming overwhelmed by the number of items found. In this chapter, we have given you guidance on how to define the scope of your research and narrow your search so that you focus as closely as possible on the relevant literature. You will then need to become familiar with the literature, which means setting aside plenty of time to read it, select what is relevant to your study and analyse it using a systematic method. You will write about the methods you used to search the literature (and what sources you searched) and how you analysed the material in your methodology chapter in your dissertation or thesis. In your proposal, you only need to indicate the main sources you will use, such as the journals and databases to which your institution subscribes.

In your literature review, and throughout your research, you must cite your sources correctly and provide full bibliographic details in your list of references. We have explained the principal rules of the Harvard system of referencing, but you must check which system you are expected to use. If your institution uses the APA system, you will find it is very similar to the Harvard system. More information on referencing will be available from your library and supervisor. It is your responsibility to ensure that you have not committed plagiarism. Many institutions use detection software to check for this and your supervisor will also be alert to this form of cheating. We have warned you about the dangers of plagiarism because it is taken very seriously and the penalties are harsh.

Remember that your literature review is not a shopping list and you must write a critical analysis that builds the case for your research questions. Therefore, it is logical that you conclude by identifying the need for your study and the main research question(s) it addresses. If you are a positivist, an important function of the literature review is to develop a theoretical framework and hypotheses.

References for further reading

Bruce, C. S. (1994) 'Research students' early experiences of the dissertation literature review', *Studies in Higher Education*, 9(2), pp. 217–29.

Creswell, J. W. (2014) *Research Design*, 4th edn. Thousand Oaks, CA: SAGE.

Gall, M. D., Gall, J. P. and Borg, W. R. (2003) *Educational Research: An Introduction*, 7th edn. Boston: Allyn & Bacon.

Pears, R. and Shields, G. (2019) *Cite Them Right*, 11th edn. London: Red Globe Press.
Ryan, B., Scapens, R. W. and Theobald, M. (2002) *Research Method and Methodology in Finance and Accounting*, 2nd edn. London: Thomson.
Tornatzky, L.G. and Fleischer, M. (1990) *The Processes of Technological Innovation*. Lexington: Lexington Books.
Wallace, M. and Wray, A. (2011) *Critical Reading and Writing for Postgraduates*, 2nd edn. London: SAGE.

Activities

1 Take four different journals from different disciplines in your library and identify which system of referencing each journal uses.
2 Using an appropriate bibliographic database, search for information on a well-known company in your own country. Limit your results by date, country or any other variable available on the database. Repeat this with another database and compare the number of 'hits' you get and the features of the search facilities and presentation of the results.
3 Identify a major author in your field of research and conduct a search for all articles he or she has written. If any are co-authored, search for articles published by each author individually.
4 List the main findings of six key articles on your field of research. Then write a synthesis of the findings in no more than two paragraphs.
5 Literature review exercise

The following reviews have been written by two students who have read the same articles. Which do you think is the better review and why?

Review 1

Roller-blading in the UK may have its roots in the 1990s, but it continues to be popular. Jane Iceslider (2010) describes roller-blading as a means of keeping fit for ice skating during the summer months. In a later article she reinforces this view, as evidenced by her comment, 'All my ice-skating friends use roller-blading as part of their fitness training' (Iceslider, 2012, p. 56).

Greg Sniffer, a reformed drug dealer, argues that roller-blades are used to provide 'quick escape from any nosy cops' (Sniffer, 2015, p. 122).

Social worker, John Goodchild, describes roller-blading as 'a non-contact dance replacement activity for young people' (Goodchild, 2010, p. 29). He cites the growing popularity of children's roller discos in support of his claim. In a later article he notes that 'rollerblading is becoming an environmentally-friendly means of transportation in urban locations' (Goodchild, 2012, p. 30).

In his school magazine, Jason Scruff, describes roller-blading as being great fun, adding that all his mates go roller-blading (Scruff, J., 2010). In the same article he mentions how using roller-blades allows him to finish his paper round much faster than when walking. In an accompanying article, Melanie Scruff (Jason's sister), contends that 'roller discos are a great place to meet boys' (Scruff, M., 2010, p. 3) and that she would rather roller-blade into town to meet friends on a Saturday than walk or catch the bus.

Review 2

Roller-blading in the UK may have its roots in the 1990s, but it continues to be popular. There is little agreement between authors for the reasons why people roller-blade in the UK. Initially it appears to have been a keep-fit activity (Iceslider, 2010 and 2012), but over time roller-blading appears to have become a fashionable activity (Goodchild, 2010), a social activity (Scruff, M., 2010) and a means of transport (Goodchild, 2012; Sniffer, 2015) and leisure (Scruff, M., 2010).

There is some evidence that young people have multiple reasons for roller-blading. For example, one teenager's motivation for roller-blading was in part due to following trends, but also to the speed of transportation compared to walking (Scruff, J., 2012).

Although it is possible that Goodchild (2010 and 2012) has based his conclusions on informal observation of particular cases of children's behaviour, there appears to have been no formal research into the reasons for the popularity of roller-blading in the UK. Therefore, there is scope for an exploratory study to identify the main motivations for the popularity of this activity.

References

Goodchild, J. D. (2010) 'The sociology of rollerblading', *Journal of Street Credibility*, 1 (1), pp. 29–33.
Goodchild, J. D. (2012) 'Rollerblading to save the planet', *Journal of Street Credibility*, 3 (3), pp. 8–9.
Iceslider, J. (2010) 'Why I rollerblade', *Journal of Fitness*, 3 (2), pp. 21–2.
Iceslider, J. (2012) 'Rollerblade your way to fitness', *Journal of Fitness*, 5 (1), pp. 53–6.
Scruff, J. (2010) 'Roller discos and boys', *Kingston School Magazine*, Summer term, p. 4.
Scruff, M. (2010) 'Rollerblading is cool', *Kingston School Magazine*, Summer term, p. 3.
Sniffer, G. (2015) 'How I kicked the habit', *Rehabilitation Quarterly*, Winter, pp. 122–5.

Adapted from 'A Mock Literature Review' (Anon.)

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter and sections 15.2, 15.5, 15.6, 15.7, 15.9, 15.10 and 15.14 in particular, which relate specifically to this chapter.

6

Writing your research proposal

Learning objectives

When you have studied this chapter, you should be able to:

- identify a research problem or issue
- determine the purpose of the research
- identify the main research question(s)
- determine the research design
- write a research proposal.

6.1 Introduction

Having identified your research paradigm, selected a research topic and begun to investigate the relevant literature, you are now ready to design your study and write your research proposal. If you are a student, the intellectual sophistication and length of your proposal will depend on the level and requirements of your programme, but once accepted by your supervisor(s), this critical document provides you with a detailed plan for your study. If you are bidding for research funds, your proposal will also play an important role.

This chapter draws together much of the information and guidance given in earlier chapters. We start by guiding you through the process of designing your research and then go on to explain how to communicate the main features of your proposed study in your research proposal. It is important to remember that we are only able to give general advice, and you will need to follow the specific requirements of your institution. For most students, writing their research proposal is the first formal milestone in their studies and paves the way for their dissertation or thesis. If you are studying for a Master's degree or a doctorate, it is likely that your research proposal will need to be more substantial than the proposal required for a Bachelor's degree. This means you will have to spend more time working on it to obtain the approval of your supervisor(s) and/or research committee. All students should find it useful to look at the examples of proposals at the end of the chapter.

6.2 Overview of research design

A **research proposal** is a document that describes the purpose of the proposed study and the context, as well as providing an overview of the main literature and details of the research design.

A **research proposal** is a document that describes the purpose of the proposed study and the context, as well as providing an overview of the main literature and details of the research design. Before you can begin writing your research proposal, you need to have found a research problem to investigate within your topic of interest and identified your research paradigm. Your topic must be relevant to your degree programme and, of course, it must also be of interest to you. You will remember that for most students the assumptions of the researcher's paradigm provide the philosophical framework that underpins the choice of methodology and methods. Therefore, the methodology and methods you select to address your research questions will be chosen from those associated with your research paradigm.

The research design stage requires you to spend time drawing up a detailed plan for how you will conduct your study to get the most valid findings. This is an important step because you will need your supervisor's approval (and approval from any other authority in your university or college who is responsible for research ethics) before you can start collecting your research data. Once approved, your research design will guide your research.

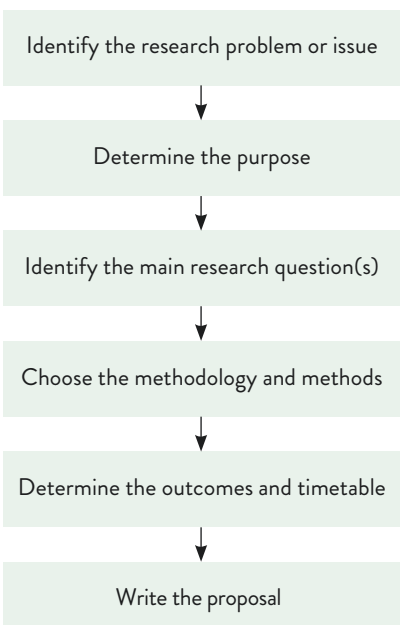


Figure 6.1 Main steps in research design

McKerchar (2009) identifies the following characteristics of good research design:

- There is a good fit between the methodology and a research paradigm that is understood and accepted by others, especially your supervisor.
- There is a fundamental framework or structure that guides the conduct of the research.
- Appropriate strategies of inquiry or research methods are employed.
- The research design allows for knowledge claims to be made that are consistent with the strategy of inquiry.
- It allows the researcher to address the research question(s) and hence meet the aims and objectives of the study.

However, there are a number of constraints on achieving the optimal research design as Bono and McNamara (2011, p. 657) point out: 'The practical problem confronting researchers as they design studies is that (a) there are no hard and fast rules to apply; matching research design to research questions is as much art as science; and (b) external factors sometimes constrain researchers' ability to carry out optimal designs.' Figure 6.1 shows the main steps in research design.

This simple model suggests the process is linear and moves smoothly from the research problem to the expected outcome. In practice, however, the process is often circular, reiterative and time-consuming, so do not be surprised if you find yourself constantly reviewing previous stages as you progress. We will now examine each of the stages of research design shown in Figure 6.1 in detail.

6.3 The research problem

6.3.1 Identifying a research problem

A **research problem** is the particular problem or issue that is the focus of the research.

The first step in designing your research is to identify a **research problem** or issue to investigate. A research problem is the specific problem or issue that is the focus of the research. However, you must remember that identifying a research problem does not take place in a vacuum, but in a particular context. Although you might have determined your research paradigm already, you may find you have selected a research problem where you consider it is necessary to change some of your basic assumptions. Therefore, you may need to review your choice of paradigm and reflect on how appropriate it is to the problem you have identified. Another possibility is that you have picked a problem which is not acceptable to your supervisor or which for practical reasons cannot be investigated.

When you have identified your research problem, you will find it useful to write a simple statement describing it to help you to remain focused while planning the design of your research. Table 6.1 gives some examples of research problems in business that other students have chosen to investigate.

Table 6.1 Examples of research problems

Research topic	Research problem
Accounting regulations	Whether accounting practices should be regulated by the government or by the accounting profession
Corporate governance	How corporate governance can be extended to employee communications
Accounting in the NHS	The use of financial and/or management accounting by doctors in general practice
Financial reporting	The most effective ways for communicating financial information to stakeholders
Environmental issues in manufacturing	The influence of 'green' factors on supplier selection in the manufacturing sector
Gender issues in employment	The effect of career-break schemes on the recruitment and retention of skilled staff
Communication methods	The effectiveness of public service announcements for communicating with students

Identifying a research problem or issue is always an exploratory and reiterative phase in your research. There are a number of ways in which you can develop your ideas within a general topic of interest. These include reading the relevant literature, discussing your ideas with your lecturers and other students, and looking at previous students' dissertations and theses. You need to bear in mind that your research project must be achievable in terms of the resources available, your skills and the time constraints imposed by the submission date. It must also be sufficiently challenging to meet the academic standards expected at your level of study.

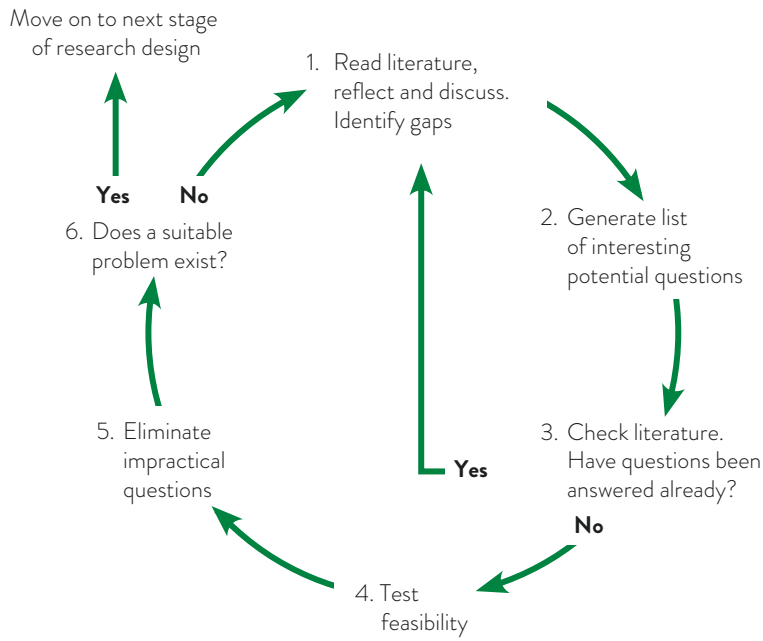


Figure 6.2 Identifying a research problem

The classic way in academic research is to read the literature on the topic of interest to you and identify any gaps and deficiencies in previous studies, since these will indicate opportunities for further research. Figure 6.2 shows a useful procedure for doing this. Identifying a research problem or issue can be a lengthy business since you have to keep revising your initial ideas and referring to the literature until you arrive at a business problem or issue you think will lead to a researchable project. You know that you are arriving at this stage when you can start generating suitable research questions.

Your initial search will probably result in three or four projects within your broad area of interest. You now need to compare them so that you can select one. At this stage it is helpful to eliminate any research problems you consider are unlikely to lead to a successful outcome. Although you might select a topic that is of great interest to you (and your supervisor), at the end of the day you will want to submit a research report which receives a high mark from the examiner or is accepted by the research/doctoral committee. Therefore, you need to examine your list of potential research problems critically and make certain that you select the one likely to give you the highest chance of success. We discuss the specific issues that give some indication of which of the research problems or issues you identify are likely to be the most researchable next.

6.3.2 Access to data

Data are known facts or things used as a basis for inference or reckoning.

Obtaining access to data is crucial to the successful outcome of your research. The term **data** refers to known facts or things used as a basis for inference or analysis. You will need to find out whether you will be able to have access to all the secondary and/or primary data you need for your study. Although you are probably able to think of a number of interesting problems, your final choice might be constrained because the necessary data either are not available or are very difficult to collect.

Many students fail to appreciate the barriers to collecting data. For example, questionnaire response rates are often very low. Companies rarely provide commercially sensitive information and, in many cases, may not have suitable records that allow them to provide the required data. Therefore, before deciding on your research project, you must be sure that you will be able to get the data and other information you will need to conduct your research. Table 6.2 provides a checklist that you can use for assessing the availability of data.

Table 6.2 Assessing the availability of data

Type of data	Source
The literature	Check journal databases for academic articles, the library catalogue and Internet for other publications.
Official statistics	National jurisdictions, the European Commission and international organisations such as the World Bank publish statistics on their websites. Some might be available in your library.
Industry data	You may need background information about a particular industry. Check your library catalogue, databases and the Internet.
Company data	Information might be available on the company's website and the company's annual report and accounts (which contains extensive narrative information in the case of listed companies). Check your library catalogue for other publications.
Internal data	List the information you require from the organisation's records and get permission/confirmation of access in writing. Do not use unethical methods, such as asking a friend who happens to work in the accounts department!
People	How many will you need to see? Do you know them already? Have you got the necessary communication skills and recording equipment? Do you have sufficient funds and time?
Surveys	Where will you find a list of relevant organisations and contact details? How many interviews or questionnaires will you need for your analysis? What response rate do you anticipate? Do you have sufficient funds and time?

6.3.3 Your skills and resources

When planning your research, you need to consider the skills and resources you will need to conduct your research. You should be able to gain a reasonable understanding of your subject area by reading the relevant literature, but you will also need other skills. For example:

- IT skills for searching the literature and analysing data
- creative skills for designing questions and visual communication of concepts
- verbal communication skills for interviewing
- knowledge of statistics if you are planning a quantitative analysis
- general analytical skills if you are planning to interpret qualitative data
- verbal and written communication skills for presenting your research.

If you know that you have certain weaknesses, you need to assess whether you can overcome them in the time available. Your project is a period of development and you should welcome any opportunity to improve your skills and exploit your existing strengths.

When considering different research problems, it is useful to look at the implications of your choice. We summarise the main criteria for assessing potential research topics in Box 6.1.

Box 6.1 Criteria for assessing a research topic

- Is the topic relevant to your degree?
- Is the scope of the topic sufficiently narrow to make it feasible?
- Do you have access to the data you will need to research this topic?
- Do you have enough time to develop the knowledge and skills to research this topic?
- Is your interest in this topic sufficient to keep you motivated over the duration of the research?

- Is an article on this topic likely to be publishable in an academic journal (or attractive to a research committee)?
- Will the study fill a gap in knowledge, extend or replicate a previous study or develop new ideas in the literature?
- Will the study enhance your employability?

6.4 Purpose of the research

Once you have chosen a suitable research problem or issue, your next task is to determine the overall purpose of the research and the unit of analysis. The unit of analysis is the phenomenon under study, about which data are collected and analysed. It is closely linked to the research problem and research questions. In business research, a unit of analysis might be a particular organisation, division or department within an organisation, or a more general group, such as business owners, managers, advisers or regulators. Other examples include inanimate objects such as a particular type of business communication, contract, decision, event or procedure. In general, you should select a unit of analysis at as low a level as possible. This should be the level at which decisions are made. Table 6.3 shows examples of different units of analysis, starting at the lowest and simplest level.

Table 6.3 Examples of units of analysis

Unit of analysis	Example
An individual	A manager, employee, union member, investor, lender, supplier or customer
An event	A merger, strike, relocation, acquisition, change of leadership, change of strategy, or decision to divest or close
An object	A machine, product, service or document
An organisation or group of people	A type of business, division, department, committee or particular group of employees
A relationship	A manager/subordinate relationship, management/union relationship, head office/branch relationship, investor/manager relationship or customer/supplier relationship
An aggregate	A collection of undifferentiated individuals or bodies with no internal structure, such as companies in a certain industry, businesses of a certain size or in a particular location

Once you have decided on your unit of analysis, you are ready to state the purpose of your study. This can be achieved by writing two or three clear and succinct sentences that explain the overall aim of the research and the more detailed objectives. The content of your purpose statement depends on whether you are designing your research under a positivist or an interpretivist paradigm. You will use the future tense when explaining the purpose of the study in your proposal, but in your dissertation or thesis you will use the present tense. Your writing style will reflect your rhetorical assumptions.

In a positivist study, the researcher adopts a formal style and uses the passive voice, accepted quantitative words and set definitions. For example, instead of writing 'I will conduct a survey…' you will write 'A survey will be conducted…'. This is because positivists are trying to convey their rhetorical assumptions (see Chapter 4) and emphasise their independence and objectivity. The purpose statement needs to identify the sample, the unit of analysis and the variables to be studied. It might also be appropriate to identify key theory and the methods to be employed. The statement does not have to follow a formula. In the example in Box 6.2, the researcher explains the purpose of the research at the same time as describing the context and rationale for the study.

Box 6.2 Example of a purpose statement in a positivist study

The motivation for the proposed study is the lack of evidence on the link between the auditing and filing choices of small private companies in the UK. The purpose of the study is to address the gap in the literature by investigating the determinants of two voluntary behaviours in micro- and non-micro small private companies: non-statutory audit and the filing of voluntary full accounts. The research will examine the reasons for the auditing and filing decisions made in connection with the companies' financial statements for accounting periods ending in 2006 in the context of the UK raising the size thresholds for a small company to the EU maxima in 2004. It will also explore the potential impact of the proposed Directive on accounting for 'micro-entities', which has the potential to reduce accounting and financial reporting obligations for approximately some 60% of registered companies in the UK (BIS/FRC, 2011).

The proposed research will focus on a sample of 592 small companies in the UK, which includes 419 companies that are likely to be categorised as micro-companies under the European Commission's proposed Directive on accounting for 'micro-entities' (EC, 2007, 2011). The sample represents a subset of private companies that took part in a survey commissioned by the Department for Business, Enterprise and Regulatory Reform (Collis, 2008).

The study will provide models that can be tested in other jurisdictions to provide evidence of the needs of micro-companies. The results should be of interest to those conducting future regulatory impact assessments on changes in the accounting and auditing requirements for smaller private companies.

Source: Extract from the proposal for Collis (2012).

In an interpretivist study it is normal to emphasise the methodology employed and to imply the inductive nature of the research. The central phenomenon being explored should be described as well as the location of the study. To reflect the rhetorical assumption of this paradigm, the researcher uses the personal voice, accepted qualitative terms and limited definitions. For example, instead of writing 'Interviews will be held with…' you will write 'I will hold interviews with…'. This is because you are trying to convey the philosophical assumptions that are appropriate to your paradigm, emphasising your involvement and subjectivity. In the example in Box 6.3, the researcher explains the purpose of the study and also gives details of the research questions.

Box 6.3 Example of a purpose statement in an interpretivist study

The purpose of the proposed study is to address gaps in the literature by providing empirical evidence on the value of the financial statements of incorporated and unincorporated SMEs in the context of trade credit decisions that support customer/supplier relationships. To obtain insights into potential international differences, we examine cases in Finland, the UK, South Africa and the USA in order to investigate the following research questions:

1. What are the main sources of information and types of information used by SMEs when making credit decisions in connection with new or existing customers?
2. What are the main sources and types of information used by credit rating agencies and credit insurers when making credit rating decisions?
3. In both cases, how is the information used and for what purposes?
4. In both cases, what other information would the decision-maker like to see in the financial statements that would aid their decision?
5. What are the international similarities and differences in the findings in the context of institutional factors?

Quantitative approaches provide limited information on the relative usefulness of different sources of financial and other information used for decision making, whereas an in-depth analysis of qualitative data can yield rich insights. Therefore, the methodology for the proposed study will be based on a small number of semi-structured interviews in each country:

- Two with small non-publicly accountable companies that are trade creditors and trade debtors
- Two with unincorporated small or micro-entities
- Two with large companies with SME suppliers or customers

In addition, one interview will be held with an international credit rating agency and another with an international credit insurer.

The main risk is obtaining access to participants who are willing to be interviewed. This will be mitigated by using researchers in each country who have been successful in finding interviewees in previous projects.

The proposed research will add to our knowledge of the process of the credit decision and highlight what information is used and by whom. It will also provide information for future evidence-based policy decisions by regulators, the accountancy profession and other stakeholders.

Source: Extract from the proposal for Collis, Jarvis and Page (2013).

6.5 The research questions

A **research question** is the specific question relating to the research problem that is addressed by the research.

When you explain the purpose of your study, you may only give the overall aim and detailed objectives, but you can see from the example in Box 6.3 that the researchers have listed their **research questions**. A research question states the specific line of inquiry the research will investigate and attempt to answer. Therefore, your research questions provide a focus for your endeavours and are not the actual questions you might use in a questionnaire or interview. Identifying the research question(s) is a crucial stage in your research because it lies at the heart of your research design.

Figure 6.3 shows a simple model of how you can develop research questions. At each stage in the process you need to read, reflect and discuss what you are doing with others. The people you discuss your research with might be fellow students as well as your supervisor. We

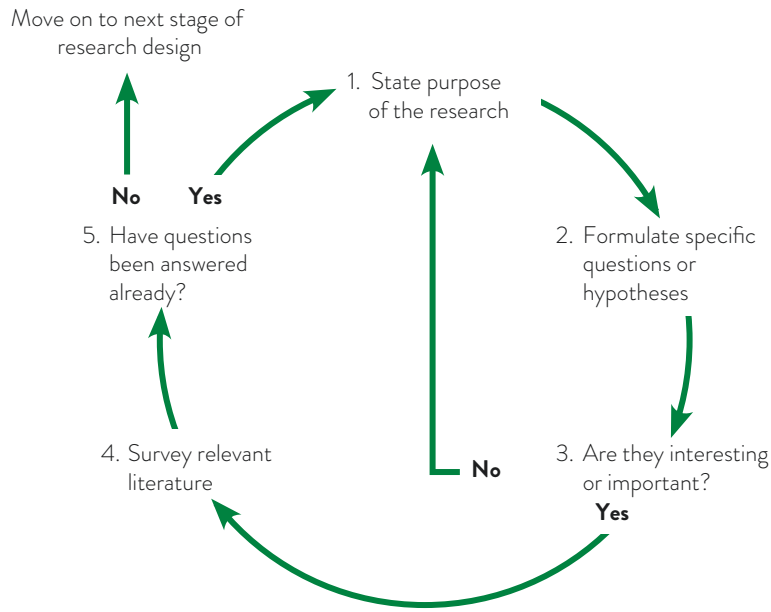


Figure 6.3 Identifying research questions

have already identified research as a process of inquiry, so the outcome of your investigation will be answers. However, you must ensure that the answers will be of interest or importance, otherwise your research will not receive much attention.

Before launching your investigations, you must search the relevant literature to see if anyone else has already answered your particular questions. If not, you can commence your research. However, if work has already been done in your chosen area, you may need to find ways of amending your proposed research so that it will produce new findings by extending or updating the existing body of knowledge.

6.5.1 Role of theory

A **theory** is a set of interrelated variables, definitions and propositions that specifies relationships among the variables, and a **variable** is a characteristic of a phenomenon that can be observed or measured. A **theoretical framework** is a collection of theories and models from the literature. It is a fundamental part of most research studies and underpins the research questions. However, these can also be suggested by empirical evidence (from an exploratory study, for example), from which you subsequently develop a theory and construct propositions to test.

Although some applied research has no theoretical background, if theory exists, you can develop a testable **hypothesis**. A hypothesis is a proposition that can be tested for association or causality against empirical evidence using statistics. Thus, hypotheses are associated with the positivist paradigm where the logic of the research is deductive and quantitative methods of analysis are used. In an interpretivist study, you are more likely to determine the purpose of your research and construct only one or two questions that you will refine and modify, and set within a theoretical context during the course of the research itself.

According to Merriam (1988), theories can be classified into three types:

- grand theories, which are most often found in the natural sciences (such as the law of gravity)
- middle-range theories, which are placed higher than mere working hypotheses, but do not have the status of a grand theory
- substantive theories, which are developed within a certain context.

However, a seminal article by Laughlin (1995, p. 81) argues that in the social sciences it is not possible to have a grand theory, only skeletal theory, where 'empirical data will always be of importance to make the skeleton complete in particular contexts'. This does not mean that the theory will be changed or permanently completed, but will remain as a general framework within which a study can be conducted. Glaser and Strauss (1967) emphasise the importance of substantive theories, where theory is derived from the data, which they describe as grounded theory (see Chapter 9).

Given these differences of opinion, you may find it confusing trying to develop a theoretical framework. However, there are a number of theories, concepts and models from which you can draw, and you will discover them when you study the literature on your chosen topic. They are important in many studies because they provide possible explanations for what is observed.

A **theory** is a set of interrelated variables, definitions and propositions that specifies relationships among the variables.

A **variable** is a characteristic of a phenomenon that can be observed or measured.

A **theoretical framework** is a collection of theories and models from the literature which underpins a positivist study. Theory can be generated from some interpretivist studies.

A **hypothesis** is a proposition that can be tested for association or causality against empirical evidence.

6.5.2 Research questions in a positivist study

Research questions in a positivist study should be stated clearly in the form of a question. You are advised to follow the tradition in your field of research. You might find it is usual to write one overarching research question with associated subsidiary research questions, each of which express a relationship between variables and imply the possibility of empirical testing. These are usually stated in the introductory chapter of your research proposal while the related hypotheses are developed in your literature review.

Your hypotheses will be based on theory. Each hypothesis is a proposition about the relationship between two variables that can be tested for association or causality against the empirical evidence you collect for your study. Each hypothesis will identify the independent variable and the dependent variable. The null hypothesis (H_0) states that the two variables are independent of one another and the alternative hypothesis (H_1) states that they are associated with one another. For example, if theory suggests that older employees work more efficiently than younger employees, your null and alternative hypotheses would be respectively:

H_0 There is no relationship between an employee's age and productivity.

H_1 There is a positive relationship between an employee's age and productivity.

In this example, age is the independent variable and productivity is the dependent variable. The purpose of your research will be to test specific aspects of any theory you have found in the literature which suggests that there is a relationship between age and productivity level. When developing your theoretical framework in your literature review, it is usual to state each hypothesis as it is mentioned in the alternative form. You will give each one a number and use a formal, rhetorical style by repeating the same key phrases in the same order. For example:

H1 There is a positive relationship between an employee's age and the level of productivity.

H2 There is a negative relationship between an employee's age and the level of absenteeism.

H3 There is no relationship between an employee's age and the degree of skill.

You will subsequently use statistics to test whether there is evidence to reject the null hypothesis that states that there is no relationship (see Chapters 11 and 12). This ensures that you adopt a cautious and critical approach.

6.5.3 Research questions in an interpretivist study

In an interpretivist study, a theoretical framework is likely to be less important or less clear in its structure. Some researchers attempt to approach their analysis with no prior theories, as they consider doing so would constrain and blinker them. Instead, they focus on trying to develop a conceptual framework, which is sometimes referred to as substantive theory. It has been argued that 'even in wanting to escape theory, to be open-minded or wanting to believe that theorising was unimportant to science, we would be practising a theory' (Slife and Williams, 1995, p. 9).

The research question in an interpretivist study can take the form of a single research question, posed in its most general form. For example, 'How do employees cope with redundancy in an area of high unemployment?' By doing this, the researcher does not block off any other potential lines of inquiry. This is necessary where an emerging methodology, such as grounded theory, is used and one stage of the research guides the next stage. Nevertheless, the aim of a grand tour question is to focus the study on certain phenomena or a particular direction. It might need to be refined during the course of the research and this could mean you have to change the title of your project to reflect the final research question(s). Creswell (2014) advises one or two grand tour questions, followed by no more than five to seven subsidiary questions.

The criteria for a good research question are less clear in interpretivist studies than in positivist studies. This is due to the importance of the interaction between the researcher and the subject of the study in the former. If you are planning to conduct an interpretivist study, your research questions might evolve during the process of research and you might need to refine or modify them as the study progresses. You will find that there are different customs in different interpretivist methodologies, which will be apparent from the literature you read on your topic. The best advice is to concentrate on the language of the question. It is usual to begin the research questions with 'what' or 'how' and to avoid terms associated with positivism, such as 'cause', 'relationship' or 'association'. Creswell (2014) suggests that you should:

- avoid wording that suggests a relationship between variables, such as 'effect', 'influence', 'impact' or 'determine'
- use open-ended questions without reference to the literature or theory, unless otherwise dictated by the research design
- use a single focus and specify the research site.

Finally, you should not underestimate the influence of your paradigm on your research design. Box 6.4 illustrates this with two examples based on the same research problem and research questions.

Box 6.4 Example of the influence of paradigm on research design

***Topic:* Gender issues in employment**

Research problem: The effect of the new career-break scheme in Firm A on the recruitment and retention of skilled staff

Research question: How has the new career-break scheme contributed to employment in Firm A?

- What is the nature of the scheme? (descriptive)
- What effect has it had on recruitment of male and female skilled staff? (analytical)
- What effect has it had on the retention of male and female skilled staff? (analytical)

Research design for a positivist study:

- Methodology: Case study
- Methods: Statistical analysis of (a) secondary data from staff employment records and (b) primary data from a self-completion questionnaire survey of staff

Research design for an interpretive study:

- Methodology: Case study
- Methods: Thematic analysis of data from semi-structured interviews with staff (primary data)

The final stages of your research design include defining terms, establishing your methodology and giving an indication of the expected outcome. We cover these points when we explain how to write your research proposal in the next section.

6.6 Writing the research proposal

6.6.1 Overview

A **research proposal** is a document that sets out the research design for a proposed study. It explains what is already known about the research topic, the purpose of the research and the main research question(s). It also describes the proposed methodology (including justification for the methods used to select a sample, collect and analyse the research data), the scope of the research and any limitations. It should incorporate a timetable and often concludes with comments on the contribution of the proposed research (the expected outcomes).

A **research proposal** is a document that describes the purpose of the proposed study and the context, as well as providing an overview of the main literature and details of the research design.

Most institutions have a formal process for submitting a research proposal and instructions concerning the contents and the maximum word count. Your supervisor and/or research committee will be looking at academic issues as well as the feasibility of the proposed study.

The main academic issues being assessed are whether:

- the proposed study is based on the literature and is academically robust. You do this by demonstrating that you are familiar with the literature and have identified a main research question.
- the methodology clearly states the source(s) from which you will collect the research data, why you are collecting the data, when you are going to collect the data, and how you are going to collect and analyse the data. Be careful not to overlook the importance of explaining your method for selecting a sample or cases and your method(s) of analysis.
- the proposed study will make a contribution to knowledge (for postgraduate and doctoral students).
- the proposed study will provide opportunities to disseminate research via conference papers and academic journal articles (for doctoral students).

The main practical issues being assessed are whether:

- you have access to the research data (primary, secondary or both). If your research requires access to confidential data, you must provide documentary evidence from the organisation(s) and/or individual(s) confirming that access has been granted.
- you have access to any finance needed to conduct the research and there are no major time constraints that would prevent the completion of the project. Therefore, if you are struggling on a student grant, do not design a study that requires extensive travelling to obtain your data that would be both time-consuming and expensive.
- the outcome is achievable.

Although it is best to use the standard format if your institution provides one, there is still plenty of flexibility to allow you to put your research proposal in its best light. Table 6.4 shows a typical structure of a research proposal, together with some guidance on the proportion of space you should consider devoting to each section.

Table 6.4 Indicative structure of a research proposal

	% of proposal
1. **Introduction** – The research problem or issue and the overall purpose of the study – Background to the study and why it is important or of interest – Aims and objectives of the proposed study – Structure of the remainder of the proposal	15
2. **Preliminary review of the literature** – Evaluation of the main studies/items in the literature – Theoretical or conceptual framework (if applicable) – Gaps and deficiencies in the literature addressed and your main research question(s)	40
3. **Methodology** – Identification of paradigm – Justification for choice of methodology and methods – Scope and delimitations of the research – Limitations of the research design and ethical issues – Demonstrate the study is feasible (access to data, funding, skills and sufficient time)	40
4. **Outcomes and timetable** – Expected contribution of the study – Gantt chart showing time for each stage in the research process	5
	100
References *(do not number this section)*	

The detailed content of your proposal will depend on the nature of your research project and how you intend to conduct it, but we are now ready to look at the main items.

6.6.2 Title

The title of your proposed study should be as brief as possible. Creswell (2014) advises that you use no more than 12 words, consider eliminating most articles and prepositions, and

make sure that it includes the focus or topic of the study. There is no need to include unnecessary phrases, such as 'An approach to…' or 'A study of…'. If you are carrying out research in one particular company or industry, make this clear. You may find it useful to look at the working titles used in the sample of research proposals at the end of this chapter.

6.6.3 Introduction

The research problem or issue that is the focus of the study should be stated clearly in your introduction. It can usually be expressed in one or two sentences. Resist the temptation to write in sentences that are so long that no one can understand them! Try showing your explanation of the research problem to fellow students, family and friends; if they understand it, it is likely you will impress your supervisor with your clarity.

You should follow this with a little background explaining why this issue is important or of interest, and to whom. You could conclude the introduction by explaining the purpose of the proposed study using one of the purpose statements we illustrated earlier, if you find this helpful.

It is important that you define key terms, and any common terms that you are using in a novel way, as they arise in your narrative. You should use a definition from an authoritative academic source, such as a specialist dictionary in your discipline or a seminal paper. We do not advise you to use Wikipedia or online sources from websites that can be posted or edited by the public, although there is no reason why you should not refer to any original sources cited. Remember that the definition should be in quotation marks and you should cite the name of the author(s), the year of publication and page number(s) in brackets next to the quotation. In a positivist study, this is essential and enhances the precision and rigour of your research.

6.6.4 Preliminary literature review

Your preliminary review of the literature should be a critical analysis of the main studies and other key items that are relevant to your chosen research problem or issue you intend to investigate. Do not fall into the trap of taking a 'shopping list' approach to writing about the previous research you have identified in academic journals, books and other sources and remember that your lecturer's slides are not publications! At this stage, you are not expected to review the entire body of existing knowledge on the topic. Your supervisor will be familiar with the literature, so it is imperative that you cite the key authors and refer to the main theories and models. If you are using grounded theory in an interpretivist study, you will still write a preliminary review of the literature, but you will not need to identify a theoretical framework. If you are adopting a grounded theory methodology, you will need to provide a convincing argument for this choice in your methodology section.

Your preliminary review of the literature should conclude with an explanation of where your research fills any gaps or deficiencies in the literature (a gap in the literature is where no knowledge exists about a particular phenomenon in a particular context; a deficiency in the literature might be that the existing knowledge is out of date). This will lead you to state your main research questions and hypotheses (if applicable). Of course, your research questions must be feasible and relate to the research problem identified in the introduction section of your proposal. It is better to omit a question if you know it will be very difficult to address, rather than include it because it looks impressive.

As mentioned in Chapter 5, you may find it useful to design a map of the literature to guide the structure of your preliminary literature review. This map represents a plan (similar to writing an essay plan) and you do not include it in your literature review.

If you are having difficulty in finding articles and other publications on your research topic, or you are unable to write your preliminary literature review, have a look at the advice in Chapter 15 (section 15.9). If you are having difficulty in finding a theoretical framework, refer to section 15.6.

Vox pop What has been the biggest challenge in your research so far?

Mohamad, second year PhD student investigating failure of ICT projects in public sector organisations

The first five or six months you really like your ideas – you're running like a bullet, reading at least 10 articles every day – but after six months you know so much more, and it gets complicated. At the beginning you think everything you know is right; afterwards you realise that you don't know whether it's right or not and the happy feeling really diminishes.

6.6.5 Methodology

The methodology chapter in your research proposal is where you describe your proposed research design. This section is important because it shows how you intend to investigate your research questions. You should be aware by now that your choice is dictated by your research paradigm. Therefore, it is essential to recognise the paradigm you have adopted, but you do not need to justify it. However, you do need to explain and justify your **methodology**, the **methods** you will use to select a sample or cases, and the methods you will use to collect and analyse your research data. You can provide a rationale for your choice by weighing up the advantages and disadvantages of alternatives. You must demonstrate that you have access to the research data you will need by stating the source of the data and the name of any external organisation or contacts who have agreed to help you gain access to data. You also need to show that you have considered ethical issues and any constraints relating to costs and other resources (see Chapter 2).

A **methodology** is an approach to the process of the research, encompassing a body of methods.

A **method** is a technique for collecting and/or analysing data.

Whatever the size of your proposed study, you will have to constrain your inquiries in a number of ways. Therefore, you will need to state the **delimitations** that establish the scope of your research. For example, you might confine your interviews to employees in Firm A or you restrict your questionnaire to certain businesses in a particular geographical area. It can be more difficult to define the scope in an interpretivist study because the nature of the research is one of exploration and discovery.

A **delimitation** establishes the scope of the research.

An approach that can be used under either paradigm is to deconstruct your research question or hypothesis. Parker (1994) illustrates this with a hypothesis from a positivist study, which is shown in Figure 6.4. The process enables you to explain every term in considerable detail within the context of your proposed research. Not only does this give you considerable insight into your research, but you are in a better position to communicate it in your proposal (and in your dissertation or thesis).

Most students will need to discuss issues such as reliability, validity and generalisability, and all students should state the **limitations** of their study. A limitation describes a weakness or deficiency in the research. For example, you might be planning a small exploratory study, from which only tentative conclusions can be drawn. This might be because you are planning a positivist study using a convenience sample rather than a random sample, or you are planning an interpretivist study but do not have the resources to conduct an in-depth case study. Sometimes additional limitations become apparent after the proposal stage and you will need to comment on these when you write your dissertation or thesis.

A **limitation** is a weakness or deficiency in the research.

Students are often reluctant to mention problems with their research. There is no need to emphasise them at the proposal stage, and a comment is usually sufficient. However, you should not ignore them, as they serve two useful purposes:

- to identify potential difficulties, which can be discussed with your supervisor to ascertain whether they need to be resolved or whether they are acceptable in the context of your research design
- to signal at an early stage some of the issues you will need to address both during the course of the research and when writing it up.

If you are having difficulty in deciding which methodology and methods to use, have a look at the advice in Chapter 15 (sections 15.8, 15.10 and 15.12).

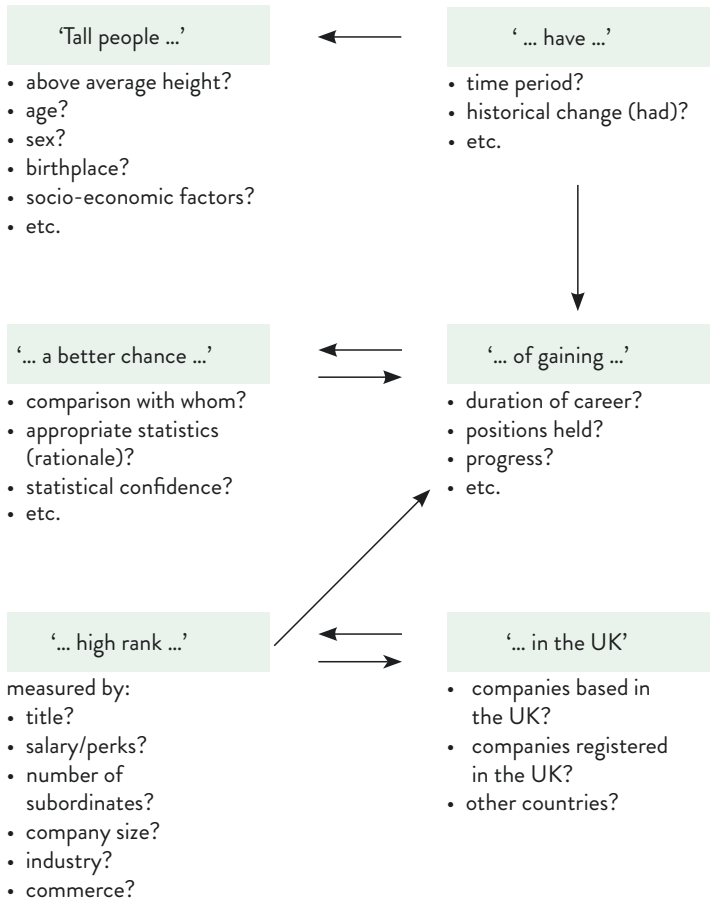


Figure 6.4 Example of deconstruction

Source: Adapted from Parker (1994, p. 24).

6.6.6 Contribution and timetable

At the proposal stage, you cannot describe the contribution of your research in terms of your findings. Therefore, the final section in your proposal is brief and will focus on the expected outcomes of the research. One way to express this is to refer to the purpose of the research. For example, if the purpose of your research is to investigate the impact of a new career-break scheme in Firm A, your expected outcomes are a description of the new scheme and an analysis of the impact of the scheme on the recruitment and retention of staff in Firm A. At all levels of research, but particularly at doctoral level, it is important to emphasise that one outcome of the research is expected to be a contribution to knowledge. In your proposal, this can be stated in terms of the gaps and deficiencies you have identified in the literature.

Your proposed study must take account of the time constraints placed on the project. Therefore, you will need to make a note of the submission date and then set a timetable for each stage in the research process. Once your proposed timetable has been approved, you can use it to check your progress regularly to ensure that you meet the deadline. As we explained in Chapter 2, allow a contingency for delays due to exams, job interviews, holidays, illness, and so on. You must be realistic about what you can achieve in the time you have available. For example, it could take you several days to design and pilot a questionnaire or interview schedule, and several weeks to pilot them.

An easy way to summarise your timetable is to use a Gantt chart with horizontal lines showing the timing of each stage to summarise your timetable. You may find Table 2.3 in Chapter 2 is a useful guide when estimating how long each stage in the research process will take. Figure 6.5 shows a typical example for an undergraduate student.

Task	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April
Search and review the literature								
Design research and write proposal								
Collect research data								
Analyse research data								
Write draft chapters								
Revise, proofread, print and submit								

Figure 6.5 Example of a Gantt chart

6.6.7 Additional information

In some cases, you might need to include additional information in your proposal. If you are applying for funding, you will need to provide a research budget for your planned expenditure on such things as travelling to interviews, printing and postage, paying for reports and papers that are not available on loan, conference attendance, and so on. Table 6.5 shows an example of how you might set out your budget. The figures are illustrative and note that the cost of the researcher's time is not included.

If you are applying for funding, you may also be asked to provide a statement of research activities and interests to provide evidence of your suitability to carry out the proposed study. Box 6.5 shows an example of a suitable succinct statement that can be used as the basis for constructing your own.

Table 6.5 Research budget

Expense	Basis of calculation	Cost	Details
		€	
Travelling expenses	30 interviews @ €30	900	Car mileage from the university
Research reports	10 reports @ €15	150	Not available from library
Research assistant	100 hours @ €20 per hour	2,000	Data input and analysis
Conference	Fees, travel and accommodation	2,250	Dissemination of results
Submission of article	Submission fee	200	*World Journal of Management*
	Total	5,500	

Box 6.5 Statement of research activities and interests

For the past four years I have been very interested in the financial measures used to evaluate the performance of managers. This interest originated with my MBA. My dissertation, which received a distinction, was entitled '*The behavioural aspects of a budgetary control system in a small engineering company*'. From this I have developed three main areas of interest:

- Managerial performance measures in small manufacturing companies
- Managerial performance measures in financial services companies
- Managerial performance measures in charities

My research into these issues has resulted in five conference papers and two refereed journal articles, as shown in my CV. In the past two years I have spent approximately 70% of my research time conducting studies in XYZ Charity. This is a national charity to which I have full access, as confirmed in the attached letter from their CEO. My proposed research would take my previous research further by...

6.6.8 References

The Harvard system of referencing is the method most commonly used in business and management. It allows you to avoid plagiarism by acknowledging all ideas and sources of information you have used in your work with a citation in the text, and providing full bibliographic details at the end under the heading of references. Do not number the heading of this section and do not number the items listed, but place them in alphabetical order by author's name. This will allow any reader to locate and consult the original source of information; you can support all your assertions with an authoritative published source; and you can also show your supervisor the extent of your reading. Remember that however flattering it might be to your lecturers to be cited, their lecture slides are not a publication and you need to refer to the original publications to which they refer.

A citation is made whether the information from your reading of a publication takes the form of a quotation or is summarised in your own words. If you are quoting, or reproducing a table or figure, your citation must include the page number(s) as well as the name(s) of the author(s) and the year of publication (see Chapter 5). You should bear in mind that your ability to apply the accepted system of referencing is one of the criteria against which your proposal will be assessed.

The more academic articles, reports, books and other literature you have read on your research topic or on research methods, the more citations you will have made and the longer your list of references will be. Therefore, you need to keep careful records of all the hard copy and Internet sources you have used. Check that every citation in your proposal has a corresponding entry in your list of references and that you have not listed any items that you did not use and therefore did not cite. It is likely that your supervisor will do this when marking your proposal!

6.7 Evaluating your proposal

You will find that a considerable part of research involves reflecting on the work you have done. Designing your research is no exception. The most common reason for students failing at the proposal stage is because they have not been able to convert their general interest in a topic into the design of a study that will allow them to investigate a specific research problem. You must also ensure your design provides a good fit between your paradigm and the proposed methodology, and that the research process is logical. Your supervisor will be evaluating your research proposal from a practical point of view as well as an academic perspective, and will be assessing the feasibility of the design, given the resources available and the time constraints.

Feedback from peers and other researchers is very important and we strongly advise you to take every opportunity available to present your proposal to peers, at a research seminar or conference. A typical presentation would cover:

1. Title slide: Title of the study, your name and other pertinent details
2. Introduction: The purpose of the study (the aims and objectives) and the context
3. Preliminary literature review: An overview of the main previous studies (a map of the literature, it would provide a useful one-slide summary)
4. Proposed methodology: Sampling method, data collection and data analysis methods
5. Expected contribution.

As you get involved in selecting a suitable research problem and developing an appropriate research design, it is easy to forget the big picture. Here are some words of general advice:

- Try not to be too ambitious. It is much better to submit a modest research proposal which you can achieve than to come to grief on a project which sets out to remedy all the problems of the world.
- Do not try to impress. The use of convoluted language and references to obscure articles does not help. Try to write simply and clearly so that any problems with your proposal can be identified and discussed with your supervisor.

- Discuss your proposal with friends and family. Although they might not be familiar with the subject matter, they can often ask questions about something you have not spotted.
- Be prepared to revise your proposal. It may be that you get part way through and realise that it is not possible to achieve all you set out to do. It is much better to correct this at the planning stage than to start the research and fail to complete it.
- Remember that your proposal is a plan. You will have done a considerable amount of work preparing it; do not throw it all away. You should use your proposal to guide and manage the research. This does not mean that you cannot adapt your work as the research progresses, but the proposal is a map which should indicate your course and allow you to decide why and when to depart from it.
- Allow time between completing your research proposal and submitting it so that you can reflect on it and make improvements.

If you are uncertain about how to write a research proposal that will be acceptable to your supervisor, have a look at the advice in Chapter 15 (section 15.7). Then use the checklist shown in Box 6.6 to evaluate it before you submit it to your supervisor or potential sponsor.

Box 6.6 Project proposal checklist

1. Do you have, or can you acquire, the knowledge and skills to do the research?
2. Do you have the resources, such as computer facilities, travelling expenses?
3. Do you have access to the research data you need? If you need the cooperation of certain organisations or people, have you obtained their consent?
4. Does your title aptly describe your study?
5. Have you described the purpose and importance of your research?
6. Have you written a critical preliminary review of the literature and identified your main research question(s)?
7. Have you described and justified your methodology?
8. Is your timetable realistic?
9. Have you avoided plagiarism and checked that your work is correctly referenced?
10. Have you used the spelling and grammar check?

Just in case you are tempted to think that some of the items in the checklist are optional, Box 6.7 shows ten ways to get your proposal rejected.

Box 6.7 Ten ways to get your proposal turned down

1. Don't follow the directions or guidelines given for your kind of proposal. Omit information that is asked for. Ignore word limits.
2. Ensure the title has little relationship to the stated objectives; and that neither title nor objectives link to the proposed methods or techniques.
3. Produce woolly, ill-defined objectives.
4. Have the statement of the central problem or research focus vague, or obscure it by other discussion.
5. Leave the design and methodology implicit; let them guess.
6. Have some mundane task, routine consultancy or poorly conceptualised data trawl masquerade as a research project.
7. Be unrealistic in what can be achieved with the time and resources you have available.

8. Be either very brief, or preferably, long-winded and repetitive in your proposal. Rely on weight rather than quality.
9. Make it clear what the findings of your research are going to be, and demonstrate how your ideological stance makes this inevitable.
10. Don't worry about a theoretical or conceptual framework for your research. You want to do a down-to-earth study so you can forget all that fancy stuff.

Source: Robson (2011, p. 395). Reproduced with permission.

6.8 Conclusions

In this chapter, we have built on your knowledge from studying the preceding chapters to explain how to design a research study and draw up a detailed plan for carrying out the study. We have explored ways in which you can identify a potential research problem by identifying gaps and deficiencies in the literature, and how the purpose of the research can be communicated succinctly through the use of a purpose statement. We have also discussed the role of the main research question(s), and the importance of determining your main research questions and a theoretical framework (the latter is not applicable if you are using a grounded theory methodology). We have looked at the role of hypotheses in a positivist study and the influence of your paradigm on your choice of methodology. Positivist and interpretivist studies will have different research designs. A positivist research design will incorporate a stronger theoretical basis and it will be necessary to develop hypotheses. There will be an emphasis on the proposed measurement and analysis of the research data. An interpretivist research design might incorporate a theoretical framework and set out various propositions, but the emphasis is more likely to be on the robustness of the methods that will be used to analyse the research data.

We have described how to write a research proposal, looked at a typical structure and suggested additional items that might need to be included, such as a statement of required resources, a budget or a statement of research activities and interests. Once your research proposal has been accepted, you can start collecting your research data. However, the acceptance of your proposal does not necessarily mean that your research project will be successful. A research proposal is merely a plan and the next step is to execute that plan. We explain how you can do this in the chapters that follow. You have already made a start because the majority of the sections you have written in your proposal will provide draft material for the chapters of your dissertation or thesis. During the course of your study, you should be adding to these draft chapters, discussing them with your supervisor(s) and making amendments.

Although every research proposal is unique, it is useful to look at other proposals. If you can obtain examples of successful proposals from your supervisor, these provide the best guide to what is acceptable at your own institution. The appendix at the end of this chapter contains a number of research proposals submitted by MPhil and PhD candidates. For the purpose of this book, they have been abbreviated and therefore some of the richness of a full proposal is lost. Nevertheless, they provide useful illustrations of the style and content of postgraduate and doctoral proposals.

References for further reading

Bono, J. E. and McNamara, G. (2011) 'Publishing in *AMJ* – Part 2: Research design.', *Academy of Management Journal*, 54(4), pp. 657–60.

Collis, J. (2012) 'Determinants of voluntary audit and voluntary full accounts in micro- and non-micro small companies in the UK', *Accounting and Business Research*, 42(4), pp. 1–28.

Collis, J., Jarvis, R. and Page, M. (2013) *Value of the Financial Statements of SMEs to Creditors*, ACCA Research Report. London: CAET.

Glaser, B. and Strauss, A. (1967) *The Discovery of Grounded Theory*. Chicago, IL: Aldine.

Laughlin, R. (1995) 'Methodological themes – Empirical research in accounting: Alternative approaches and a case for "middle-range" thinking', *Accounting, Auditing and Accountability Journal*, 8(1), pp. 63–87.

McKerchar, M. (2009) 'Philosophical Paradigms, Inquiry Strategies and Knowledge Claims: Applying the Principles of Research Design and Conduct to Taxation', University of New South Wales Faculty of Law Research Series 2009, Working Paper 31.

Merriam, S. B. (1988) *Case Study Research in Education: A Qualitative Approach*. San Francisco, CA: Jossey-Bass.
Parker, D. (1994) *Tackling Coursework: Assignments, Reports and Presentations*. London: DP Publications.
Robson, C. (2011) *Real World Research*, 3rd edn. Chichester: Wiley.
Slife, B. D. and Williams, R. N. (1995) *What's Behind the Research: Discovering Hidden Assumptions in the Behavioural Sciences*. Thousand Oaks, CA: SAGE.

Activities

1 Compare two potential research topics using the following criteria.

	Topic 1	*Topic 2*
a) Is the topic researchable, given time, resources and availability of data?		
b) Is there a personal interest in the topic in order to sustain attention?		
c) Will the results from the study be of interest to others?		
d) Is the topic likely to be publishable in a scholarly journal or attractive to a research committee?		
e) Does the study fill a void, replicate, extend or develop new ideas in the scholarly literature?		
f) Will the project contribute to career goals?		

2 Describe the purpose of your research by writing a positivist purpose statement using the guidelines in the chapter. Then rewrite it as an interpretivist purpose statement.

3 Set down your initial ideas for a proposed study by completing the following form.

Main research question ....
a) What is your unit of analysis?
b) What data are you going to collect?
c) Why are you collecting the data?
d) How will you collect the data?
e) When will you collect the data?
f) How will you analyse the data?

4 Now deconstruct your research question as explained in this chapter.

5 Consolidate your answers to the previous questions and construct an outline research proposal. Evaluate the contents of your plan in accordance with the guidance given at the end of this chapter.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter and sections 15.2, 15.5, 15.6, 15.7 and 15.8 in particular, which relate specifically to this chapter.

Appendix

Examples of business research proposals

Research area: Accounting decision making

Evaluating investment decisions in advanced manufacturing systems: a fuzzy set theory approach

Research problem and literature overview

An important function of management accounting systems is providing managers with models that evaluate all relevant information needed for making investment decisions (Accola, 1994). Although Discounted Cash Flow Models (DCFM) have been widely accepted by both academicians and practitioners as a sound approach to investment decisions (Klammer, Koch and Wilner, 1991; Wilner, Koch and Klammer, 1992; Cheung, 1993), many authors have criticised applying them to evaluate the investment in Advanced Manufacturing Systems (AMS) (for example Mensah and Miranti, 1989; Medearis, Helms and Ettkin, 1990) because these models are biased in favour of short-term investments whose benefits are more easily quantified than longer term projects. Consequently, these authors concluded that DCFM should not be applied to evaluate the investments in AMS. The most difficult task associated with applying DCFM in evaluating AMS investments lies in the existence of many variables which can hardly be measured and expressed in terms of cash flows, especially the benefits that the system will provide, such as greater manufacturing flexibility, learning effects, the effects on employee morale and decreased lead time.

Due to these criticisms, some researchers (for example, Medearis *et al.*, 1990; O'Brien and Smith, 1993) argue to ignore the financial analysis and regard the investment as a strategy that should be implemented regardless of the results of DCFM. Also, several authors suggested many approaches to evaluate the investment in AMS as a substitute of DCFM. These approaches are either numerical or non-numerical.

Thus, the main problem in the evaluation of investment decisions in AMS is how to quantify the expected benefits from these systems. In order to make these decisions in an objective manner, there is a need for a device that can properly treat qualitative variables in addition to quantitative variables. This suggests the use of fuzzy set theory (FST), which reduces the need for precise numerical inputs to decision analysis, in evaluating such decisions. FST provides a method of combining qualitative and quantitative variables for decision-making processes.

Research objective

The main objective of this research is introducing a suggested model for evaluating investment decisions in AMS considering qualitative and quantitative variables through the use of FST.

Methodology and work plan

The main aspects of the proposed research are: First, a model using the mathematical logic of FST will be constructed for evaluating the investment decisions of acquiring AMS. This will be carried on through an extensive theoretical study. So as to ensure that this model is applicable in the UK environment, a limited number of interviews with practitioners will be undertaken during the formulation of the model. Second, there will be an empirical study which can be used as a basis for evaluating the benefit and validity of the quantitative model. Input to the theoretical model will demand an in-depth understanding of particular investment decisions and the cooperation of key players in the decision-making process in order to establish 'fuzzy' variables. This data can only be collected in face-to-face interviews of a semi-structured nature.

References

Accola, W. L. (1994) 'Assessing risk and uncertainty in new technology investments', *Accounting Horizons*, 8(3) September, pp. 19–35.

Cheung, J. K. (1993) 'Management flexibility in capital investment decisions literature', *Journal of Accounting Literature*, 12, pp. 29–66.
Klammer, T., Koch, B. and Wilner, N. (1991) 'Capital budgeting practices: A survey of corporate use', *Journal of Management Accounting Research*, *American Accounting Association*, 3, Fall, pp. 113–30.
Medearis, H. D., Helms, M. M. and Ettkin, L. P. (1990) 'Justifying flexible manufacturing systems (FMS) from a strategic perspective', *Manufacturing Review*, 3(4) December, pp. 219–23.
Mensah, Y. M. and Miranti, P. J. (1989) 'Capital expenditure analysis and automated manufacturing systems: A review and synthesis', *Journal of Accounting Literature*, 8, pp. 181–207.
O'Brien, C. and Smith, J. E. (1993) 'Design of the decision process for strategic investment in advanced manufacturing systems', *International Journal of Production Economics*, 30–1, pp. 309–22.
Wilner, N., Koch, B. and Klammer, T. (1992) 'Justification of high technology capital investment – An empirical study', *The Engineering Economist*, 37(4), pp. 341–53.

Research area: Accounting regulation

The regulation of related party transactions

The problem

Related parties are an everyday occurrence in the business world and the transactions that take place between them are a natural process. However, in the UK, these transactions are not disclosed, which gives misleading information and enables companies the chance to act fraudulently (Mason, 1979). There are a number of cases of fraud using related parties including Pergamon Press (1969) and US Financial (1972) while more recently, the death of Robert Maxwell has revealed the syphoning of funds to related parties, effectively stealing people's pensions. For these reasons, it is essential that the disclosure of related party transactions should be regulated. Attempts to regulate these transactions have been made by the ASC with ED 46 (1989) but so far these have been unsuccessful.

Aim of the research

To enable any future standard concerned with the disclosure of related party transactions to be comprehensive and implementable, certain questions must be researched and answered:

1. Why was the earlier attempt at a standard unsuccessful?
2. How should 'related parties' be defined?
3. What information should be disclosed?
4. What should be the threshold of the influence of the resulting standard?
5. How valuable will the information be to the users of the accounts?

Methodology

The research will be conducted as a longitudinal investigation of the interest in related party transactions in the UK. This will include an extensive literature review of background papers (Brown, 1980), previous attempts at issuing a standard ED 46 (ASC, 1989) and comments made about the exposure draft (Hinton, 1989; ASC, 1990). A critique of ED 46 will be published as a major part of the research. The study will be conducted in the context of agency theory (Jenson and Meckling, 1976) and the 'market of excuses' thesis by Watts and Zimmerman (1979). A critical appraisal will also be made of the 'Nobes Cycle' (1991). The transfer to PhD will enable the research to include international experience, including IAS 24 (IASC, 1984) and SAS no. 6 (AICPA, 1975), conducted within the framework of international classification (Mueller, 1967; Nobes, 1992).

References

AICPA (1975) 'Statement on Auditing Standard No. 6', *Journal of Accountancy*, 140, September, pp. 82–5.
ASC (1989) Exposure Draft 46, *Related Party Transactions*, April.
ASC (1990) 'Comments received on ED 46'.
Brown, H. R. (1980) *Background paper on related party transactions*, ICAEW.
Hinton, R. (1989) 'Relating party transactions the UK way', *Accountancy*, 103(1150), pp. 26–7.
IASC (1984) IAS 24, *Related Party Disclosures*.
Jenson, M. C. and Meckling, W. H. (1976) 'Theory of the firm: Managerial behavior, agency costs and ownership structure', *Journal of Financial Economics*, 3(4), pp. 305–60.

Mason, A. K. (1979) *Related party transactions: A research study*, CICA.
Mueller, G. (1967) *International Accounting*, Part I, New York: Macmillan.
Nobes, C. (1992) *International Classification of Financial Reporting*, 2nd edn. Lava: Routledge.
Watts, R. L. and Zimmerman, J. L. (1979) 'The demand and supply of accounting theories: The market of excuses', *Accounting Review*, 54, April.

Research area: Auditing

An analytical study of the effect of confirmatory processes on auditors' decision-making and hypothesis updating

Research problem

Motivated in part by research findings in psychology, the auditing literature has recently begun to focus on auditors' use of confirmatory processes in evidence search and evaluation. Confirmatory processes mean that the auditor prefers to search for evidence confirming his initial hypotheses and also evaluates this evidence in a way that confirms his hypotheses (Church, 1990, p. 81). As the use of confirmatory processes is still a new trend in auditing, some problems are associated with the use of these processes, for example the impact of confirming and disconfirming approaches on auditors' decisions, the role of hypotheses formulation and the use of audit evidence in hypotheses updating.

Literature review

Most of the previous studies (for example, Bedard and Biggs, 1991; McMillan and White, 1993) on the use of confirmatory processes in auditing focused on auditors' hypotheses formulation. These studies declared that auditors differ in their abilities to formulate correct or plausible hypotheses and these abilities are affected by various factors. Among these factors are expertise, source of hypotheses, hypotheses frame, professional scepticism, motivational factors and cognitive factors. The stated factors still need in-depth investigation in addition to determining what other factors can trigger the use of confirmatory processes in auditing. A few studies also examined the process of hypotheses updating. Einhorn and Hogarth (1985) formulated a model called 'Contrast/Surprise Model' which investigates the effect of confirming and/or disconfirming evidence on hypotheses updating. Ashton and Ashton (1988) investigated the validity of the previous model. However, their study is insufficient for investigating the process of hypotheses updating because they concentrated only on evidence order.

Research objective

The main objective of the proposed research is determining the effect of using confirmatory processes on auditor's decision-making, and investigating the process of hypotheses updating. The main research questions to be addressed are:

1. What factors trigger the use of confirmatory processes in auditing?
2. What is the process of hypotheses updating?
3. What theoretical models are relevant to the process of hypotheses updating?
4. What are the most appropriate circumstances for using confirmatory/disconfirmatory approaches?

Methodology

The research will be carried out through a theoretical and an empirical study. The empirical study will involve survey and experimental studies. The survey will be conducted through interviews with a number of auditors in auditing firms. It is intended to carry out 36 interviews in six auditing firms; two large, two medium and two small. Interviews will be held with two highly experienced, two medium experienced and two relatively inexperienced auditors in each firm. These interviews will help in determining factors affecting auditors' use of confirmatory processes. Following the analysis of this data, 18 experimental studies will be carried out to determine the validity of the proposed model. These experimental studies will be conducted in the same auditing firms as the interviews.

References

Ashton, A. H. and Ashton, R. H. (1988) 'Sequential belief revision in auditing', *Accounting Review*, October, pp. 623–41.

Bedard, J. C. and Biggs, S. F. (1991) 'Pattern recognition, hypotheses generation and auditor performance in an analytical task', *Accounting Review*, July, pp. 622–42.
Church, B. K. (1990) 'Auditors' use of confirmatory processes', *Journal of Accounting Literatures*, 9, pp. 81–112.
Einhorn, H. J. and Hogarth, R. M. (1985) *A Contrast/Surprise Model for Updating Beliefs*, Working Paper, April, Chicago: University of Chicago.
McMillan, J. J. and White, R. A. (1993) 'Auditors' belief revisions and evidence search: The effect of hypothesis frame, confirmation bias and professional skepticism', *Accounting Review*, July, pp. 443–65.

Research area: Buyer behaviour

The influence of children on the family purchase of environmentally friendly grocery products in South Wales

Previous studies of environmental consumerism have addressed the implications of the individual's buyer behaviour (Ottman, 1989; Charter, 1992) and changes in organisational management practices (Charter, 1992; Smith, 1993; Welford and Gouldson, 1993). The majority of studies in the area of green consumerism focus on the greening of the individual's buying behaviour, the development of green consumerism and the reactions of management in a wide sphere of industries. This research will take family buying behaviour models and build in an environmental perspective. The conceptual framework is presented briefly in Figure A.1.

Research by Charter in 1992 revealed that environmental awareness is increasing in schools throughout Europe, with the introduction of environmental topics in a range of school syllabuses, together with wide recognition of the importance of environmental issues as a cross-curricular subject. This has resulted in environmental awareness and concern diffusing among children, with the direct result of children acting as important catalysts in raising the environmental awareness of the family group by reporting back what has been learned about the environment at school.

As Buttle (1993) discovered, consumer decisions are influenced by systematic relationships of the family which have a variable and determined effect upon the actions of individuals. Most researchers in environmentally responsive buyer behaviour have employed what Buttle (1993) describes as individualistic concepts and constructs. This research intends to take the interactive phenomena of the family and the influence of children on the purchase of environmentally responsible grocery products.

Aims

The purpose of the proposed study is to investigate the influence of children on the family purchase of environmentally friendly grocery products in South Wales with a focus on understanding of the influence that children have on family purchase of environmentally friendly grocery products. Grocery products have been selected because children have a major influence on product choice in this area, and are likely to be involved in product choice selection. The main aim of the study is to determine children's attitudes to and awareness of environmental

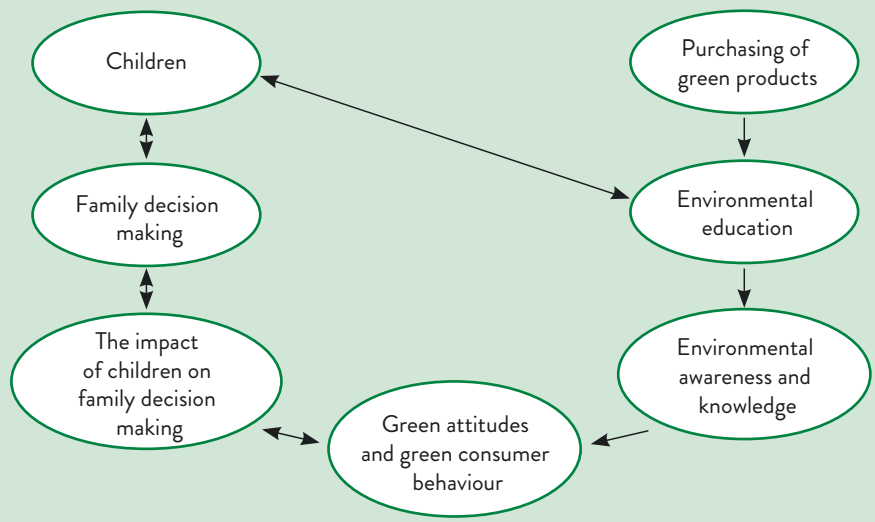


Figure A.1 Diagrammatic conceptual framework

concerns and the family–child interaction process within the context of environmentally responsive family buying behaviour.

Methodology

The first stage of this doctoral research has been a review of the existing literature on green consumerism, environmental education and children, and family buying behaviour. The literature review concentrates on several areas – first, on the diffusion of environmentally responsive buying behaviour; second, on the issues surrounding the development of children's attitudes and awareness of environmental concerns; and third, on the family–child interaction process within the context of family buying behaviour, as Figure A.1 illustrates.

The primary methodology consists of three stages: The exploratory research, which is underway, and consists of focus group sessions with primary school children in South Wales. The aims of the exploratory study are to determine the attitudes and behaviour of children towards environmental consumerism and how they believe they influence environmentally responsive family buying behaviour. The legal and ethical aspects of research with children will be adhered to.

Stage two will be an investigation of the family group through focus group sessions in South Wales, with the objective of establishing the actual interactive decision-making process within the sample families. This will be undertaken between September 1995 and March 1996.

The third stage of the research will consist of the development of case studies in order to investigate the holistic characteristics of the real-life situation. The case study sample will be developed from stage two of the research. The in-depth case study analysis will consist of semi-structured interviews and an observational study to be undertaken between March 1996 and March 1997.

Output

This research will contribute to family buyer behaviour knowledge and the understanding of environmentally responsive consumer behaviour; it will contribute to the understanding of the marketing implications of the influence of children in environmental decision-making and the ways in which decision-making is undertaken within the family group in the context of environmentally responsive buyer behaviour.

References

Buttle, F. (1993) The co-ordinated management of meaning: A case exemplar of a new consumer research paradigm, *European Journal of Marketing*, 28(8/9).

Charter, M. I. (1992) *Greener Marketing*. Sheffield: Greenleaf Publishing.

Ottman, J. (1989) 'Industries' response to green consumerism', *Journal of Business Strategy*, 13(4).

Smith, D. (1993) 'Purchasing department contributions to company environmental performance', *Purchasing Supply Management*, 20(1).

Welford, R. and Gouldson, A. (1993) *Environmental Management Business Strategy*. London: Pitman Publishing.

Research area: Organisational change

Changing the deal: The role of informal contracts in business transformation and organisational renewal

Introduction and literature review

In the last decade, the belief has grown among organisational theorists (Kanter, 1983; Handy, 1989; Pascale, 1990 and others) that in order to be successful in increasingly turbulent markets, organisations need to be able to assimilate, or better instigate, dramatic shifts in their industries. Change is becoming more discontinuous (Handy, 1989) or transformational in nature. The management of discontinuous change demands a more 'holistic approach' (Hinings and Greenwood, 1988) and an ability to recognise and, if appropriate, act on the limitations of the organisation's existing paradigms (Morgan, 1986, 1993). It can also require organisations to build more flexibility into their structures and contractual arrangements (Atkinson, 1984). Roles may be restructured; jobs rescoped; new skills demanded; career paths obfuscated: in short, individuals are asked to

undertake a radical rethink of their role, both within the organisation and in a broader context. Formal contracts and cultures are being developed that aim to meet these challenges, but the informal side of organisational life cannot and should not be ignored.

A pilot project (in an operating company of a leading financial services group) conducted for this proposal, suggested that even when change is accepted at the 'rational' levels it may meet resistance if insufficient attention is paid to its broader implications (Jarvis, 1994). There is a growing need to understand the 'informal contract' between the employer and employee, if both parties' expectations are to be met.

A key output from the research will be a better understanding of the 'informal contract', and if and how it is evolving. At this stage, a working definition is being employed, as follows: 'the expectations – emotional and rational; conscious and unconscious – that employees bring to and take from their work and that are not covered by their job description and formal contract of employment'.

Research aim

The main aim of the MPhil stage of the project is to define the informal contract and establish its role in the implementation of major change programmes. The aim of the PhD stage of the research is to uncover if and how the informal contract can be 'managed' to support employees through major change.

Research methodology and proposed timetable

Primary research will be qualitative, collaborative inquiry (Reason, 1988) built around 6–8 case studies, each being conducted over a period of 18–24 months. This approach has been selected for its ability to yield data at the unconscious, as well as conscious, level. Hypotheses will be developed as the case study progresses and each case study will adopt four key research methods: interviews with senior management to provide an organisational context and an understanding of the aims and critical success factors for the change programme; depth interviews, with middle management grades and below, to provide context and a broad understanding of the individual meaning of the informal contract; individual diaries to provide a depth of information – 'felt' and rational – into the meaning of the informal contract to individuals; a series of inquiry groups to develop a shared meaning for the informal contract. Triangulation will be provided through this use of different methods and different sources, while an audit trail will ensure confirmability.

The PhD stage of the research will test hypotheses for transferability. As well as the opportunities for comparison provided by multiple case studies, it is envisaged that a series of cross-organisational groups, comprising senior managers, will be set up to look at how these hypotheses transfer from theory into practice.

References

Atkinson, J. (1984) *Emerging UK Work Patterns*, IMS Paper No. 145.
Handy, C. (1989) *The Age of Unreason*. Business Books Ltd.
Hinings, C. R. and Greenwood, R. (1988) *The Dynamics of Strategic Change*. Basil Blackwell.
Jarvis, C. (1994) *The Introduction of a Self-Assessment Appraisal System in to FSG OpCo*, unpublished.
Kanter, R. M. (1983) *The Changemasters*. Unwin Hyman.
Morgan, G. (1986) *Images of Organization*. SAGE.
Morgan, G. (1993) *Imaginization*. Penguin.
Pascale, R. (1990) *Managing on the Edge*. Penguin.
Reason, P. (1988) (ed.) *Human Inquiry in Action: Developments in New Paradigm Research*. London: SAGE.

Research area: Organisational culture

Evaluation of input and effectiveness of culture change on individuals and organisations

Background

I have run and co-tutored personal, management and organisational development courses for the last ten years. Co-tutoring has given me the opportunity to observe others' training, receive feedback and reflect on my own practice. The dominant thought area that has emerged from this reflection is that the quality of relationship between tutor and learner, and learner and learner, is of critical importance if lasting change and development is to occur.

As a participant in a self-managed learning group at Lancaster University (MAML), I found the experience challenging and, at times, frustrating. I believe this was due to the developmental relationships within the group. While this subject has emerged from reflecting on my own personal experience, I believe it is relevant to tutors, learners and managers. Effective 'engaging' between individuals could be a basis for effective managerial relationships.

Aim of the study

The study will explore the nature of 'engaging' (that is, effective developmental relationships) between tutors and learners, and learners and learners. The aim is to define and develop a working model of effective developmental relationships.

Theoretical context

Rowland (1993) has proposed a spectrum of tutoring relationships from 'didactic' to 'exploratory', with the middle ground being occupied by an 'interpretative' model. In his 'exploratory' and 'didactic' models the learning process is seen as being 'a black box, a kind of private psychological process in which the tutor cannot engage' (1993, p. 27). In the 'interpretative' models the tutor deliberately attempts to become part of the learning process. He characterises the relationship as being one in which there is a free flow of learning and the tutor becomes an important part of the students' learning process. The psycho-therapeutic work of Rogers (1961) clearly defines the characteristics of what he terms a 'helping relationship'. This relationship creates a 'psychological climate' that ultimately releases human potential. Combining the work of Rowland (1993) and Rogers (1961) suggests a definition of 'engaging' as a relationship that creates a developmental psychological climate and a culture of support in which individuals develop shared meanings and collectively become an integral part of each other's reflective processes.

Using Reason's (1988) post-positivist research methodology of cooperative inquiry, I will work with groups to establish how individuals successfully 'engage'. Reason provides many useful insights into establishing cooperative inquiry groups including creating the 'right' atmosphere for people to examine processes, freely challenge and support one another. He suggests this is not easy and needs to emerge from the group as it matures towards truly authentic collaboration. This is another factor within the process of 'engaging' but between researcher and researched. Thus, the theoretical context of the research methodology parodies the area under study.

Methodology and research process

The proposed study will use a form of cooperative inquiry, which is ontologically based on a belief in a participatory universe and attempts to undertake research with people rather than on them. Cunningham (1988) suggests a broad model of cooperative inquiry which he calls 'interactive holistic research'. This non-linear, or as he puts it 'omni-focused', model (p. 167) has four elements:

a) Collaborative inquiry – that is with people and either of Type I – in which the group explores its internal processes together – or Type II in which the group explores a process that happens outside the group.

b) Action research – research which is concerned with developing practical knowledge or praxis.

c) Experimental research – research which is concerned with how and what I experience.

d) Contextual locating – this represents the backdrop to the whole research study, whether intellectually, socially or emotionally.

Within the MPhil phase, I propose to establish a collaborative inquiry group with fellow tutors and learners to explore experiences of 'engaging' (Type II according to Cunningham, 1988). The purpose of this phase is to define and develop a model of 'engaging' between tutors and learners. This will be elaborated in the PhD phase by exploring the nature of developmental relationships within the group (Type I according to Cunningham, 1988) and to look further at this relationship in the context of managing. In this phase the objective is to define 'engaging' between learners and to develop a model of collaborative learning or development. The group will be assembled by invitation and consist of fellow tutors

with an interest in exploring developmental relationships. Initial research with learners will be confined to participant observation to enable a working hypothesis to be established and will be undertaken with the many groups that I currently co-tutor. This will be replaced with a more formal collaborative inquiry which attempts to elicit a learner's perspective on 'engaging', initially free of any hypothesis, but later to explore a hypothesis which is either given or developed.

Research with fellow tutors and with learners will take place concurrently. The synthesis of these views will take place through a critical examination of my own practice and experience, through observation and critical subjectivity. Ideas that are developed will then be available for scrutiny and development with the collaborative inquiry group. In each of the groups (that is, learners and tutors) I will be the primary researcher.

References

Cunningham, I. (1988) 'Interactive Holistic Research: Researching Self-Managed Learning', in Reason, P. (1988) *Human Inquiry in Action – Developments in New Paradigm Research*. London: SAGE.
Reason, P. (1988) (ed.) *Human Inquiry in Action: Developments in New Paradigm Research*. London: SAGE.
Rogers, C. (1961) *On Becoming a Person*. London: Constable.
Rowland, S. (1993) *The Enquiring Tutor: Exploring the Process of Professional Learning*. London: Falmer Press.

Research area: Strategic management

Tacit knowledge and sustainable competitive advantage

Introduction and literature review

An enduring problem for strategic management is the sustainability of competitive advantage (Porter, 1985; Barney, 1991; Black and Boal, 1994). The proposed research is concerned with competitive advantage and the link between a heterogeneous firm resource (in this instance tacit knowledge) and the use of relatively homogeneous information technology (IT) assets. Much of the literature exploring the link between IT and competitive advantage, holds that innovatory systems are quickly and widely adopted and thus a source of enabling and not critical advantage (Banker and Kauffman, 1988; Ciborra, 1991). Contradictory research shows that this may not be the case as implementation of IT can produce unexpected outcomes (Ciborra, 1991). Other research (for example, Cash and McFarlane, 1988; Kremar and Lucas, 1991; Lederer and Sethi, 1991) does not recognise the import of tacit knowledge and sees deviations in performance stemming from a lack of planning. However, recent additions to the literature question this logic, finding that intra-firm structural differences, the source of unexpected outcomes, can be combined with technology as complementary assets to confer a potential source of sustainable competitive advantage (Feeny and Ives, 1990; Clemons and Row, 1991; Heatley, Argarwal and Tanniru, 1995).

Inadequacy of current research

No empirical research has explored the role of tacit knowledge as a positive intra-firm structural differentiator in the implementation of IT. A priori observation seems to indicate that tacit knowledge is valuable, rare, imperfectly inimitable and non-transferable (Barney, 1991). Evaluating IT strategic successes, Ciborra (1991) identifies serendipity, trial and error, and bricolage as elements of a process of innovation in the use of systems. None of the literature explores the source, or the effects of this process. Thus, while the literature has speculated as to the role of tacit knowledge in creating sustainable competitive advantage (Spender, 1993), the empirical question, 'Can tacit knowledge provide a source of sustainable competitive advantage?' has not been addressed.

Aims and objectives of research

The research aims to fill this gap in the literature by examining the proposition that tacit knowledge is a source of competitive advantage, and asking, if it is, what the conditions are that are required to support it. The research also aims to answer the question of how tacit knowledge can provide a source of sustainable competitive advantage. This requires an examination of pre-emption, dynamic economies of learning and continuing innovation effects from using IT and tacit knowledge as complementary assets. Thus, the research will test the proposition that combinations of tacit knowledge and IT create core competencies that lead to superior performance, and that these competencies are inimitable in the sense

used by Barney (1991). Barriers to imitation can be created by combining tacit knowledge and technology.

Methodology and plan of work

At the highest level of abstraction, it is proposed to use the resource-based view of the firm as a framework to understand asset combinations that can be the source of differences among firms. It is proposed that the research will operationalise measures developed by Sethi and King (1994) which were devised to assess the extent to which IT applications provide competitive advantage. In this research competitive advantage is driven by system performance, and this is the dependent variable in this study. The sample will be taken from the population of firms who use SAP business process software. The sample will be stratified for external validity according to Collis and Ghemawat's (1994) resource-based industry typology: along the dimensions of key resources and the nature of the production task. Construct validity will be established using pilot research; in-depth interviews.

The focus of the study will centre on deviations from expected performance of a tightly specified and robust business process-oriented system which is widely used in a variety of industries. The unit of analysis is at the level of business processes. Deviations in performance between firms having the same IT system constitute differences in the dependent variable and this is a function of knowledge assets, their management and characteristics of the firm and system context. A research instrument will be designed which will be administered to collect cardinal and ordinal data on the dimensions of tacit knowledge, group dynamics, firm and system characteristics, including data collection on firm-specific technology trajectories.

References

Banker, R. and Kauffman, R. (1988) 'Strategic contributions of IT', *Proceedings of 9th International Conference on Information Systems*, pp. 141–50.

Barney, J. (1991) 'Firm resources and sustained competitive advantage', *Journal of Management*, 17(1), pp. 99–120.

Black, J. and Boal, K. (1994) 'Strategic resources: Traits, configuration and paths to sustainable competitive advantage', *Strategic Management Journal*, 15, pp. 131–48.

Cash, J. and McFarlane, F. (1988) *Competing Through Information Technology*. Harvard Business School Press.

Ciborra, C. U. (1991) 'The limits of strategic information systems', *International Journal of Information Resource Management*, 2(3), pp. 11–17.

Clemons, E. K. and Row, M. C. (1991) 'Sustaining IT: The role of structural differences', *MIS Quarterly*, September, pp. 275–92.

Collis, D. and Ghemawat, P. (1994) 'Industry Analysis: Understanding Industry Structure and Dynamics', in Fahey, L. and Randall, R. M. (eds) *The Portable MBA*, Wiley, pp. 171–93.

Feeny, D. and Ives, B. (1990) 'In search of sustainability: Reaping long-term advantage from investments in IT', *Journal of Management Information Systems*, 7(1), pp. 27–45.

Heatley, J., Agarwal, R. and Tanniru, M. (1995) 'An evaluation of innovative information technology', *Journal of Strategic Information Systems*, 4(3), pp. 255–77.

Kremar, H. and Lucas, H. (1991) 'Success factors for strategic IS', *Information and Management*, 21, pp. 137–45.

Lederer, A. and Sethi, V. (1991) 'Meeting the challenges of information systems planning', *Long Range Planning*, 25(2), pp. 69–80.

Porter, M. E. (1985) *Competitive Advantage*. Free Press.

Spender, J. C. (1993) 'Competitive advantage from tacit knowledge? Unpacking the concept and its strategic implications', *Academy of Management*, pp. 37–41.

Sethi, V. and King, W. (1994), 'Development of measures to assess the extent to which IT provides competitive advantage', *Management Science*, 40(12), pp. 1601–27.

7

Collecting qualitative data

Learning objectives

When you have studied this chapter, you should be able to:

- discuss the main issues in collecting qualitative data
- describe and apply methods based on interviews
- describe and apply methods based on diaries
- describe and apply methods based on observation
- compare the strengths and weaknesses of methods.

7.1 Introduction

In this chapter, we focus on the main methods used to collect qualitative data. These methods are appropriate if you are planning to collect primary research data, such as the data you have generated from conducting interviews or focus groups. On the other hand, if you are planning to base your study on secondary research data, your main interest is likely to focus on the methods available to analyse qualitative data, which we cover in Chapter 8.

The methods we examine in this chapter will be of particular interest if you are designing a study under an interpretivist paradigm. However, they will also be of interest to positivists who are planning to collect some qualitative data which they will subsequently quantify. Typically, this will be the case if your research design incorporates methodological triangulation which involves using multiple methods from the same paradigm. For each of the methods for collecting qualitative data covered in this chapter, we start by explaining the nature of the method and how to use it, before going on to give examples of how it has been applied in previous studies. We also examine the main problems students encounter and how they can be resolved. It is important to remember that you must obtain approval from your supervisor and any other authority responsible for research ethics in your university or college before you start collecting any research data.

7.2 Main issues in collecting qualitative data

All researchers are interested in collecting **data** about the phenomena they are studying. In Chapter 1, we defined data as known facts or things used as a basis for inference or reckoning. Some authors distinguish between data and information and define **information** as the knowledge created by organising data into a useful form. Obviously, this depends on how items of data are perceived and how they are used. For example, if you are an interpretivist, you might collect data relating to the phenomena under study via interviews, which you subsequently analyse using non-numerical methods. You probably consider that this process allows you to turn data into information that makes a small contribution to knowledge. On the other hand, your interviewees might consider that what they gave you was information in the first place.

Qualitative data are any type of data in a non-numerical form, such as text or images. All data can also be classified by source. Your study might be based on an analysis of **secondary data** (data collected from an existing source) or on an analysis of **primary data** (data you have generated by collecting them from an original source, such as interviews or a focus group).

Qualitative data are normally transient, understood only within context and are associated with an interpretive methodology that usually results in findings with a high degree of **validity**. It contrasts with quantitative data, which are normally precise, can be captured at various points in time and in different contexts, and are associated with a positivist methodology that usually results in findings with a high degree of **reliability**. Examples of qualitative data include printed material such as text, figures, diagrams, and other images, and audio and/or visual material such as recordings of interviews and focus groups, videos, and broadcasts. All these forms of data could be generated by you or by someone else, but the way in which they are collected needs to be systematic and methodical. The challenge for the researcher designing an interpretive study is to apply method(s) that will retain the integrity of the data.

Figure 7.1 (see next page) shows an overview of the data collection process in an interpretive study. However, it is important to realise that this is purely illustrative, and the process is not as linear as the diagram suggests. Moreover, research data can be generated or collected from different sources and more than one method can be used.

Data are known facts or things used as a basis for inference or reckoning.

Information is the knowledge created by organising data into a useful form.

Primary data are data generated from an original source, such as your own experiments, surveys, interviews or focus groups.

Qualitative data are data in a non-numerical form.

Secondary data are data collected from an existing source such as publications, databases and internal records.

Reliability refers to the accuracy and precision of the measurement and absence of differences in the results if the research were repeated.

Validity is the extent to which a test measures what the researcher wants it to measure and the results reflect the phenomena under study.

7.2.1 Contextualisation

Since qualitative data need to be understood within context, you need to collect some background information first. This is known as contextualisation. Data about the context can relate to aspects such as time and location, or legal, social, political and economic influences. For example, a person working in a declining industry in a remote northern town in Canada, who is confronted with redundancy two weeks before the New Year starts, might have different views of the future than someone working in a booming high tech industry in California. It is critical to your research that you establish and understand this contextual framework, as

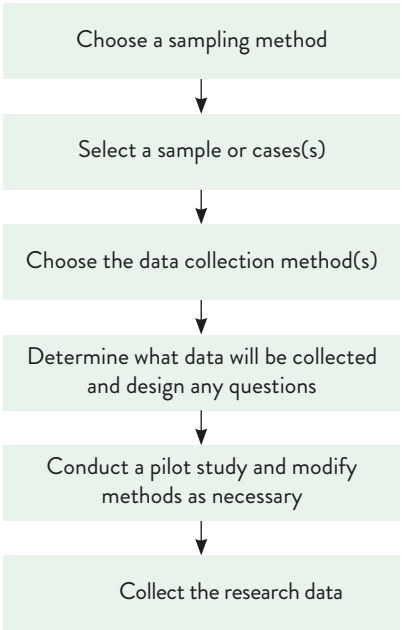


Figure 7.1 Overview of data collection in an interpretive study

this will enhance your sensitivity to the qualitative research data you subsequently collect and aid your interpretation. When we say that you 'understand' the context, we mean that you make reference to it when you analyse and interpret your data and when you draw conclusions. This will add to the richness and depth of your findings.

Much of the contextualising data will be found in the literature. Do not ignore statistical data simply because they are quantitative. Information such as the level of unemployment in an area, the economic performance of an industry or employment patterns in a particular company can contribute to setting the framework within which you will be doing your research. Local newspapers are also important, but quite often take a political stance. It is sometimes more revealing to read the letters from readers than the editorials, as the readers' letters usually express the opinions and feelings of people who are part of the phenomenon you are studying.

Having established the context, you need to collect data relating to the location of your study and any events taking place before you collect the data. Therefore, you might need to use your phone's camera, video recorder or audio recording facilities as well as a notebook. The notes taken while collecting primary research data are sometimes referred to as field notes, a term borrowed from the natural sciences.

7.2.2 Selecting a sample under an interpretivist paradigm

A **sample** is a subset of the population and a **sampling frame** is a record of the population from which a sample can be drawn. A **population** is a body of people or collection of items under consideration. If the population is relatively small, you can select the whole population; otherwise, you will need to select a sample.

A **sample** is a subset of a population.

A **sampling frame** is a record of the population from which a sample can be drawn.

A **population** is a body of people or collection of items under consideration for statistical purposes.

Under an interpretivist paradigm, the research data will not be analysed statistically with a view to generalising from the sample to the population. Therefore, you do not need to select a random sample. For example, you might be designing an interpretive study that investigates the experiences of entrepreneurs seeking finance to start or expand their businesses. In most countries, 99% of businesses are small or medium-sized firms and there is a constant churning of businesses being set up and businesses closing for one reason or another. This makes it extremely difficult to trace them all, so you would need to identify a method for selecting a manageable number for the study. One solution is to narrow the scope of your study to a particular location (for example, an industrial estate in your location that has a number of small business units), or to select only the small businesses who are members of a local professional group. Perhaps you are interested in the views of students attending a series of workshops offered by your university or college on improving employability skills. As you are not able to attend all the workshops, you could restrict your sample to those attending the same workshops as you.

You will need to describe your population and any sampling methods used in your methodology chapter. Finding willing participants who fit your selection criteria is often a problem for undergraduate students and those on taught Master's programmes, who have tight time constraints and few external contacts. However, if generalisation is not your aim, there are a number of methods that can be used to select a non-random sample:

- Networking involves making use of any contacts you already have. If you are doing a placement or internship as part of your degree or you are working while you are studying, you might find you already have easy access to a suitable sample. For example, you might have business contacts from jobs you have done in the past or the present, or social contacts and family members who fit your sampling criteria. For example, if you are a member of a gym or play sport, you might meet people who would be willing to participate in a study on work–life balance; if you are a member of a walking group or a sailing club, you might know people who are willing to share their views on environmental issues.
- Snowball sampling is used in studies where it is essential to include people with experience of the phenomenon being studied in the sample. For example, supposing you are interested in how people cope with redundancy. Perhaps you are able to find some people who have experienced being made redundant who are willing to take part in your survey. One of the questions you would ask them would be whether they know of anyone else

who has also been through the same experience with whom they could put you in touch. In this way, you can extend your sample of participants.

- Purposive sampling is similar to snowball sampling as the participants are selected by the researcher on the strength of their experience of the phenomenon under study. However, in judgemental sampling the researcher makes the decision prior to the commencement of the research and does not pursue other contacts that might arise during the study.
- Convenience sampling occurs when the sample is based on expediency and the researcher has little influence on the composition of the sample. For example, only certain employees who are involved in the phenomenon being investigated are available at the time of the study.
- Piggyback sampling is where you extract your sample from the respondents or participants in an existing larger study.
- You can also use screening as a method for finding a sample. For example, if you were interested in why people purchase a particular product, you could advertise on social media to reach a large number of people and select only those who buy the product to participate in a focus group. Alternatively, you could visit locations where members of your target population are likely to congregate. For example, if you wish to find out about the revision techniques used by student to prepare for exams, you are likely to find a suitable sample of individuals who are currently experiencing this by visiting the library and cafés in your university or college.

Vox pop What has been the biggest challenge in your research so far?

Sharif, undergraduate student investigating how car dealerships have survived during the recession

My biggest challenge has been getting the interviews. I was relying on my next door neighbour to give me the first interview, but although he's given me a day several times, when the time comes, he says he's too busy. I was hoping it would snowball from there and he'd introduce me to his contacts. I'm going to have to start cold calling.

Collecting sensitive data wasn't an easy task at all! My research depended on interviews with internal auditors, but permission was refused by more than 20 organisations before I found four that would agree to give me access. So, my initial plan of conducting a comparative study between two countries had to be altered to a comparative study between sectors within one country.

Hany, final year PhD student investigating the ERP impact on the internal audit function

If you are designing a study under a positivist paradigm, you will be interested in generalising from your sample to the population. If that is the case, you must not use any of these methods but refer to the methods for selecting a random sample in Chapter 10.

We will now move on to examine some of the main methods for collecting data for qualitative analysis. It is important to remember that the methods associated with interpretivist paradigms often allow the researcher to collect and analyse the research data in one process. This contrasts with methodologies associated with positivist paradigms, where statistical methods are used to analyse the data. If you are designing a study under an interpretivist paradigm, you will need to read this chapter in conjunction with Chapter 9. If you are designing a study under a positivist paradigm, you will need to read this chapter in conjunction with Chapter 10 and the appropriate chapter(s) on statistical analysis.

7.3 Interviews

An **interview** is a method for collecting data in which a sample of participants (the interviewees) are asked questions to find out what they do, think or feel. Verbal or visual prompts might be required. Interviews are a popular method for collecting research data and you might think that

An **interview** is a method for collecting primary data in which a sample of interviewees are asked questions to find out what they think, do or feel.

all you have to do is talk to someone. Unfortunately, it is not quite as simple as that. You need to clarify what information you want, and this might be guided by a conceptual framework you have developed from the literature. In addition, you need to think about how to get access to people who can supply the information you need and how to select your participants. Once you have resolved those issues, you need to consider how you can encourage the interviewees to give you the information you need and how you will record the interview. Some students use a mobile phone or laptop to record the interview as an alternative to buying a specific audio recorder. The main consideration is the sound quality. Remember that you must get permission before you make any audio or visual recordings and you will need to run a quick test to ensure that your device is recording. You are strongly advised to have a backup in case of technical failure.

Interviews can be conducted with individuals or groups. The most common form is a one-to-one interview where there is one interviewer and one interviewee. Some researchers find it useful to have two interviewers to help ensure that all the issues are fully explored. The second researcher can be responsible for audio recording what is said during the interview, as well as keeping notes of nuances, gestures and interruptions. In addition to the audio recording of the interview, it is helpful to have a record of what occurred during the interview as it can be used to extract a more robust and comprehensive interpretation. A group interview comprises one or more interviewers and two or more interviewees. This encourages the participants to interact with one other when responding to questions

There are three main interviewing methods:

- Face-to-face interviews are the traditional method and still widely used. The interview can be conducted in the participant's place of work, home or any convenient public place. The main advantage of face-to-face interviews is that comprehensive data can be collected. The presence of the interviewer makes it easier to ask complex or sensitive questions, provide clarification and get the participant's undivided attention, but of course this depends on the time and place of the interview. If the interview is conducted outside working hours, it might be possible to conduct a longer interview than is possible during the busy working day. However, interviewing is time-consuming and can be expensive if you have to travel any distance to meet participants. It is important that you take precautions to ensure your personal safety when meeting participants (see Chapter 2) and plan how you will record the interview.
- Telephone interviews are also widely used and offer the advantage of personal contact without the cost of travel. If the interview is conducted during working hours, it might not be possible to conduct such a long interview as you could using the face-to-face method. However, there are fewer constraints on the geographical location of the sample and no travelling costs. Nevertheless, you may need to budget for the cost of the telephone calls, particularly if you are conducting international research. You will also think about how you will record the interviews.
- Online interviews using video conferencing such as *Skype, FaceTime* or *WhatsApp* are increasingly popular. This method can be particularly useful for international research where face-to-face interviews are impractical and telephone interviews are too costly. Online interviews can be conducted at a time and place that is convenient to both the interviewer and the interviewee. In addition, the interviewee might feel more at ease being able to see the face of the interviewer, which is not possible during a telephone interview. However, online methods introduce some limitations on your choice of sample, as the participants must have access to the Internet and this type of software, as well as being willing and able to use this type of software. In common with the other two methods, you will need to plan how you will record the interviews.

As you can see, each of these interview methods has its own combination of strengths and weaknesses. Cost is often an important factor, and the best method for a particular study often depends on the size, location and accessibility of the sample.

7.3.1 Using interviews under an interpretivist paradigm

Under an interpretivist paradigm, unstructured or semi-structured interviews are used. In an unstructured interview, none of the questions are prepared in advance but evolve during the interview. The researcher uses open-ended questions, which cannot be answered with a

simple 'yes' or 'no' or a short factual answer; instead, an **open question** requires a longer, developed answer. A **closed question** is one that requires a 'yes' or 'no' answer or a very brief factual answer, or it requires the respondent to choose from a list of predetermined answers. Closed questions are quick and simple to answer, whereas open questions take longer to answer and require the respondent to think and reflect. Open questions are used to obtain opinions or information about experiences, and feelings, such as 'What are the benefits of working for this company?'. The researcher might also use probes to explore the interviewee's answers in more depth.

An **open question** is one that cannot be answered with a simple 'yes' or 'no', or a very brief factual answer, but requires a longer, developed answer.

A **closed question** is one that requires a 'yes' or 'no' answer, or a very brief factual answer, or requires the respondent to choose from a list of predetermined answers.

In a semi-structured interview, the researcher prepares some questions to encourage the interviewee to talk about the main topics of interest and develops other questions during the course of the interview. The order in which the questions are asked is flexible and the researcher might not need to ask all the pre-prepared questions because the interviewee may have provided the relevant information when answering another question. Under a positivist paradigm, interviews are structured, which means the questions are planned in advance and each interviewee is asked the questions in the same order (see Chapter 10).

Easterby-Smith, Thorpe and Jackson (2012, p. 132) suggest that unstructured or semi-structured interviews are appropriate when:

- it is necessary to understand the personal constructs (sets of concepts or ideas) used by the interviewee as a basis for his or her opinions and beliefs
- the purpose is to develop an understanding of the respondent's 'world' so that the researcher might influence it (for example, through action research)
- the logic of a situation is not clear
- the subject matter is highly confidential or commercially sensitive, or there are issues about which the interviewee might be reluctant to be truthful.

Unstructured interviews are very time-consuming and there could be problems controlling the range of topics and recording the questions and answers. You might also have problems when it comes to analysing the data as the questions raised and the matters explored vary from one interview to another as different aspects of the topic are revealed. This process of open discovery is the strength of such interviews, but it is important to recognise that the emphasis and balance of the emerging issues might depend on the order in which your participants are interviewed. We discuss the methods for analysing interview data in the next chapter.

7.3.2 Designing interview questions under an interpretivist paradigm

In this section, we focus on designing interview questions where the research data generated will be analysed using non-numerical methods. Before you can start designing any questions, you need to have gained considerable knowledge about your topic from reading the literature. The only exception to this is would be if you are designing an inductive study using a methodology such as grounded theory. We discuss this in Chapter 9. Table 7.1 (see next page) shows examples of different types of interview question and their uses.

To ensure that you gain maximum information, it is essential that you probe the interviewee by asking questions that require them to elaborate on their initial statement. There are a number of qualitative characteristics relating to the answers that you must establish, and Table 7.2 (see next page) shows examples of the probes you can use to elicit such data. Probes are questions you ask in response to what the interviewee has said. They are asked so that you can gain greater understanding of the issue under study and are the beginning of the data analysis stage. They are used in an unstructured or semi-structured interview. If you are thinking of asking prepared questions only, you would be using a structured interview, which is a method associated with a positivist paradigm.

You should bear in mind that recent events can affect the interviewee's responses. For example, he or she may have just received news of a promotion or a salary increase; alternative, the interviewee may have just received a reprimand or bad news about a friend or relative. If time allows, you will find it useful to arrive at the interview venue 15 minutes beforehand to assimilate the atmosphere and the environment, and spend the first few minutes putting the interviewee at ease. It is difficult to predict or measure bias, but you should be alert to the fact that it can distort your data and hence your findings.

Table 7.1 Types of interview question

Type of question	Useful for	Not useful for
Open question (e.g. Tell me what happened when ...)	Most openings to explore and gather broad information	Very talkative people
Closed question (e.g. Did you consult your manager?)	Getting factual information	Getting broad information
Multiple questions (more than one in a sentence)	Never useful	Never useful
Probes (e.g. What happened next?)	Establishing sequence of events or gathering details	Exploring sensitive events
Hypothetical question (e.g. What might happen that could change your opinion?)	Encouraging broader thinking	Situations beyond the interviewee's scope
Comparison question (e.g. Do you prefer weekly or fortnightly team meetings?)	Exploring needs and values	Unrealistic alternatives
Summary question (e.g. So, am I right in thinking that the main issues are ...?)	Avoiding ambiguity, validating data and linking answers	Premature or frequent use

Table 7.2 Examples of probes

Characteristic	Probe
Clarity	Can you give me an example of this? What do you mean? Can you explain that again?
Relevance	How do you think that relates to the issue? Can you explain how these factors influence each other?
Depth	Can you explain that in more detail? Can you give me examples?
Dimension	Is it possible to look at this another way? Do you think that is a commonly held opinion?
Significance	How much does this affect you? What do you think is the most important? Would you change your opinion if X was to happen?
Comparison	Can you give me an example where this did not happen? Can you give me an example of a different situation? In what way does your opinion differ from the views of other people?
Bias	Why do you hold this opinion? What might happen that could change your opinion?

You must always ask the interviewee for permission to record the interview using an audio recorder and taking notes. After putting your interviewee at ease, you will find it useful to spend a little time establishing a rapport before starting to record. You can offer to switch the recorder off if your interviewee wants to discuss confidential or sensitive information but seek

permission to continue to take notes. This encourages a higher degree of frankness. We discussed the issue of confidentiality in Chapter 2.

Questions should be presented in a logical order and it is often beneficial to move from general to specific topics. It is important to remember that you should only ask questions that are relevant to your study. Classification questions collect data about the characteristics of the unit of analysis, such as the interviewee's job title, age or education; or the geographical region, industry, size or age of the business. If you wish to make comparisons with previous studies, government statistics or other publications, it is essential to use probes to ensure that you have enough information to categorise the information correctly so that you can describe your sample. There is some debate over the best location for classification questions. Some researchers believe they are best placed at the beginning so that the interviewee gains confidence in answering easy questions; others prefer to place them at the end so that the interview starts with the more interesting questions. If your questions are of a sensitive nature, it can be beneficial to start with the non-threatening classification questions. On the other hand, if you have a large number of classification questions, it could be better to ask them at the end, so that the interviewee is not deterred at the start.

Some research projects include the investigation of sensitive issues such as equality, health, redundancy, financial loss or safety. Lee (1993) offers the following advice on asking sensitive questions:

- Use words that are non-threatening and familiar to the respondents. For example, when explaining the purpose of the questionnaire, say you are looking at working patterns rather than investigating absenteeism in their place of work.
- Lead up to any sensitive question slowly.
- You might find that participants will answer questions about past indiscretions more readily than questions about current behaviour. For example, they might admit to stealing from their employer at some time in the past, but be unwilling to disclose that they have done so recently.

These suggestions raise ethical issues and you must determine your own position on this. If you find your interviewee is showing signs of resisting some topics, the best advice is to drop those questions. However, this will alert you to the likelihood that these might be interesting and important issues and you might wish to find an alternative way of collecting the data, such as diary methods or observation.

You need to let the interviewee know that the interview is coming to an end. One way of doing so is to say that you have asked all the questions you had in mind and ask whether he or she has any final comments. You should then conclude by thanking them and reassuring them that you will be treating what they have told you as confidential. If you want to improve the validity of your findings, you should arrange to send a summary of your findings to the interviewee for feedback on your interpretation. When you have left the interview, you should spend as much time as possible immediately afterwards adding to your notes. You will find it helpful if you can share your insights and reflections with your supervisor or fellow students.

Box 7.1 shows an example of a semi-structured interview schedule with suggested prompts. It was used to investigate a research problem relating to access to finance for small businesses.

Box 7.1 Example of a semi-structured interview schedule with probes

Thank you very much for agreeing to take part in this interview, which will take about 30 minutes. As I explained in my email, I am interested in your experiences as a business owner and your plans for the future of the business. With your permission, I will record the interview, which will reduce the need to take detailed notes and help with the analysis.

I'd like to start by asking you something about the early life of the business.

1. **When was this business started (year)?**
   a) Was it started as a sole proprietorship/partnership/limited company?
   b) Has there been a change since then? If so, is it now a sole proprietorship/partnership/limited company and what were the reasons for the change?

2. Did you start the business yourself/buy the business/join the business after it was started?

a) What are the main activities of the business/what sector does it operate in?

b) What made you decide to go into this type of business?

c) What were you doing before this?

3. Did you get any advice before starting/buying/joining the business?

Use the following probes if necessary:

a) If so, from whom?

b) What sort of advice did you receive?

c) What did you do as a result of this advice?

d) How long did it take you from having the initial idea to starting/buying/joining the business?

4. How did you raise the finance to start/buy/join the business?

Use the following probes if necessary:

a) How much did you need?

b) Did you have any problems raising the cash? If so, what problems?

c) What did you do to resolve the problems?

d) What did you need the finance for?

e) What type of finance did you seek?

f) Did you seek advice from anyone beforehand? If so, what advice and from whom?

g) Did you have any difficulties in obtaining the finance you wanted from the first source you tried?

h) Did this source offer you any advice on how to improve your application?

i) Did you use this advice to revise your application?

j) Were you successful with your next application? If not, explain what you did next.

k) What was the effect on your business of any of the problems you have mentioned in getting access to finance?

5. Have you needed to raise finance since those early days?

a) Did you have any problems raising the cash? If so, what problems?

b) What did you do to resolve the problems?

If necessary, use probes (d)–(k) above.

I'd like to move to the present day now.

6. What are the main activities of the business (what type of products of services does it provide)?

7. How many owners are there?

a) How many owners are involved in the day-to-day running of the business?

b) How many owners are not involved in the business, and what is their relationship to the business (e.g. retired founders, family members, business angels)?

c) Would you describe it as a family-owned business?

d) Has there been a change of ownership of the business in the past 3 years?

8. What is your role in the business?

a) What is your background? (e.g. financial or business experience/training)

9. So that I can get an idea of the size of the business, how many people are on the payroll, including yourself and any other owners?

a) How many of them are full-time and how many are part-time?

b) How many of them are paid family members?

c) Do any of the family members work on a voluntary (unpaid) basis?

10. What would you say is the main challenge to the success of the business at the moment?

No prompting – perhaps it has nothing to do with financial matters.

11. Have you received any advice on financial matters during the past 12 months?

a) If so, from where and about what?

b) What did you do as a result of this advice?

12. I don't need any figures, but can you tell me approximately what proportion (%) of the total capital in the business is debt finance (e.g. long-term loans or mortgages)?

13. Does the business employ an accountant?

a) If so, is it an internal accountant (employed in the business) or an external accountant in practice?

b) Does the accountant prepare the annual accounts?

c) Are the accounts audited?

14. Who are the main customers (e.g. small/medium/large firms or individuals)?

a) Are customers offered credit?

b) If so, who makes the decisions regarding granting credit to customers?

15. Do you give information to credit rating agencies, credit insurers or other organisations? If so, what information do you give to each (e.g. financial and non-financial information)?

16. Do you have any plans for the future of the business?

Use the following probes if necessary:

a) Do you want to grow the business over the next two or three years?

b) If so, in what way do you want the business to grow and do you think you will need additional finance to fund this growth?

c) Do you want to sell this business and then get a job somewhere else/start another business/retire?

d) If you want to retire but remain an owner, what are your plans regarding the future management of the business?

If the interviewee is happy to go on talking, ask the next question:

17. Have you owned a business before this one? If so, tell me about how you started that?

Use any of the previous questions that are relevant to gain an understanding.

Thank you very much for giving me so much of your time.

I will send you a copy of the interview transcript for your approval in due course.

I may use anonymous quotations in my research report to illustrate the findings, but neither your name nor that of the business will be associated with any of the information you provide.

Your contact details will be kept securely and destroyed at the end of the study.

Vox pop What has been the high point of your research so far?

Pippa, final year PhD student investigating how a small town is affected by increased tourism

The experiences of towing a campervan to remote places for my fieldwork and meeting a lot of wonderful people who gave me a lot of time.

Nesrine, fourth year PhD student investigating supply chain agility

Solving my data collection problem! I'd started collecting primary data [via face-to-face interviews] in Egypt when the 'Arab Spring' happened and it wasn't safe to go there. I thought it would mean that I had to start all over again in another country. Then at last, after several months, I was able to go back to Cairo again and carry on!

7.3.3 Examples of studies using interviews

In this section, we examine three examples of studies using interviews where all the interviewees in each study were asked the same set of questions and were able to answer them in their own words. The first study (Brockman *et al.*, 2010) investigated the level of personal cohesiveness in new product development teams. The researchers obtained agreement to work with 12 teams and the team leader of each team was interviewed first. Next, two members from each team were interviewed and this provided a total of 36 interviews. There were approximately equal numbers of men and women in the sample and each interview lasted around 45 minutes. Therefore, the total time taken for the 36 interviews was more than 25 hours.

You can appreciate that the researchers had carefully planned the sampling and sequencing of the interviews. This was important as they spent 25 hours conducting the interviews. If you are planning to use a similar approach, you must make sure you are fully prepared. Do not be too ambitious about the number of interviews but decide how many people you will interview on the basis of their position and expertise/knowledge. Brockman *et al.* (2010) used predetermined questions, but every question was open-ended. As the researchers observed, this meant that the data analysis took a considerable amount of time. Therefore, this is not an approach that is suitable if you have tight time constraints.

The second study (Lengnick-Hall, Gaunt and Kulkarni, 2008) focused on the employment of people with disabilities and sought the opinions of 38 executives in small (0–49 employees), medium (50–499 employees) and large (500 or more employees) companies. The interviews took place in the participants' offices; typically, with no one else present. To determine what questions should be asked, the researchers conducted a thorough review of the existing literature. As the subject of the research might be considered sensitive, the questions were designed at the industry level, rather than focusing on the employee's company, with a view to eliciting more candid answers.

The third study (Thaichon *et al.*, 2017) was conducted in Australia where the deregulation of banks had made it easier for customers to switch banks. The authors used a qualitative approach as the different levels of meaning in the terms used could be misinterpreted. To obtain a sample, the researchers asked customers outside a bank whether they would agree to be interviewed. If so, a time and location for the interview was agreed. A total of 21 semi-structured, in-depth interviews were conducted, each lasting about 20 to 25 minutes. From these interviews, the authors were able to identify eight factors that influenced customers to switch banks.

All these examples demonstrate the need to be very careful when selecting your sample and planning the interviews. The researchers in the second study state that the interview questions were derived from the literature. Even with a team of experienced researchers, preparing the questions and conducting the interviews takes considerable time and the subsequent transcribing and analysis of the data is likely to take even longer. You must bear this in mind if you are planning to use interviews as part of your research design.

7.3.4 Potential problems

You should be aware that there can be a number of potential problems with interviews. Sometimes the interviewee is accompanied by another person (often to ensure that all the questions you ask can be answered). You must be alert to the fact that if there is more than one interviewer or interviewee it will change the dynamics of the interview. Another situation that can arise is that your interviewee could be 'wearing two hats' (in other words, have multiple roles). For example, the finance director of a company you are interviewing might also be on an advisory group that influences EU company law; a factory employee might also be a trade union official. Therefore, when asking questions, you must determine whether he or she is giving a personal opinion or making a policy statement. Another problem is that the interviewee might have certain expectations and give what he or she considers is the 'correct' or 'acceptable' answer to the question. Lee (1993) suggests that, to some extent, this can be overcome by increasing the depth of the interview.

When asking questions, you need to be aware of the potential for inadvertent bias, such as age, class, gender or race bias. For example, a study that examined sex bias more than 40 years ago (Rosenthal, 1966) found that male and female researchers obtained significantly different data from their subjects. The following tendencies were observed:

- Female subjects were treated more attentively and considerately than male subjects.
- Female researchers smiled more often than male researchers.
- Male researchers placed themselves closer to male subjects than female researchers did.
- Male researchers showed higher levels of body activity than female researchers did. When the subject was male, both male and female researchers showed higher levels of body activity than they did with female subjects.
- Female subjects rated male researchers as being friendlier than female researchers, and as having more pleasant and expressive voices than female researchers.
- Both male and female researchers generally behaved more warmly towards female subjects than they did towards male subjects, with male researchers being the warmer of the two.

Vox pop What has been the high point in your research so far?

Chris, undergraduate student investigating environmental implications of logistics in the grocery market

7.4 Critical incident technique

Unstructured interviews are not merely idle conversations. The researcher needs to encourage the participant to tell his or her story in his or her own words, while keeping the interviewee focused on the relevant issues. The task is to obtain in-depth, reliable knowledge about what people do, think or feel. One way to do this is to use **critical incident technique** which was developed by Flanagan (1954) as a method for collecting data about a defined activity or event based on the participant's recollections of key facts. The principles can be modified and adapted according to the circumstances, which makes it very useful for designing interview questions under an interpretivist paradigm.

Critical incident technique is a method for collecting data about a defined activity or event based on the participant's recollections of key facts.

7.4.1 Using critical incident technique

Critical incident technique helps interviewees to talk about activities and events by reference to their own experiences and discourages them from talking about hypothetical situations or other people's experiences. For example, if you are using interviews with owners of small businesses to investigate a research problem relating to access to finance (see Box 7.1), the critical incident might focus on their experiences at the start-up stage. You could follow this up by asking them to tell you about the next time they can remember needing finance and what happened, until you have covered all the occasions. If there are a great many of the type of critical incidents you are interested in, it is best to ask about the most recent or to ask the interviewee afterwards why he or she chose that particular event.

Flanagan intended the researcher to collect information about critical incidents using a form. Box 7.2 shows his example of such a form.

Box 7.2 Flanagan's example of a critical incident form

"Think of the last time you saw one of your subordinates do something that was very helpful to your group in meeting your production schedule." (Pause until he indicates that he has such an incident in mind.) "Did his action result in increase in production of as much as one per cent for that day? – or some similar period?"

(If the answer is "no", say) "I wonder if you can think of the last time that someone did something that did have this much of an effect in increasing production." (When he indicates he

has such a situation in mind, say) "What were the general circumstances leading up to this incident?"

.....

.....

"Tell me exactly what this person did that was so helpful at that time." .....

.....

"Why was this so helpful in getting your group's job done?" .....

.....

"When did this incident happen?" .....

"What was this person's job?" .....

"How long has he been on this job?" .....

"How old is he?" .....

Source: Flanagan (1954, p. 342). This content is now in the public domain.

Box 7.3 shows an example of a semi-structured interview schedule that incorporates a critical incident technique. It was used in an international study to investigate a research problem relating to the information used to make trade credit decisions in small businesses.

Box 7.3 Example of a semi-structured interview schedule incorporating critical incident technique

Participant information *(Provide in advance but reiterate main point at the interview)*

Thank you for agreeing to take part in this international study on the financial and other information used in making credit decisions relating to SMEs in Finland, UK, South Africa, Thailand and USA. In particular, I am interested in:

- The type of information needed by trade and other creditors, credit rating agencies and credit insurers
- The purposes for which the information is needed
- The sources of information used
- Other information that they would like to see in the financial statements

With your permission, this interview will be recorded. This will reduce my need to take detailed notes and improve the analysis. I will provide a copy of the interview transcript for your approval. I may use anonymous quotations from the transcript in the research report, but the full interview transcript will not be published. I will send you a summary of the findings.

I am very grateful to you for kindly giving up your time to take part in the study. Your participation is voluntary. Unless you have given us permission otherwise, neither your name nor the name of your organisation will be associated with any of the information you provide. Your contact details will be treated in the strictest confidence and once the study has been completed, they will be deleted.

I'd like to start by asking you something about yourself and the business.

1. **Who are the main customers? (e.g. small, medium, large firms, individuals)**
2. **What is your background? (e.g. financial experience/training)**
   a) Do you make all the credit decisions in the business?
3. **I see from the annual accounts that trade receivables exceed trade payables – is that typical of this sector?**

I'd now like to focus on credit decisions made in connection with customers.

4. **Approximately how many and what proportion of your customers is given credit?**
   a) How do you decide whether to give credit?
   b) What do you take into account when deciding whether to grant credit?

c) Does the value of the contract effect the credit decision? If so how?
d) Are large customers dealt with differently from smaller ones?
e) Does the form of the customer affect the decision (e.g. large limited company, medium or small limited company, sole trader or partnership, public body, private individual)?

5. I'd like you to think about the last time you made a decision to give a substantial amount of credit to a *new customer* (i.e. the first time for this customer).

a) How long ago was that and how would you categorise this customer (e.g. size of the firm, amount of credit, value of orders/sales volume)?
b) What financial and/or non-financial information did you request from this new customer?
c) Did you receive any other information without asking for it?
d) Did you look at this customer's financial statements?
e) Can you give some indication of the relative importance of financial information compared with non-financial information?
f) Did you do a credit check, ask for a credit reference or ask for credit insurance?
g) Do you treat most of your new customers in this way? If not, how do things differ? Probe: Would you have requested different information if the circumstances had been different (e.g. value of the order; size of the customer; if the customer was part of the community/your business network)?

6. I'd now like you to think about the last time you made a decision to give a substantial amount of credit to an *existing customer*.

a) How long ago was that and how would you categorise this customer (e.g. size of the firm, amount of credit, value of orders/sales volume)?
b) What financial and/or non-financial information did you request from this existing customer?
c) Did you receive any other information without asking for it?
d) Did you look at this customer's financial statements?
e) Can you give some indication of the relative importance of financial information compared with non-financial information?
f) Did you do a credit check, ask for a credit reference or ask for credit insurance?
g) Do you treat most of your existing customers in this way? If not, how do things differ? Probe: Would you have requested different information if the circumstances had been different (e.g. value of the order; size of the customer; if the customer was part of the community/your business network)?

7. Do you have access to any of your customers' real-time information systems (e.g. e-invoicing)?

a) Approximately how many and what proportion of your customers?

8. Do you monitor the financial position of your customers? If so, which customers and how? (e.g. To see whether they are paying within the agreed period, to ask for credit checks or to request financial information)

a) What happens when a customer exceeds the credit period?
b) Are bad debts a problem for your business?
c) I'd now like to ask you about the use of financial statements in assessing and monitoring the credit worthiness of customers.

9. Does your business examine the financial statements of new and/or existing customers? (If 'no', go to Q12)

10. **Are you responsible for examining the new and/or existing customers' financial statements? (If 'no', keep these questions for that person)**
    a) Does your business examine the customer's annual financial statements? Probe: Are these the statutory accounts?
    b) Does your business require the customer's annual financial statements to be audited?
    c) Does your business examine the customer's quarterly or monthly financial statements?
    d) How do you obtain customers' financial statements? Prompt: From the customer, the public registry, a commercial database (if so, which one)?
    e) What information is examined? Prompt: P&L, BS, Notes to the accounts, other?
    f) What is the most useful information in the financial statements for assessing/monitoring credit risk?
    g) What other information would make the financial statements more useful? Probe: Do you ask for other financial information that is not disclosed?
    h) Do you discuss the information in the financial statements with the customer?
11. **Do you have a standard format for extracting the data to be analysed?**
12. **Do you compare financial data for the customer with industry averages or other benchmarks? If so, what?**
13. **Do you do a credit check on new and/or existing customers? If so, which credit rating agency do you normally use?**
    a) What information do you get?
    b) What information do you use?
    c) Do you assess the customer's performance? If so, how do you measure it?
    d) Do you assess their liquidity? If so, how do you measure this?

    Before we finish, I have a few questions about when your business is buying on credit from another organisation.

14. **Please think about the last time you purchased goods or services on credit from a *new supplier* (i.e. the first time from this supplier).**
    a) How long ago was that?
    b) What financial and/or non-financial information did this new supplier request?
    c) Did you give any other information without asking for it?
    d) Did they ask for your business's annual financial statements? Probe: Are these the statutory accounts?
    e) Did they ask for your business's periodic financial statements? Prompt: Quarterly, monthly, other?
    f) Did they ask for the financial statements to be audited? If so, which (annual, quarterly, monthly, other)?
    g) Did they ask for a credit reference or ask for credit insurance?
    h) Do most of your new suppliers treat you in this way? If not, how do things differ? Probe: Would you have been asked for different information if the circumstances had been different (e.g. value of the order; size of the supplier; if the supplier was part of the community/your business network)?
15. **Please think about the last time you purchased goods or services on credit from an *existing supplier*.**
    a) How long ago was that?
    b) What information did this existing supplier request? Prompt: Financial or non-financial information?

c) Did you give any other information without asking for it?

d) Did they ask for your business's annual financial statements? Probe: Are these the statutory accounts?

e) Did they ask for your business's periodic financial statements? Prompt: Quarterly, monthly, other?

f) Did they ask for the financial statements to be audited? If so, which (annual, quarterly, monthly, other)?

g) Did they ask for a credit reference or ask for credit insurance?

h) Do most of your existing suppliers treat you in this way? If not, how do things differ? Probe: Would you have been asked for different information if the circumstances had been different (e.g. value of the order; size of the supplier; if the supplier was part of the community/your business network)?

16. Do you give information to credit rating agencies, credit insurers or other organisations? If so, what information do you give to each? Probe: Financial and non-financial.

Thank you very much for giving me so much of your time. I will send you a copy of the interview transcript for your approval in due course. I may use anonymous quotations in my research report to illustrate the findings, but neither your name nor that of the business will be associated with any of the information you provide unless you have given permission otherwise. Your contact details will be kept securely and destroyed at the end of the study.

7.4.2 Examples of studies using critical incident technique

In this section, we examine three examples of studies using critical incident technique. The first study (Meldrum and McCarville, 2010) focuses on employees with part-time, seasonal or temporary contracts in the leisure industry. The sample was obtained by asking students on relevant academic courses to complete a short screening questionnaire and this produced 168 responses. One of the questions asked respondents if they were willing to participate in an interview to discuss their work experiences and, if so, to provide their contact details. The results of the screening survey were used to identify students with a range of work experiences (ranging from high to low commitment), job types and settings, and the number of jobs they had. A total of 24 students with the appropriate experience were identified and subsequently these students took part in individual semi-structured interviews.

The questions selected were used to measure the affective dimensions of commitment to the organisation, occupation, supervisor, work group and customers. They were asked to describe significant events (the critical incidents) when others' actions (fellow workers or customers) seemed particularly effective or ineffective in achieving organisational goals. A less effective alternative might be to ask: 'Are your fellow workers effective in achieving organisational goals?' but the answers might have been based merely on vicarious knowledge or unsupported evidence. From this you can see that asking the participant to think of a specific event is crucial to the technique.

The second example (Johnstone, Wilkinson and Ackers, 2010) is a study that investigated the work agreement between employer and employees. The aim of the study was to gather opinions of those involved in the partnership agreement rather than vague recollections of organisational events. By using critical incident technique, those interviewed were encouraged to identify some of the main organisational and employment relations issues/incidents over the past five years (or since they joined the organisation if less than five years). The researchers asked what happened, how it was managed, who said what and to whom, how the interviewee felt at each stage, and how he or she perceived the outcome. A total of six long interviews were conducted with managers, three with employee representatives and three with full-time union officials. The interview data were supplemented with data from focus groups with employees.

In the third example (Chen-Tsang and Ching-Shu, 2009), the researchers used a questionnaire to collect data rather than holding interviews. The aim of the study was to identify the seriousness of service failures in restaurants, any corrective action taken and the response of the customer. The researchers sent a questionnaire to a sample of customers who had visited any chain restaurant during the previous six months and who had experienced a service failure. A total of 500 incidents were identified and 431 of them matched the researchers'

definition of a service failure. The questionnaire covered the following topics and some of questions were based on a rating scale and therefore yielded quantitative data:

1. A detailed description of the failure that occurred.
2. The perceived magnitude of the failure on a scale of 1–10, where 1 = a minor mistake and 10 = a major mistake.
3. A detailed description of what measure the restaurateur took to compensate for the failure.
4. The degree of satisfaction for the compensation, where 1 = very unsatisfied and 10 = very satisfied.
5. The type of chain restaurant.
6. Whether the incident caused them to cease patronage at the restaurant.
7. Demographic information about the respondent such as age, gender and level of education.

A recurring theme with the studies we have discussed is the care that the researchers took in selecting people they wished to interview. Although each study focuses on a different topic, all three benefited from using critical incident technique as it helps create focus. Although the number of interviews is not large, considerable insights can be gained from using this technique in a small number of in-depth interviews.

7.4.3 Potential problems

If you have limited knowledge of the phenomenon under study, one potential problem is that you might find it difficult to determine what constitutes a critical incident. A search of the literature will help you. A problem associated with any method based on memory is that the participant could have forgotten important facts. There is also the problem of post-rationalisation, where the interviewee recounts the events with a degree of logic and coherence that did not exist at the time. In common with all types of interview, critical incident technique can generate a considerable amount of data that will take some time to analyse.

7.5 Focus groups

A **focus group** is a method for collecting data whereby selected participants discuss their reactions and feelings about a product, service, situation or concept, under the guidance of a group leader.

A **focus group** is a method for collecting data whereby selected participants discuss their reactions and feelings about a product, service, situation or concept, under the guidance of a group leader. For example, you might wish to get a group of employees from a company together to discuss what they feel about the profit-sharing scheme in operation, or a group of consumers to discuss their views on a particular brand of mobile phone or a television programme. Listening to other group members' views stimulates participants to voice their own opinions and encourages the participants to interact with one an another when responding to questions. This helps produce data that would otherwise be difficult to access. Focus groups combine interviewing (see section 7.3) and observation (see section 7.8). They can be used in an interpretive methodology but are also used by positivists before or after conducting a survey.

In business research, focus groups have long been popular in marketing research, but are increasingly being used in other disciplines. Focus groups can be useful for a number of purposes, such as:

- to develop knowledge of a new phenomenon
- to generate propositions from the issues that emerge
- to develop questions for a survey
- to obtain feedback on the findings of research in which the focus group members participated.

7.5.1 Using focus groups

If you are planning to use a focus group to collect your research data, you will need to enlist help. You will probably want to facilitate the meeting yourself, which means you will need

someone else to take detailed notes and another person to manage the audio and/or video recording. Many researchers find it essential to make a video recording of the discussions as the visual cues can be even more revealing than the audio or written records. You will need to prepare a list of issues you want to cover and, if you are the facilitator, you will find it useful to take brief notes of the main points as they emerge. It is very difficult (but not impossible) to run a focus group by yourself, but there is a risk that data you collect will not have the breadth and depth you are seeking. Box 7.4 shows the main steps involved.

Box 7.4 Procedure for a focus group

1. Prepare a list of issues you want to cover.
2. Invite a group of people with sufficient experiences in common on the research problem to meet at a neutral location.
3. Create a relaxed atmosphere when introducing the group members and explaining the purpose of the focus group and how it will be conducted.
4. Start the session with a broad, open question. This can be displayed on an overhead projector or flip chart. If possible, give visual explanations or examples.
5. Allow the group to discuss the issue(s) as you introduce them without intervention from you, except to ensure that all members have an opportunity to contribute to the discussion and all the issues are covered.

An alternative group method is the Delphi method, which is used to establish communication between a geographically dispersed panel of experts to allow them to deal with a complex problem in a systematic, methodological way with a view to gaining consensus. This is usually achieved through a series of carefully designed questionnaires, interspersed with summarised information and feedback of opinions from earlier responses from panel members. The method takes its name from the oracle of Delphi in Ancient Greece, through whom the gods were believed to give prophecies about the future. The questionnaire can be administered in face-to-face interviews or online (hence the term e-Delphi). Like focus groups, it is widely used as a forecasting technique in marketing and policy-based research. The advantages of the Delphi method are that it generates decisions from a structured group rather than an unstructured focus group and avoids the problem of peer pressure that can be present in a focus group (Lindqvist and Nordänger, 2007).

7.5.2 Examples of using focus groups

In this section, we examine two examples of research using focus groups. The first study (Brüggen and Willems, 2009) compares offline and online focus groups, and the e-Delphi method. The methods were compared in terms of their depth, breadth, efficiency, group dynamics, non-verbal impressions and attitudes of participants. We will concentrate on the investigation of the offline and online focus groups. Online focus groups take place in a virtual room where participants can view and react to the comments of other group members and the moderator. All participants are online at the same time, which allows for direct interactions and a synchronous group discussion.

The study concludes that offline focus groups have the highest depth and breadth. In addition, they are most efficient and lead to higher quality outcomes when compared with online focus groups. Although they take some effort to set up, you might find online focus groups a novel method for collecting data in your field. If you could also conduct some offline focus groups, your project could incorporate an interesting comparison of the findings from the two approaches.

Stewart and Shamdasani (2017) suggest that online focus groups offer the following advantages over face-to-face focus groups:

- An online focus group can expand the geographic range of the participant pool.
- It allows larger samples and/or more diverse groups to be used.

- The potential for anonymity within online groups, and the ability to participate from home or other known and comfortable environments, can make participants more relaxed and more willing to share information.
- It can be faster to complete.
- The costs are generally lower.
- The online environment provides a means for demonstrating products, ideas, and messages, and for allowing participants to engage in cocreation.

The second example (Kerrigan and Graham, 2010) not only describes focus groups but also suggests potential avenues for research. The study examines regional news media, which face an uncertain future as the Internet allows bloggers and amateur journalists to provide alternative sources of news and comment. Fifteen semi-structured interviews were conducted and, in order to gain further insights, these were followed by one focus group with five participants. Three key questions were posed during the focus group. The first question focused on the level of disruption in the media sector as a result of the development of social media and the second related to the potential for wealth/value creation through the social space being generated in these networks. The third question concentrated on the organisation, control and management of the interactions between the media organisations.

7.5.3 Potential problems

Focus groups are fairly inexpensive to set up. This has resulted in their extensive use to examine industrial, economic, and social problems, but the results are sometimes nothing more than the opinions of a small group of people and offer little in the way of deep insights or illumination of the issues under study. To be credible as a data collection technique, focus groups must be properly managed.

One approach is to run a series of groups comprising major categories and compare your findings. For example, you might have separate groups of permanent employees, part-time employees and retired employees discussing their opinion of their employer. Another approach is to have one group containing members from each category. It can be difficult to obtain sufficient volunteers. Too few participants would not generate sufficient data, and too many might mean some do not participate fully; if they do, a large group might be hard to manage. You must remember that you are not trying to obtain a sample from which you can generalise, but to obtain as full a range of perceptions and experiences as possible of the issue or phenomenon of interest to you. Therefore, we advise five to ten participants, but we advise that you try to get acceptances from about 15 to allow for non-attendance on the day.

If the research problem or issue is of interest and relevance to the group, it should not be difficult to generate relevant discussions. In consumer research, participants are invited to try sample goods. This is difficult to replicate when the topic concerns something intangible, such as ethical or equality issues, regulation, or corporate governance. It helps if the subject is controversial and often a short documentary will generate discussions. However, sometimes the focus group does not work because one member is highly vociferous and dominates the discussion. Therefore, the researcher needs to explain the purpose of the focus group meeting and how it will be conducted at the onset, and prepare a strategy for encouraging everyone to make a contribution if some remain silent. One approach is to thank the dominant individual for his or her contribution and take the lead for a moment by summarising the points he or she has made and writing them on a flip chart. Then the rest of the group are invited to give their opinions on these points and add others.

Protocol analysis is a method for collecting data used to identify a practitioner's mental processes in solving a problem in a particular situation, including the logic and methods used.

7.6 Protocol analysis

Protocol analysis is a data collection method used to identify the mental processes in problem solving, and is usually associated with an interpretive methodology. The aim of the method is to find out how people behave and think in a particular situation, particularly in solving a complex problem. Smagorinsky (1989, p. 475) describes protocol analysis as 'an expensive and meticulous research method that has had its share of growing pains'. However, the method offers a tool for the researcher who is interested in how individuals solve business problems.

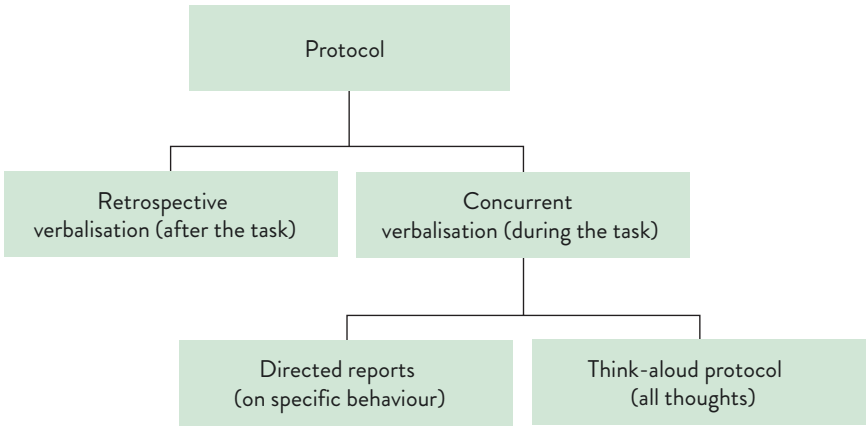


Figure 7.2 Types of protocol

The researcher gives some form of written problem to a practitioner who is experienced in that field. As the practitioner addresses the problem, he or she gives verbal explanations of how he or she is doing it and the researcher records the process. Sometimes the practitioner generates further questions, which form the basis of a subsequent stage in the research.

Protocol analysis studies tend to be small, involving fewer than a dozen participants. The process of constructing the problem that is given to the practitioners is difficult and is part of the research process. The researcher must seek to contrive a realistic problem and address the fundamental issues, and also define the scope of the study. Furthermore, the researcher must have sufficient knowledge to be able to understand and interpret the logic and methods the practitioner uses to address the problem (it cannot be assumed that a solution is always found).

7.6.1 Using protocol analysis

There are a number of ways in which the verbal data can be generated. Retrospective verbalisation takes place when the participant is asked to describe processes after they have occurred. Concurrent verbalisation takes place when the participant is asked to describe and explain their thoughts as they undertake a task. There are two types of concurrent verbalisation: directed reports and think-aloud protocol. The former result when participants are asked to describe only specific behaviours and the latter when they are asked to relay every thought that comes into their heads. Figure 7.2 summarises the different types of protocol.

Day (1986) identified the following advantages of using protocol analysis:

- It helps to reduce the problem of interviewer bias.
- The possibility of omitting potentially important areas or aspects is reduced.
- The technique is open-ended and provides considerable flexibility.

7.6.2 Examples of studies using protocol analysis

In this section, we examine the way in which protocol analysis is used in two published studies. The first study (Deakins, Whittam and Wyper, 2010) investigated how bank managers made lending decisions in connection with actual business propositions. The researchers explain the stages involved in preparing the materials before the interviews took place:

- The first stage was to obtain examples of good propositions for banks loans which had been refused.
- From these examples, the researchers developed seven cases which were examined by a bank lending expert; five cases were considered suitable for the research.
- These cases were then sent to eight bank managers who had agreed to participate in the research so that they could study the cases in advance.

- Subsequently, each bank manager took part in an interview lasting approximately two hours. The interviewer asked the bank manager to 'think aloud' by talking through the decision-making process for each case study.

As the authors note, protocol analysis interviews are open-ended and require a considerable time commitment from the interviewee together with considerable skills and knowledge on the part of the interviewer.

The second study (Read *et al.*, 2009) was much larger and compared the ways in which a group of 27 experienced entrepreneurs and a group of 37 managers with little entrepreneurial experience approached marketing decisions when there was considerable uncertainty. All were asked to think aloud when making marketing decisions in exactly the same business situation (the case). The researchers describe the following stages in the research:

- The sample was selected by determining what is meant by entrepreneurial expertise.
- A case study scenario was developed that described an uncertain situation and the information seeking tasks required to develop a market for the product.
- Having studied the case, individual interviews were held with all the participants, who were asked to 'think aloud' by giving verbal explanations about the information they would require and the details of the decisions they would make.
- The recordings of the interviews were subsequently coded and analysed.

This study also emphasises the care you must take when designing a study. One of the common problems experienced by students collecting qualitative data is that they are unable to analyse it successfully due to lack of planning at the design stage.

7.6.3 Potential problems

One major problem is finding participants with the necessary knowledge and time. Bolton (1991) used concurrent verbal protocols to test questionnaires and identify questions associated with information problems. However, he warns that it is 'time consuming and labour intensive' (Bolton, 1991, p. 565). Day (1986, p. 296) points out that a major drawback of using retrospective verbalisation is that it does not consider 'a real-time situation, but rather an action replay'. On the other hand, concurrent verbalisation requires the researcher maintaining a continuous presence and is usually too time-consuming and disruptive to be considered a feasible choice.

7.7 Diary methods

A **diary** is a method for collecting data where selected participants are asked to record relevant information in diary forms or booklets over a specified period of time.

Diaries are a method for collecting written data that can be used under both an interpretive and a positivist methodology. A diary is a record of events or thoughts and is typically used to capture and record what people do, think and feel. Participants are asked to record relevant information in diary forms or booklets over a specified period of time.

7.7.1 Using diary methods

Plummer (1983) distinguishes between three types of diaries:

- A log is a detailed diary in which participants keep a record of the time they spend on specific activities. This is a method of collecting quantitative data and is normally used in a positivist study.
- A diary is where participants keep descriptive records of their day-to-day lives. These are free-form and present the researcher with several challenges, but also tremendous insights. The diarist should be encouraged to write his or her thoughts as if the diary is secret and to be read by nobody else. This will encourage illuminating revelations, but these can be difficult to interpret. It is also challenging to make comparisons if several participants are keeping diaries about the same phenomenon. You might even question whether they are in fact observing the same events, as their perceptions can differ so much.

- A diary-interview has the advantage of allowing the researcher to progress to another level of inquiry. The participants are asked to keep a diary in a particular format for a short period. Detailed questions are subsequently developed from the diaries and form the basis of an in-depth interview with the diarist. The extent to which the researcher determines the format is a matter of judgement, but it is one that you must be able to defend. If there is time, we recommend that unstructured interviews are held to agree the format with the participants. Typical formats include those based on time (where the diarist records what they do, think or feel at specific times of the day), events (where the diarist makes the record whenever the activity, thought or feeling occurs) and random (where the diarist makes the choice).

Diary methods offer the advantage of allowing the perspectives of different diarists to be compared. They can be a useful means of gaining sensitive information or an alternative to using direct observation. In contrast to participant observation, where the researcher is involved in the research, in a diary study, data are collected and presented largely within the diarist's frame of reference. Stewart (1965) used diaries as part of a study of managers' jobs and cites the following main advantages:

- Diaries greatly increase the possible coverage of numbers and types of participants, and their geographical and industrial distribution.
- The data can be collected simultaneously, which is less time-consuming than observation.
- The classification of activities is made by the diarist rather than the observer, who might be unfamiliar with the technical aspects of the job.
- The diarist can record all activities, whereas an observer might be excluded from confidential discussions.

7.7.2 Examples of using diary methods

Although the first two examples we describe in this section do not relate to business or management issues, they have been chosen because they represent modern adaptations of traditional diary methods. The first study (Ronka *et al.*, 2010) focuses on the daily dynamics in two families in Finland. The family members participating in the research were required to send text messages (SMS) in answer to structured diary questions three times a day over a one-week period. They also kept records in written diaries. The researchers found that the mobile phone method of data collection facilitated the recording of participants' answers at the agreed times and the participants reported that answering was easy and did not take up too much time. A major limitation with SMS is the constraint on the number of characters in each text message when the participant replies. Therefore, if you are considering using this method, you must ensure that the questions posed will elicit reliable and valid responses.

In the second study (Boddy and Smith, 2008), written diaries and telephone interviews were used to collect data from a sample of 82 mothers about the minor injuries experienced by their eight-year-old children. The mothers were asked to keep a structured incident diary for nine days and participate in a daily structured telephone interview over that period. The researchers found that telephone interviews resulted in more missing data than the diary records and reported that the participants preferred the diary method. This comparison of the two methods offers insights into their potential benefits and drawbacks for this particular group of subjects, and is a reminder of the importance of choosing methods that are appropriate to the research question but also appropriate to the participants. Here, we can see that the use of methodological triangulation improved the validity of the findings.

Our third study (Roche and Jacobson, 2019) investigates undergraduate students' responses to the US presidential election in 2016. A total of 85 students completed a 14-day daily diary where mood, stress and mental health outcomes were assessed before and after the election. The authors suggest that daily diary research designs could be integrated into college settings to inform the allocation of counselling centre resources and for political research. Indeed, the co-operation of students in this study suggests that they might be willing to participate in diary studies that focus on management issues in your university or college.

Our final example focuses on the utility of audio diaries in a mixed methods study of transient working patterns and stress among temporary workers in the UK. Crozier and Cassel (2016) found that their participants considered audio diaries were more user-friendly than written diaries. However, they acknowledge that personal attributes, such as confidence and written communication skills, are likely to be moderating factors. The main challenges were:

- rehearsal as impeding immediacy and accuracy
- retrospection
- attrition and incompletion
- managing variation in recording length
- privacy compared with written diaries
- setting context
- coherence in narration
- confidence
- authenticity
- adjustment to the recording process.

Despite these challenges, the authors found that the data provided by the audio diaries extended and complemented interview data from a previous stage in the research and identified additional factors to incorporate in a subsequent questionnaire survey. They suggest that the richness of data generated by audio-diaries makes them useful as a stand-alone method in some research designs.

7.7.3 Potential problems

Practical problems associated with diary studies in general include selecting participants who can express themselves well in writing, focusing the diary (what should be recorded and when), and providing encouragement over the record-keeping period. You will also find that setting up a diary study involves considerable time and effort. As with many other methods of data collection, there is also the issue of confidentiality. Stewart (1965) points out other disadvantages:

- There are severe limitations if the study is concerned with comparability, although these are reduced if the participants are a homogeneous group.
- There might be problems finding a suitable sample and the researcher might have to rely on volunteers.
- There will always be some unreliability in what is recorded.

This last point can be extended to the bias that can occur in the diarists' record keeping. For example, the participants might want to give a favourable impression by claiming to work harder, longer and more efficiently than they did. They might be inclined to omit information that they perceive as giving a negative impression, such as taking a two-hour lunch break instead of the usual one-hour break. There is also the problem that participants might be tempted to modify their normal behaviour during the study to provide the information they think you want. If participants misreport their activities or change their behaviour to give a false impression, it greatly reduces the reliability of the findings. This can also happen when a researcher is using observation as a technique for collecting research data. We examine this next.

Observation is a method for collecting data in a laboratory or a natural setting to observe and record people's actions and behaviour.

7.8 Observation

Observation can take place in an artificial (laboratory) setting or in a natural (real life) setting. Observing people in a natural setting is often referred to as fieldwork. A natural setting is preferred in a study designed under an interpretivist paradigm because of the importance of

context and its influence on the phenomenon being studied. This does not necessarily preclude the use of a laboratory setting, if that is an integral part of the research design.

7.8.1 Using observation methods

The most common type of observation in business research is non-participant observation where the researcher observes and records what people say or do without being involved. The subjects of the research might not be aware that they are being observed, especially if they are being recorded on video or captured in photographs. If the focus of the research is dialogue, audio recordings can be made. As with all data collection methods, permission must be sought from the subjects in advance. If the recording equipment is reliable and can be set up in such a way that the observer does not need to be present, it means that he or she is not distracted by having to write notes, which could also influence the subjects' behaviour. However, that does not remove the possibility that the subjects might alter their behaviour because they know they are being observed and/or recorded.

Under an interpretive design, the themes relating to the actions and dialogue will emerge during the analysis of the recordings. However, in a study designed under a positivist paradigm, the observer could go on to measure the frequency of occurrence, time of duration or other quantitative data, or have prepared a schedule of phenomena of interest from the literature.

The second type of observation is participant observation. In this method, the researcher is fully involved with the participants and the phenomena being researched. The aim is to provide the means of obtaining a detailed understanding of the values, motives and practices of those being observed. The main factors to be considered with this method of observation are the:

- purpose of the research
- cost of the research
- extent to which access can be gained
- extent to which the researcher would be comfortable in the role
- amount of time the researcher has available.

7.8.2 Examples of using observation methods

In this section, we examine examples of participant and non-participant observation. Both reflect the need for an opportunity to use observation. Essentially, something must be happening, and the researcher must be there to see it. In our first example (Bowen, 2008), the researcher was a member of a party of tourists taking a two-week tour from the UK to Malaysia and Singapore. The holiday included a variety of tourist venues and activities such as walks and boat trips in the rainforest, snorkelling off the coast and the islands, and cultural visits. The researcher provides the following list of requirements for conducting participant observation:

- the phenomenon under study is observable within an everyday setting
- the researcher has access to an appropriate setting
- the phenomenon is sufficiently limited in size and location to be studied as a case
- the research questions are appropriate for a case study
- the research problem can be investigated by collecting qualitative data from direct observation and other means that are relevant to the setting.

With participant observation research there is an ethical dilemma: should you declare what you are doing or hide it from the other members of the group? In this study, the researcher revealed that he was a university lecturer and declared his research interest. If you are planning to use participant or non-participant observation, we strongly advise you to discuss this important ethical issue with your supervisor at an early stage.

Our second example (Findlay *et al.*, 2009) is a large project that involved the use of non-participant observation to examine the formal negotiation process between management and unions. The researchers were non-participant observers of the negotiations and they also conducted 90 formal interviews with key players before, during and after agreement was reached. The research team was fortunate in having access to every stage of the bargaining process and was able to observe both formal and informal meetings between management and union negotiators. As a student, you will find that access is often a major challenge. If you are conducting a study using non-participant observation, make sure you have full agreement from all the parties concerned. In addition, you need to clarify how long that agreement will last, any barriers to your attendance and whether there are any restrictions on how you write up the research. This last point is important because in some cases the people being observed might want the right to edit your work, which would not be acceptable.

Our final example demonstrates how projects can be developed from practical aspects of daily life. Loth, Molenbroek and van Eijk (2018) investigated what passengers on a train in the Netherlands do with their hand luggage when wanting to use the toilet. Some explanation is required of the scenario. Storage places in Dutch railway carriages include overhead luggage racks, spaces behind the seats and coat hooks. However, in train toilets there is only one hook on the toilet door for hanging up a coat and/or bag. The researchers used a mixed methods approach using a questionnaire survey with 72 respondents followed by observation based on video recordings. The survey revealed that passengers usually take their hand luggage into the train toilet with them due to lack of storage space and the fear losing their seat. The observational method was slightly more complex. Video recorders were placed in the toilet and 22 participants with hand luggage, such as coats and bags, gave permission to be videoed by signing an informed consent form guaranteeing their privacy. They were rewarded with a travel card for one day of unlimited first-class train travel worth about 80 Euros. Analysis of the recordings showed that nine participants left their coats on their seats. All but one of the remainder kept their coats on when using the toilet. None of the participants used the coat hook on the back of the door for any purpose and most kept their belongings on their bodies. However, one hung a coat and two hung bags on a hook at the end of the support bar intended for apparatus to help disabled users transfer to and from the toilet. Five put their bags on the toilet floor and five moved their belongings from one place to another. These findings led to practical recommendations for the train company concerned. Although it was only a small study, it suggests that observational methods can be used to obtain research data even in the most private of settings.

7.8.3 Potential problems

There are a number of problems associated with observation techniques. One problem is that you cannot control variables in a natural setting, but by observing the behaviour in two different settings you can draw comparisons. Other problems are concerned with ethics, objectivity, visibility, technology for recording what people say and/or do, boredom with the task, the difficulty of concentrating for long periods of time, and the impact the researcher has on those observed. Problems of observer bias can arise, such as when one observer interprets an action differently from a colleague. Another problem can be that the observer fails to observe some activities because of distractions. In addition, the grid designed for recording observations might be deficient because it is ambiguous or incomplete.

Observing people in any setting is likely to make them wonder what you are doing. Knowing that they are being observed, might make them change their behaviour by becoming more productive than usual; more docile than usual; take more risks than usual, be less decisive than usual, and so on. These are known as demand characteristics, because you are making demands on the individual, and this could affect the research. It might be possible to minimise the demand characteristics by not stating the exact purpose of the research. For example, instead of saying you are studying the effect of supervision on the level of productivity, you could say that you are investigating the effect of different environments on job satisfaction.

Many years ago, such an approach might have been acceptable and after the observation the researcher would have explained the true purpose of the research. However, the ethical codes now used by many countries and universities state it is not acceptable to mislead the participants. It is usually necessary for you to explain beforehand the purpose of the research

to the participants and to ensure that they understand it. In some universities, it is necessary to obtain the signed consent of the participant. The ethics rules in most countries do not allow you to observe people without their prior permission and without explaining the purpose of your research.

7.9 Conclusions

The collection of qualitative data under an interpretative paradigm cannot be separated from the analysis. Although for the purposes of explanation we are discussing collection and analysis in separate chapters, in practice the analytical process starts as soon as you begin collecting qualitative data. If you are collecting qualitative data as part of a positivist study, you will choose quantifying methods in the next stage, followed by statistical analysis. We cover this in the next few chapters. Whichever paradigm you have adopted, it is essential that you do not collect data until you have decided on the method of analysis.

All researchers must consider the ethical issues involved. As a general rule, you should inform the participants of the purpose of the research and, where practicable, obtain their written consent to take part. Most of the methods in this chapter are based on the researcher recording the data (interviews, critical incident technique, focus groups, protocol analysis and observation) or the participant recording the data (diary methods). We have also mentioned grounded theory methodology again, where any interpretive method(s) can be used. Some of the methods in this chapter are associated with specific analytical methods, which we discuss in the next chapter.

It is also essential that you use rigorous methods for recording research data that also provide evidence of the source. Notetaking allows you to jot down the main points, which is starting off the analysis process. However, it would be difficult to write comprehensive notes and you might miss important information because you are busy writing. Most note-taking involves a degree of instant analysis, which can lead to omissions, distortions, errors and bias as you subjectively filter what data you record. Moreover, even shorthand writers sometimes find it difficult to decipher their notes afterwards.

Audio or video recording overcomes these problems and leaves you free to concentrate on taking notes of other aspects, such as attitude, behaviour and body language. A specific recording device can be used, or the facilities on your telephone or laptop. The important thing to remember is that you need to obtain the participant's agreement to being recorded. Although new technology has made video easier to use, the cost of the equipment might be a problem. The advantage of video is the relative completeness and complexity of the data captured and the permanence of the record it provides. The subsequent analysis can be conducted in any order and at different speeds.

References for further reading

Bolton, R. N. (1991) 'An exploratory investigation of questionnaire pretesting with verbal protocol analysis', *Advances in Consumer Research*, 18, pp. 558–65.

Boddy, J. and Smith, M. (2008) 'Asking the experts: Developing and validating parental diaries to assess children's minor injuries', *International Journal of Social Research Methodology*, 11(1), pp. 63–77.

Bowen, D. (2008) 'Consumer thoughts, actions, and feelings from within the service experience', *The Service Industries Journal*, 28(10), pp. 1515–30.

Brockman, B. K., Rawlston, M. E., Jones, M. A. and Halstead, D. (2010) 'An exploratory model of interpersonal cohesiveness in new product development teams', *The Journal of Product Innovation Management*, 27(2), pp. 201–19.

Brüggen, E. and Willems, P. (2009) 'A critical comparison of offline focus groups, online focus groups and e-Delphi', *International Journal of Market Research*, 51(3), pp. 363–81.

Chen-Tsang, S. and Ching-Shu, S. (2009) 'Service failures and recovery strategies of chain restaurants in Taiwan', *The Service Industries Journal*, 29(12), pp. 1779–96.

Crozier, S. E. and Cassel, C. M. (2016) 'Methodological considerations in the use of audio diaries in work psychology: Adding to the qualitative toolkit', *Journal of Occupational and Organizational Psychology*, 89(2), pp. 396–419.

Day, J. (1986) 'The use of annual reports by UK investment analysts', *Accounting & Business Research*, Autumn, pp. 295–307.

Deakins, D., Whittam, G. and Wyper, J. (2010) 'SMEs' access to bank finance in Scotland: an analysis of bank manager decision making', *Venture Capital*, 12(3), pp. 193–209.

Easterby-Smith, M., Thorpe, R. and Jackson, P. (2012) *Management Research*, 4th edn. London: SAGE.

Findlay, F., McKinlay, A., Marks, A. and Thompson, P. (2009) "Collective bargaining and new work regimes: 'Too important to be left to bosses'", *Industrial Relations Journal*, 40(3), pp. 235–51.
Flanagan, J. C. (1954) 'The critical incident technique', *Psychological Bulletin*, 51(4), July, pp. 327–58.
Johnstone, S., Wilkinson, A. and Ackers, P. (2010) 'Critical incidents of partnership: Five years' experience at NatBank', *Industrial Relations Journal*, 41(4), pp. 382–98.
Kerrigan, F. and Graham, G. (2010) 'Interaction of regional news-media production and consumption through the social space', *Journal of Marketing Management*, 26(3-A), pp. 302–20.
Lee, R. M. (1993) *Doing Research on Sensitive Topics*. London: SAGE.
Lengnick-Hall, M. L., Gaunt, P. M. and Kulkarni, M. (2008) 'Overlooked and underutilized: People with disabilities are an untapped human resource', *Human Resource Management*, 47(2), pp. 255–73.
Lindqvist, P. and Nordänger, U. K. (2007) '(Mis-?) using the e-Delphi method: An attempt to articulate the practical knowledge of teaching', *Journal of Research Methods and Methodological Issues*, 1(1), pp. 1–13.
Loth, M., Molenbroek, J. F. M. and van Eijk D. J. (2018) 'Hand luggage in the train toilet', *WORK: A Journal of Prevention, Assessment & Rehabilitation*, 59(3), pp. 387–99.
Meldrum, J. T. and McCarville, R. (2010) 'Understanding commitment within the leisure service contingent workforce', *Managing Leisure*, 15(1–2), pp. 48–66.
Plummer, K. (1983) *Documents of Life: An Introduction to the Problems and Literature of a Humanistic Method*. London: Allen & Unwin.
Thaichon, P., Quach, S., Bavalur, A. S. and Nair, M. (2017) 'Managing customer switching behavior in the banking industry', *Services Marketing Quarterly*, 38(3), pp. 142–54.
Read, S., Dew, D., Sarasvathy, S. D., Song, M. and Wiltbank, R. (2009) 'Marketing under uncertainty: The logic of an effectual approach', *Journal of Marketing*, 73(3), pp. 1–18.
Roche, M. J. and Jacobson, N. C. (2019) 'Elections have consequences for student mental health: An accidental daily diary study', *Psychological Reports*, 122(2), pp. 451–64.
Ronka, A., Malinen, K., Kinnunen, U., Tolvanen, A. and Lamsa, T. (2010) 'Capturing daily family dynamics via text messages: Development of the mobile diary', *Community, Work & Family*, 13(1), pp. 5–21.
Rosenthal, R. (1966) *Experimenter Effects in Behavioural Research*. New York: Appleton-Century-Crofts.
Smagorinsky, P. (1989) 'The reliability and validity of protocol analysis', *Written Communication*, 6(4), pp. 463–79.
Stewart, D. W. and Shamdasani, P. (2017) 'Online focus groups', *Journal of Advertising*, 46(1), pp. 48–60.
Stewart, R. (1965) 'The use of diaries to study managers' jobs', *Journal of Management Studies*, 2, pp. 228–35.

Activities

1 You intend to conduct research to examine the study habits of your fellow students. Select two data collection methods you could use and discuss their advantages and disadvantages.
2 You want to identify the features that employees most like about their workplace. Explain how you would do this.
3 You ask an interviewee the following question: 'How much do you like your job?' The interviewee has replied, 'Not much'. List the probes you would use to improve the quality of his or her answer.
4 Working in small groups (or pairs), one person mimes an action, such as playing a computer game, studying for an examination, carrying out a domestic chore or a work-related task, while the others write down their interpretations and subsequently compare them.
5 You intend to use participant observation to examine the study habits of your fellow students in lectures. In pairs, design a form on which you will record your observations. (Hint: Which students will you focus on? What behaviour will you record? What else might you record?) Reflect on the advantages and disadvantages of this method and how you could overcome the main challenges.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter and sections 15.2, 15.5, 15.7, 15.10 and 15.11 in particular, which relate specifically to this chapter.

8

Analysing qualitative data

Learning objectives

When you have studied this chapter, you should be able to:

- discuss the main issues in analysing qualitative data
- describe and apply a general analytical procedure
- describe and apply content analysis
- describe and apply discourse analysis
- compare the strengths and weaknesses of methods.

8.1 Introduction

Your choice of method for analysing your research data depends on your paradigm and on whether the data are quantitative or qualitative; indeed, you might have collected some of each type. In this chapter, we consider the main methods by which qualitative data can be analysed. The methods we describe that focus on quantifying the research data will be of interest to you if you are designing a study under a positivist paradigm, whereas the non-quantifying methods will be of interest to those adopting an interpretivist paradigm.

The research data might represent secondary data such as emails, letters, reports, articles, advertisements, broadcasts or films, or primary data such as field notes, interview transcripts, audio or video recordings, photographs, images or diagrams. It is challenging to manage the analysis of a large amount of data and therefore we describe the main methods that will allow you to analyse your data in a rigorous and systematic manner. We also discuss the use of software as an aid to managing the process. As we have pointed out before, it is essential that you describe and justify your method(s) in your proposal, and subsequently in your dissertation or thesis.

If you have collected a large volume of qualitative research data, you might find the analysis stage much more difficult than the collection stage. Therefore, we have referred to studies that illustrate how other researchers analysed qualitative data successfully. We advise that you obtain a copy of these studies before you start collecting data. This should help you avoid the problem of collecting the data and then finding that you do not know how to interpret it.

We have already noted that researchers can use more than one method to collect their research data and you can also use multiple methods to analyse your data. This is useful if the methods are complementary and add to the interpretation. In the next chapter, we examine integrated methods where the analysis stage is incorporated into the collection stage.

8.2 Main issues in analysing qualitative data

Analysing qualitative data presents both positivists and interpretivists with a number of challenges. In contrast to quantitative data, where statistical analysis is the universally accepted convention, there is no consensus on how to analyse qualitative data. Another challenge is that sometimes the method for collecting qualitative data also incorporates the basis of the analysis, which makes it difficult to distinguish methods by purpose. Furthermore, in some published studies, it is not clear how the researcher structured and summarised large volumes of qualitative data to arrive at the findings. This has led to the criticism that 'brief conversations, snippets from unstructured interviews, or examples of a particular activity are used to provide evidence for a particular contention… [and] the representativeness or generality of these fragments is rarely addressed' (Bryman, 1988, p. 77). Others comment on the lack of instruction in methods for analysing qualitative data: 'Despite the proliferation of qualitative methodology texts detailing techniques for conducting a qualitative project, the actual process of data analysis remains poorly described' (Morse, 1994, p. 23). However, these deficiencies in the literature have gradually been addressed.

8.2.1 Quantifying methods

If you are designing a study under a positivist paradigm, you will probably collect most of your data in numerical form (via a questionnaire, for example), which you will analyse statistically. However, you might have collected a small amount of qualitative data from responses to open-ended questions, which means you need a quantifying method that converts your qualitative data to a numerical form. Alternatively, you might decide not to quantify the data, but use them to provide quotations to support your interpretation of your statistical analysis of the quantitative data. If you are using methodological triangulation (see Chapter 4), you will not necessarily want to quantify certain qualitative data. Typical examples are where you collect data from exploratory interviews to help you identify variables for developing hypotheses, or you conduct post-survey interviews with a small number of respondents to aid the interpretation and validity of the results. However, other studies require the quantification of very large amounts of data (for example, the analysis of documents).

Positivists can use informal methods to quantify small amounts of qualitative research data, such as counting the frequency of occurrence of the phenomena under study. This allows them to examine 'such things as repetitive or patterned behaviours' (Lindlof, 1995, p. 216). If the action, event or other phenomenon occurs frequently in the data, you might decide to omit some references to it to avoid repetition. This is not a shortcut because every occurrence must be counted to determine which data should be omitted. Frequency of occurrence can also be used to investigate whether an action, event or other phenomenon of interest is a common or rare occurrence. Another way of selecting data of interest is to designate items as 'important' and therefore retained in the analysis, or 'not important' and therefore ignored when counting the frequency of occurrence. You will need to be careful not to lose the richness and detail of the data in the process.

If you use informal methods to quantify your qualitative research data, it is essential that you explain the criteria for including and discarding data in your methodology chapter so that your supervisor and others can see that you have applied your methods systematically and rigorously. In addition, you must be clear about why the method is appropriate, as you will need to justify your choice. This will entail comparing its advantages and disadvantages with appropriate alternatives.

8.2.2 Managing qualitative data

If you are designing your study under an interpretivist paradigm, managing qualitative data can be daunting. New researchers tend to design very ambitious studies, but you need to remember that you are seeking depth and richness of data. Therefore, you should limit the scope of your study. This will provide more focus and help reduce the amount of qualitative data you collect. You can also reduce the amount of data you collect by conducting fewer interviews, focus groups, observations, and so on. The breadth of scope of your study depends on the level of your course, what is normal in your discipline and what is acceptable to your supervisor, research committee and/or sponsors.

Morse (1994) suggests that all the different approaches to analysing qualitative data are based on four key elements in the process, although the emphasis varies according to the methodology used:

- Comprehending is acquiring a full understanding of the setting, culture and study topic before the research commences. There is considerable debate in interpretive research on how much prior knowledge the researcher should have. There are those who believe that the researcher should not approach the study with pre-knowledge and the mind should be uncluttered by previous theories and concepts which might block out new perspectives and discoveries. Morse argues that the researcher does need to be familiar with the literature at the commencement of the study, but should remain distanced from it so that new discoveries can be made without being contaminated by preconceptions.
- Synthesising is the drawing together of different themes and concepts from the research and forming them into new, integrated patterns. It is where items of data are reduced and sifted to give a general explanation of what is occurring.
- Theorising is the constant development and manipulation of theoretical schemes until the best theoretical scheme is found. Theory gives qualitative data structure and application. It involves confronting the data with alternative explanations. Causal links or patterns can be hypothesised and 'tested' with selected informants who might refute or verify them. There are three ways of developing theory:
  - identify the beliefs and values in the data and attempt to make links with theory
  - use lateral thinking by examining and comparing the concepts and data from other settings
  - construct theory from the data by induction.
- Recontextualising the data through the process of generalisation, so that the theory emerging from the study can be applied to other settings and populations. In the process, the researcher will return to existing theories to place the results in a context and establish new developments and models or new links.

Vox pop What has been the biggest challenge in your research so far?

Nawi, final year PhD student investigating the determinants of financial structure in small and medium-sized entities

For me, it's staying focused. It's quite a tough task for me to organise all the data I've collected around the research questions. But I have to do it!

8.2.3 Using qualitative data analysis software

Qualitative data analysis (QDA) software, such as *NVivo* and *ATLAS.ti* is widely available and can be very useful in managing the analysis of a large amount of qualitative data or material from mixed methods research. The software will not do the analysis and interpretation for you, but it will provide a place where you can store your data, and it will help you with the process of structuring, coding and summarising the data. *NVivo* can import data from a range of sources, such as *Microsoft Word* and *Excel* documents, pdf files, audio and video recordings, images, online surveys, emails and social media and web content. It can summarise your data in framework matrices and display your data in charts, as well as creating reports and extracts. You can also exchange information between *NVivo* and other applications such as *Microsoft Word* and *Excel*, *IBM SPSS Statistics software* ("*SPSS*"), *SurveyMonkey*, and *Mendeley*, *Evernote* and *EndNote*.

The main advantages offered by QDA software in general are:

- It makes it very easy to import, store and retrieve large amounts of qualitative data.
- It frees you from the manual task of searching, coding and relationship building within the data, thus allowing you to spend more time on analysis and discovery.
- It helps you work systematically.
- It improves the validity and auditability of the findings.

Critics argue that the main disadvantages of QDA software are that it distances the researcher from the data. This encourages a mechanical approach to the analysis and can lead to a focus on volume and breadth rather than depth and meaning. Another concern is the cost of QDA software, and the amount of time needed to learn how to use it.

Gilbert (2002) identifies three stages that researchers experience when using QDA software:

- the tactile–digital divide where the researcher must get used to working with the data on the computer screen rather than hard copy
- the coding trap where the researcher finds the software brings him or her too close to the detail of the data and too much time is spent coding without taking a broader, more reflective view
- the meta-cognitive shift where the researcher learns to reflect on how and why he or she works in a particular way and what impact this has on the analysis.

If you decide to use QDA software, remember to allow time to follow the online tutorials and become familiar with the software. It is useful to keep a research journal in the software program as this allows students 'to rapidly and openly record their thoughts, questions, reflections and emergent theoretical ideas to a central executive point in the program' (Johnston, 2006, p. 387).

If you are having difficulty organising your qualitative research data or you do not know when to start the analysis, have a look at Chapter 15 (section 15.11).

8.2.4 Video conferencing in team-based research

Web-based software for video conferencing such as *Zoom*, *Microsoft Teams*, *Skype* and *FaceTime* are not only useful for aiding the collection of qualitative data (for example, interviews or focus groups), but can also be used to support qualitative data analysis if you are collaborating with other researchers. Video conferencing can support all phases of the qualitative research process

in team-based research, regardless of their proximity. Quartiroli *et al.* (2017, p. 659) found that 'Skype enabled all team members to view data in real time during all phases of the data analysis process, including coding, categorisation, and identification of domains'. The researchers report that video conferencing enhanced communication and consensus building, as well as increasing the efficiency and effectiveness of the analytical process.

8.3 A general analytical procedure

We are now ready to look at some of the main non-quantifying methods of analysis. We start by examining a general analytical procedure for qualitative data described by Miles and Huberman (1994). This is useful because it is not tied to a particular data collection method and it will help you conduct your analysis in a systematic way that you can describe in your dissertation or thesis. Their advice is derived from an extensive study of the literature, a survey of researchers using methods of qualitative inquiry, and an examination of the examples and exhibits the respondents provided that showed how they applied their methods. They concluded that qualitative data analysis involves three simultaneous flows of activity:

- reducing the data
- displaying the data
- drawing conclusions and verifying the validity of those conclusions.

Figure 8.1 illustrates the overlapping nature of these elements and how they take place both during the data collection period and afterwards. Indeed, some data reduction might take place in advance of the data collection period when the researcher chooses the conceptual framework, research questions and participants or cases. You need to remember that these processes rely on the fact that you are very familiar with your data and require a systematic approach. We will now look at the first three stages in detail.

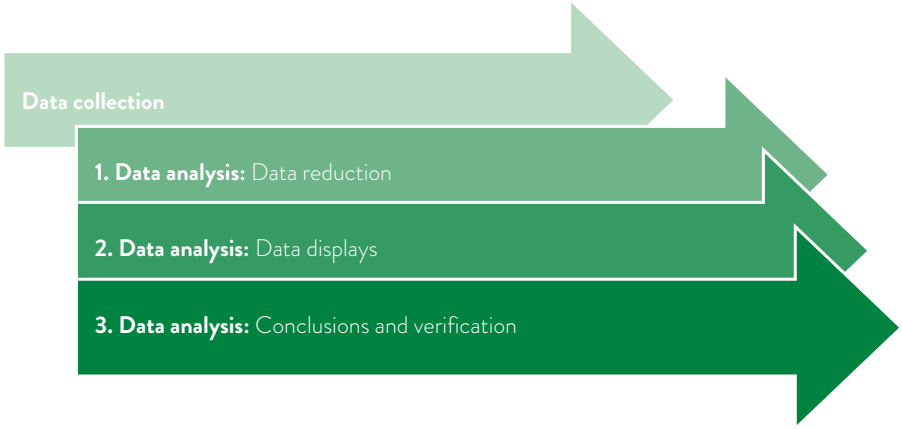


Figure 8.1 Overlapping stages in qualitative data analysis

Vox pop What has been the high point of your research so far?

Hany, final year PhD student investigating the ERP impact on the internal audit function

The final stage of the qualitative data analysis when the findings started to be clear to me. Although the analysis of around 50 interviews was a very exhausting task that took a long time, the process and the findings turned out to be very interesting.

Kevin, final year PhD student investigating the personalisation of products and services

When I conducted my pilot study and found the information the interviewees gave actually confirmed my conceptual framework – even the answers I didn't anticipate confirmed it! My first thought was 'At least I won't have to go back to the drawing board', quickly followed by 'I hope no one else has the same idea and starts writing about it before I do!'

8.3.1 Data reduction

Data reduction is a stage in the data analysis process that involves selecting, discarding, simplifying, summarising and reorganising qualitative research data.

In an interpretive study, you will have collected a mass of qualitative data such as published documents, field notes and interview transcripts that must be reviewed, analysed and interpreted. Whichever method(s) you decide to use for analysing your data, it will involve reducing the data. **Data reduction** is 'the process of selecting, focusing, simplifying, abstracting, and transforming the data that appear in written-up field notes or transcriptions' (Miles and Huberman, 1994, p. 10). It is the first stage in the analysis process. Continuous data reduction involves discarding irrelevant data and collating data where relationships of interest exist. Anticipatory data reduction occurs when the researcher uses a theoretical framework or highly structured research instrument that leads to certain data being ignored. This is not usually a feature of an interpretive study as it restricts collection of rich data and limits deep understanding of the phenomena under study.

You would be right in thinking that data reduction means that you will ignore some of the data you have collected. This is because it is not until you are familiar with your data that you can determine what is relevant and what is not. Consequently, reflection is a key part of an interpretive methodology. Imagine you are from another planet and you are watching one of the events at the Olympic Games. Until you have spent a considerable amount of time analysing and reflecting on what you observe, you would find it very difficult to make sense of the behaviour of the participants.

Data reduction can be achieved by restructuring the data. The data may have been collected in a chronological form dictated by the method of collection (diary methods and observation, for example) or because it is a convenient framework for asking questions (in interviews, for example). If you are using a theoretical framework, this will provide categories into which the data can be fitted. Each category will be given a label or code. If you are not using a theoretical framework, you will develop a conceptual framework as themes and categories emerge during the data collection stage.

Data reduction of text can also be achieved by detextualising the data. This simply means summarising the data in the form of a diagram. For example, if a diarist or interviewee gave you information about who he or she communicated with during the previous day in the office, you could summarise these interactions by drawing a network diagram.

We summarise the main features of data reduction in Box 8.1. Although we have explained that data reduction is a key part of analysing qualitative data, it is important that you keep all the data you have collected so that you can provide your supervisor and/or sponsor with an audit trail showing the process you followed to arrive at your conclusions. You will use some of the data to provide quotations or examples to illustrate your findings.

Box 8.1 Main features of data reduction

- Reducing the data – finding a systematic way to select relevant data, often through the use of coding.
- Restructuring the data – using a pre-existing theoretical framework or one that emerges during the data collection stage to provide categories into which the data can be fitted.
- Detextualising the data – summarising data in the form of a diagram.

8.3.2 Data displays

A **data display** is a summary of data in a diagrammatic form that allows the user to draw valid conclusions.

Diagrammatic analysis makes use of **data displays** to summarise complex data. Data displays are 'a visual format that presents information systematically, so the user can draw valid conclusions and take needed action' (Miles and Huberman, 1994, p. 91). Examples include a network diagram, matrix, chart or graph. Miles and Huberman (1994) provide a comprehensive guide to using data displays and their approach spans not only the analysis of qualitative data, but the entire research design from the beginning to the writing of the final report. In this section, we describe some of their suggestions for data displays when analysing qualitative data.

There are no limits to the types of displays that can be generated from qualitative data, but they fall into two major categories:

- A network has a series of labelled nodes with links between them, which represent relationships.
- A matrix is a table with defined columns and rows and appropriate headings. If the matrix displays a chronological sequence of events, the headings of the columns show the dates and the row labels show the event, action or other phenomenon of interest. If time information is not relevant, another simple form of matrix might show partially ordered data that is little more than a checklist. A complex matrix might illustrate variables, periods of time and conditions, as well as the researcher's thoughts and evaluations. Whether a matrix is simple or complex, you will have to spend considerable time designing it and summarising your raw data.

  We summarise Miles and Huberman's general advice for constructing data displays in Box 8.2.

Box 8.2 General advice for constructing data displays

- Consider what appropriate displays can be used to bring together qualitative data so that conclusions can be drawn.
- Be inventive in using displays; there are no limits on the types of diagrams and illustrations which can be used.
- Constructing displays is an iterative process where you construct an initial display and draw some tentative conclusions, which will be modified, or even overturned as new items of data become available and new displays are constructed.
- Be systematic in your approach to constructing displays and analysing data, but be aware that by becoming more formal in your approach there are the dangers of becoming narrow, obsessive or blind to new meaning which might emerge from the data.
- Use mixed models in your analysis and draw from different methodologies and approaches in your analysis.
- Remain self-aware of the entire research process and use supportive friends to act as critical voices on matters and issues you are taking for granted.
- Communicate what you learn with colleagues who are interested in qualitative studies. In particular, share your analytical experiences.

An events flow network is useful for displaying a complex sequence of events, in terms of both chronological order and relationships. It will also lay the foundation for a causal analysis: 'what events led to what further events and what mechanisms underlay those associations' (Miles and Huberman, 1994, p. 113). Figure 8.2 shows an example of an events flow network relating to the experiences of a university student who had interrupted their studies. The student's experiences are presented in the boxes in the left-hand column, and the researcher's summary of the major forces moving the student to the next experience are shown on the right. The '+' signs indicate the strength of the various forces; the '–' signs, the strength of the student's dissatisfaction with the succeeding experiences.

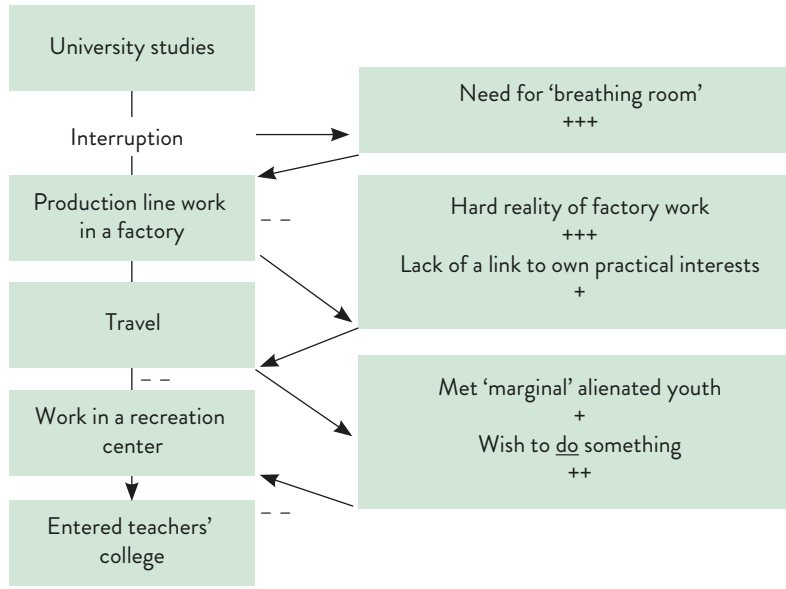


Figure 8.2 Events flow network: a student's learning and work experience

Source: Miles and Huberman (1994, p. 114). Reproduced with permission of SAGE Publications.

An effects matrix is useful for selecting and displaying data that represent the changed state of individuals, relationships, groups or organisations. Box 8.3 shows an example of an effects matrix summarising data on one or more outcomes where the researcher was examining organisational change in a school. The researcher has divided the outcome of change at the school into structural changes, procedural or operating changes and more general relational or social climate changes, where the conceptual sequence is from 'hard' to 'soft' change. In addition, these aspects are displayed separately for the early use period (the first and second years) and the later use period (the third year). The researcher also distinguishes between primary changes, which followed directly from the requirements of change, and 'spin-offs', some of which had not been fully anticipated. Thus, the matrix displays effects, time of use and primary as well as spin-off outcomes.

Box 8.3 Effects matrix

Organization changes after implementation of the ECRI Program

	Early use 1st and 2nd yrs.		Later use 3rd yr.	
EFFECT TYPES	PRIMARY CHANGES	SPIN-OFFS	PRIMARY CHANGES	SPIN-OFFS
Structural	Scheduling: ECRI all morning, rescheduling music, phys. ed. Helping teacher named: has dual status (teach/admin)	Cutting back on math, optional activities Two separate regimens in school Ambiguity of status and role	Integrated scheduling, cross-age grouping in grades 2–6	Less individual latitude: classroom problems become organizational problems

	Early use 1st and 2nd yrs.		Later use 3rd yr.	
EFFECT TYPES	**PRIMARY CHANGES**	**SPIN-OFFS**	**PRIMARY CHANGES**	**SPIN-OFFS**
Procedural	No letter grades, no norms	Parents uneasy 2 regimens in class Teachers insecure Loosens age-grading system	ECRI evaluation sheets, tightening supervision	Teachers more visible, inspectable
	Institutionalizing assistance via helping teacher	In-house assistance mechanism implanted	More uniformity in work in all classes	Problems, solution more common, public
Relations/ Climate	Users are minority, band together	Cliques, friction between users, non-users	Tighter academic press Perception by teachers of collective venture	Reduction in 'fun activities', projects (e.g. Xmas) More lateral help More 'public' distress

Source: Miles and Huberman (1994, p. 138). Reproduced with permission of SAGE Publications.

Both the events flow network and the effects matrix are examples of simple diagrams and it is possible to construct far more complex displays. It is important to remember that you need to be very familiar with your data before you construct your data display and start drawing conclusions.

8.3.3 Using a general analytical procedure

Miles and Huberman (1994, p. 9) identified a number of common features in the procedures used by those analysing qualitative data:

- giving labels (codes) to words, phrases, paragraphs, and so on, and labelling them as examples of a particular 'thing' which might be of interest in the initial set of materials obtained from observation, interviews, documentary analysis, etc.
- adding comments, reflections, etc. (commonly referred to as 'memos')
- going through the materials trying to identify similar phrases, patterns, themes, relationships, sequences, differences between subgroups, etc.
- using these patterns, themes, etc., to help focus further data collection
- gradually developing a small set of generalisations that cover the consistencies found in the data and linking these generalisations to a formalised body of knowledge in the form of constructs (sets of concepts or ideas) or theories.

Coding allows you to group the qualitative data you have collected into categories that share a common characteristic. In this context, a **code** is 'a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data' (Saldaña, 2013, p. 3). Put more simply, a code is a label used by the researcher to identify themes or topics in the qualitative data collected

A **code** is a word or phrase assigned as a label by the researcher to identify a theme or topic in the qualitative data collected for analysis.

for analysis. The codes provide a link between the qualitative data collected and the researcher's analysis and interpretation of that data.

One of the challenges is deciding whether something is relevant for coding. Bryman (2012) suggests you should code material if:

- the interviewee (or other source) states that it is important
- you have read about something similar in a previous study
- it reminds you of a theory or concept
- it is repeated in several places
- it surprises you.

All qualitative data collection methods generate a considerable volume of material and the procedure shown in Box 8.4 offers a method by which it can be managed and controlled.

Box 8.4 General analytical procedure for qualitative data

1. Convert any rough field notes into a written record that you and your supervisors will still be able to understand later on. You may wish to add your own thoughts and reflections. This will be the start of your tentative analysis. You should distinguish your interpretation and speculations from your factual field notes.
2. Ensure that any material you have collected from interviews, observations or original documents is properly referenced. The reference should indicate who was involved, the date and time, the context, the circumstances leading to the data collection and the possible implications for the research. You will find it useful to record your references on a pro forma summary sheet, which you can store in an indexed system for ease of retrieval.
3. Start coding the data as soon as possible. This will involve allocating a specific code to each variable, concept or theme that you wish to identify. The code can be allocated to a specific word or to a phrase. The use of exemplars is helpful when applying the code and explaining its significance in your dissertation or thesis. The code will allow you to store, retrieve and reorganise data in a variety of ways. You will find it easier if you start with as many codes as you feel necessary and later collapse them into a smaller number.
4. You can then start grouping the codes into small categories according to patterns or themes which emerge. This is not a mechanical task and requires considerable reflection. If you are not using a theoretical framework, do not attempt to impose categories, but allow them to emerge from the data. Compare new items of data as they are collected with your existing codes and categories, modifying them as required.
5. At various stages, write summaries of your findings at that point. The discipline of putting your thoughts on paper will help with your analysis and highlight any deficiencies to be remedied.
6. Use your summaries to construct generalisations that you can use to confront existing theories or to construct a new theory.
7. Continue until you are satisfied that the generalisations are sufficiently robust to stand the analysis of existing theories or the construction of a new theory.

Box 8.5 shows an example of coding on an extract from an interview transcript, where the researcher (R) is investigating the role of credit in small firms. The interviewee (I) is the owner-manager of a company that creates online training courses. The researcher has identified the codes in the right-hand margin.

Box 8.5 Extract of a coded interview transcript

R: I'd now like to focus on credit decisions made in connection with customers. Approximately how many and what proportion of your customers are given credit?	
I: Almost all of them. Well, all of them except for those few credit card individuals – everybody else is given credit.	
R: How do you decide whether to give credit?	
I: We don't think of it like that. I guess we decide to take someone on as a client and implicit in that is the fact that we're going to give them credit because it's the only way it's going to work. And our concern is very rarely their ability to pay but the time it might take to get the money.	IMPLICIT DECISION CREDIT PERIOD
R: Is that because of the nature of the people you're dealing with?	
I: Yeah, they're large businesses that… I mean they might go out of business, but credit checking them probably isn't going to tell me anything about that… so my concerns are how Byzantine are the approval mechanisms for getting paid and is there some kind of weird purchase order system that I haven't been made privy to or whatever. That's one concern and the other one is whether there's something about the work that we're being commissioned to do that might leave open to doubt whether we have satisfactorily completed it. Should there be a change of personnel or a falling out, could they say, 'Well you haven't done it,' and because what we're creating is something that's virtual, would that be difficult? You haven't got a bunch of stuff you can kick and say 'Look, here it is. I made it; I delivered the goods; pay me; I created this course for you.' 'Well it's rubbish.' 'No, it's not. It's really high standard.' That's an unpleasant debate to have to have if you're not getting paid.	CREDIT CHECKS NOT USEFUL RISK OF LATE PAYMENT
R: Would you normally be in that sort of discussion with the person who wants the product rather than any credit people?	
I: Yeah, I've never spoken to anyone. Our bookkeeper would chase an invoice with the accounts department, but no, I sit down with the person who commissions us, and we scope the project out, and we agree a schedule and within that discussion there is an invoicing schedule.	CREDIT CONTROL STAGE PAYMENTS
R: Is there any discussion about the terms of reference?	
I: No, I unilaterally put a payment period onto the first invoice, and I won't discuss that with the customer.	
R: Does the value of the contract affect any credit decisions?	
I: Generally, no. We've had some very big contracts. We do control how much money someone owes us, not because we have a concern about whether they might never pay us, but because we just need to get the cash in. So, we're quite keen to agree milestones within a project. Our whole approach to managing a project is designed to say there will be this initial scoping and the price for that is X and we'll invoice you at this point. Then there'll be stage one, stage two, stage three, stage four invoices that will come out. Sometimes we'll end up having to agree to raise those on satisfactory completion of the work, but quite often we can manage to build a time frame where – how can I explain this? Imagine that we scope a piece of work that has an initial prototype or whatever and then there are five chunks of it left. We say, 'Okay, we'll do the five chunks. It'll take five months and we'll invoice you for each one at the end of the month,' and we put the dates in; and then the client doesn't provide the content we need [for the online training programme]… In some cases, we'll still raise the invoices and say, 'Look, we'll do the work when it comes in, but I have staff sitting here waiting for it.' And they'll say, 'That's fine, we don't mind paying as long as you say you'll do it.'	IMPORTANCE OF CASH FLOW TRUST

Coding your material helps you group the coded data into categories and start seeing patterns in the data. Figure 8.3 shows how the researcher in the example in Box 8.5 created a main category and two subcategories from the codes in that part of the transcript.

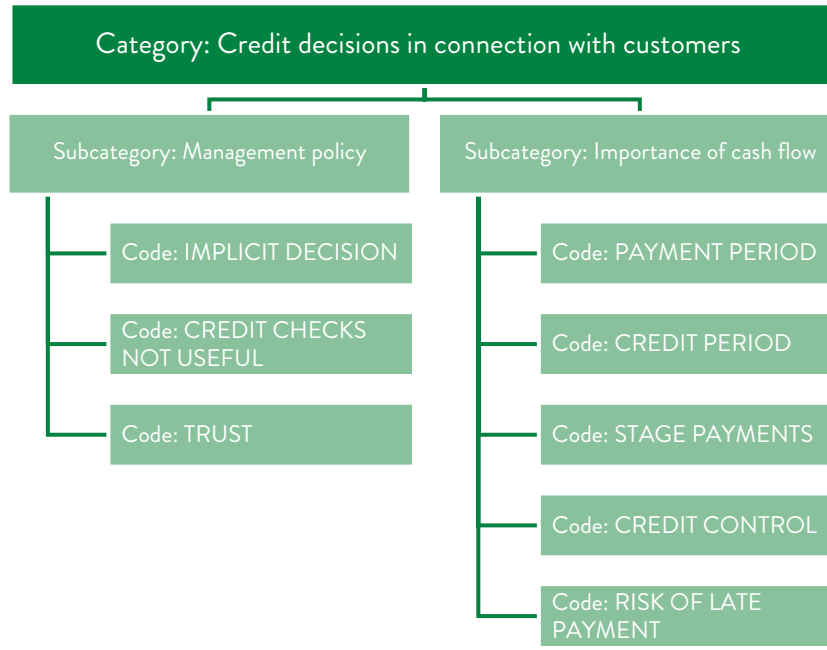


Figure 8.3 Example of development of categories and subcategories from coded interview data

Coding must be conducted with care and requires immersing yourself in the data. By that we mean, reading and re-reading the material and identifying categories that capture elements of the phenomena under study. Some researchers develop codes based on those used in previous studies or on their theoretical framework; others develop codes purely on the basis of the patterns they find in the data. During your study of the literature you will come across articles and other papers where the researchers claim to have used grounded theory. Developed by Glaser and Strauss (1967) and subsequently elaborated by Strauss and Corbin (1998) and Corbin and Strauss (2008), it involves a highly systematic approach to applying specific types of codes at several stages in the coding cycle. This leads to the development of theory that is 'grounded' in the data – hence the name of the methodology. Some researchers have loosely applied some of the procedures and tried to claim they have used grounded theory, so be wary of falling into the same trap. If you are interested in using grounded theory, you will find a detailed description in Chapter 9.

8.3.4 Examples of studies using general analytical procedures

The extent to which your analysis is structured will depend on the extent to which you structured the collection of your data. We will now look at two examples.

The first is a highly structured analysis described in an evaluation conducted in an international business setting by Jinkerson *et al.* (1992). The study focused on training needs in the tax practices of a firm of consultants. It involved a number of researchers using personal interviews, telephone interviews and a postal questionnaire survey in 14 European countries. Two specific research instruments were used: a master questionnaire, which provided the conceptual framework for data collection, and a data checklist to track the collection of data from respondents. The questionnaire identified themes, key points and questions, and each received a unique code, as did each country, office and participant. The data checklist was completed by the project researchers at the end of an interview or on receipt of data from respondents and showed the data collected. This permitted any missing data to be identified and subsequently collected. The researchers maintained six sets of files for the study and these are described in Table 8.1.

Table 8.1 Files documenting the study

File type	Description of contents
Raw data	Interview notes; documents describing existing training strategies, etc.; completed questionnaires; Work paper 1
Data summaries	Summaries of raw data, Workbook 2
Data reconstruction	Relationship with and across countries on key themes; notes about insights Hunches, developing interpretations; drafts of reports including findings and conclusions; Workbooks 3, 4, and 5
Methodology	Descriptions of methodology and its limitations; description of instrument development processes and procedures for administration; correspondence with management about the study
Plans, proposal and budget	Work programme and timeliness; proposal; budget for personnel level, payroll and non-payroll
Instruments and tools	Data collection and analysis tools

Source: Jinkerson *et al.* (1992, p. 278). With permission from Elsevier.

The process of research was conducted through the use of work papers which were contained in the first three files:

- Work paper 1 contained the raw data from interview notes
- Work paper 2 summarised the raw data in Workbook 1 for each of the main points for each of the offices in the study
- Work paper 3 reconstructed the data in Workbook 2 to create a picture across all key points within a single theme for all offices in each country
- Work paper 4 was a country summary where the researchers wrote an overall assessment of the tax practice and training situation in that country
- Work paper 5 contained the findings of the research and the recommendations.

This might appear to be a very elaborate system, but it must be remembered that this was a particularly large and complex project. In addition to illustrating the use of systems and procedures to manage and analyse qualitative data, this example demonstrates the amount of planning and management required for a research project.

The second example (Demangeot and Broderick, 2010) is a study that investigated online shopping and the data were analysed using *QSR NUD*IST v.6* software. The analysis sought to uncover recurring patterns in data that related to instances of online exploration activity by participants through description of their motives, the environmental stimuli or online actions taken, and the expected consequences of those actions. The analysis generated a large number of categories. A process that involved constantly going through the data and referring to the literature, identified seven categories of shopping motives, twelve environmental stimuli and eight consequences.

8.3.5 Potential problems

One of the potential problems concerns the volume of data. Our first recommendation is that you do not collect too much data. This is particularly important for students on undergraduate and taught Master's programmes where there are tight time constraints. It is very easy to underestimate how long it takes to arrange, conduct and transcribe interviews, and you might then find you have little time left to analyse the data. Therefore, it is very important that you adopt a systematic approach and keep a record of the analytical procedures you have used, so that you can explain and justify your method(s) in your dissertation or thesis.

The next issue is determining the categories. One approach is to go through the literature and extract categories from there or see what others have done. It is common to start with a large number of categories and then, through a process of re-categorisation, gradually collapse them as you become more familiar with the data. We discuss issues relating to categorisation in more detail in the next chapter when we examine grounded theory.

In this section, we have focused on methods of analysing qualitative data through coding, summarising, categorising and identifying patterns or themes. Some qualitative researchers prefer a more intuitive approach to data analysis and 'assume that through continued readings of the source material and through vigilance over one's presuppositions, one can capture the essence of an account' (Miles and Huberman, 1994, p. 8). Although we have suggested ways in which you can analyse the qualitative data you have collected, the value of the analysis will depend on the quality of your interpretation.

8.4 Content analysis

Content analysis is a method by which selected items of qualitative data are systematically converted to numerical data for analysis.

Content analysis is a widely used method for quantifying qualitative research data. It is usually associated with a positivist paradigm, although it has been described as 'the diagnostic tool of qualitative researchers' (Mostyn, 1985, p. 117) for analysing a large amount of open-ended material and reducing it to manageable amounts for analysis. Content analysis is a method by which selected items of qualitative data are systematically converted to numerical data. Normally a document is examined, although the technique can be used to analyse other forms of communication, such as newspapers, broadcasts, audio recordings of interviews, and video recordings of non-participant observations and focus groups. Mostyn (1985) claims the technique was used to analyse communications as early as 1740.

According to Beck, Campbell and Shrives (2010), two main approaches to content analysis are found in the financial reporting literature: mechanistic and interpretative. Mechanistic approaches can be divided into form-orientated content analysis, which focuses on counting the frequency of words or concrete references, and meaning-orientated content analysis, which focuses on the underlying themes in the text. The general purpose of interpretative approaches is to capture meaning by disaggregating the text into its constituent parts and subsequently describing the contents of each component to increase understanding of what is communicated and how.

8.4.1 Usng content analysis

If you have a large amount of data to analyse, the first step is to determine the basis for selecting a sample. However, if the amount of data is manageable and you have sufficient time, you can analyse all the data. The next step is to determine the coding units, such as a particular word, character, item or theme that is found in the material. Table 8.2 shows examples of coding units.

Table 8.2 Examples of coding units

Coding unit	Example
Words/ phrases	Examine minutes of company/union meetings for the word 'dispute' Examine circulars and press releases to shareholders for the phrase 'increased dividends'
Theme	Examine minutes of company/union meetings for examples where agreement was reached Examine circulars and press releases to shareholders examples where increases in productivity are linked to increased profits
Item	Examine newspapers for articles focusing on small businesses Examine company reports for items dealing with environmental issues
Time	Measure the time allocated to business news items on the news bulletins of different television channels

Once you have determined the coding units, you can construct a coding frame, which lists the coding units (the codes) in the first column, leaving room for the analysis of each communication to be added on the horizontal axis. The analysis can be based on the frequency of occurrence and/or other factors. For example, if you were examining a newspaper for articles focusing on small businesses, you might want to analyse such things as the date of the paper, the page number, the length of the article, the author, the main issues in the article, names of firms, owners, and so on. Under a positivist paradigm, the data could then be further analysed using statistics.

The choice of coding units can be confusing, and you must consider the implications for your findings. For example, if you choose words instead of sentences, or you count pages rather than sections on a particular theme, you could arrive at different conclusions. In addition, if you ignore figures, tables and images, you will not capture the messages they communicate that might be relevant to the phenomena under study. These issues are discussed by Hooks and Van Staden (2011) in the context of the environmental reporting by companies. They conclude that the quality of environmental disclosure is highly correlated with disclosures counted by sentence count. They also propose a quality per sentence measure.

If you are analysing secondary data, content analysis offers a number of advantages to researchers over other methods because you need only select a population or sample, and you have a permanent record which can be examined many times. You can avoid the time and expense associated with setting up and conducting questionnaire surveys, unstructured interviews, focus groups or observation. This leaves you free to spend more time on your analysis. It is also a non-obtrusive method, which means that the subjects of the study are not likely to be aware of or influenced by your interest. Finally, the systems and procedures for carrying out content analysis are very clear, so researchers who are concerned with the reliability and validity of their study will find the method highly acceptable.

Vox pop What has been the high point of your research so far?

Jennifer, undergraduate student investigating extent of environmental reporting in FTSE 100 companies

Finding a journal article on my topic that describes the coding frame [the authors] used for their content analysis!

8.4.2 Examples of studies using content analysis

If you are planning to use content analysis, we advise you to read the following studies, which we have selected because the researchers explain their methods. Czepiec (1993) examined advertising traits by analysing 454 advertisements appearing in the *People's Daily* between 1980 and 1989 to determine which factors Chinese businessmen considered most important when promoting their industrial products. She analysed the text of the advertisements for mention of 21 advertising traits which had been generated from previous studies concerned with buying behaviour.

Pullman, McGuire and Cleveland (2005) analysed customers' comments from a hotel satisfaction survey. They provide a thorough guide to the methods used to count words and determine association between certain words. They also explain how they used linguistic analysis to explore the semantics, syntax and context of comments, which led to the identification of key ideas, evaluation of their relative importance and predictions of customer behaviour. The authors also provide worked examples of various software programs that support content analysis.

Mehdizadeh (2010) used content analysis to examine traits of narcissism and self-esteem demonstrated by fellow undergraduate students at York University with active accounts on the social media and social networking website, *Facebook.com*. A random sample of 100 students (50 female and 50 male) agreed to participate and signed a waiver form allowing their Facebook pages to be rated by the researcher. The aim of the study was to assess the amount of self-promotion, which was defined as any descriptive or visual information that appeared to attempt to persuade others about one's own positive qualities. The pages analysed were the About Me section, the Main Photo, the first 20 pictures on the View Photos of Me section, the Notes section, and the Status Updates section.

The aim of a study by Peetz and Reams (2011) was to gain an understanding of the existing body of knowledge on sport marketing. To do this they conducted a content analysis of the journal, *Sports Marketing Quarterly,* from its inception in September 1992 (Volume 1, Issue 1) to June 2011 (Volume 20, Issue 2). The study analysed the authors by gender, institutional affiliation, location, number of authors per paper and the ordering of the authors' names. It also analysed the editorial board (the editor, associate editor, guest editor, section editor and reviewers) by number, gender and editorial position. In addition, categories were established to determine the type of research and the type of methodology employed.

A major factor to consider when planning to use content analysis is the amount of work required. For example, Lainé (2019) investigated economic bias in the press by examining economic news articles published throughout 2014 in France by six newspapers with the largest circulation. From reading of more than 11,000 articles, he developed analytical categories which he subsequently used for statistical analysis. One way of managing large amounts of material is to use software. Ekker (2016) examined data from an emergency management training tool developed for training police, fire and ambulance teams in Norway and Sweden. The project generated both qualitative data (the content of the communications) and quantitative data (who communicated with whom, how often and with what type of information). *NVivo* was used to aid the analysis of the qualitative data and quantitative analysis used the R statistics package and the social network analysis (SNA) module.

If you are planning to use content analysis, you will need to consider how much data you will collect and whether you have sufficient time to use manual methods to analyse it. If not, you should explore the availability of QDA software (see section 8.2.2) and make sure you allow time to follow online tutorials or attend any training offered by your university or college.

8.4.3 Potential problems

If content analysis is appropriate for your paradigm, it can be a useful way of systematically analysing qualitative data by converting the material into quantitative data. However, content analysis suffers from a number of potential problems. Silverman (2013) contends that its theoretical basis is unclear, and the conclusions drawn can be trivial and of little consequence. There is also the concern that if you select only the words or phrases you have determined are of interest, you might ignore large amounts of data that could help you understand the phenomena under study at a deeper level.

Another issue is the availability of published data. For example, perhaps you want to analyse quarterly data for the past five years, but subsequently find that one quarter's data are not available. You also need to remember that if you are analysing secondary data, the material will have been written for another purpose and audience, and this influences its content and wording. With large amounts of data, the method can be time-consuming and tedious, and it requires a consistent approach and high levels of concentration.

8.5 Discourse analysis

Discourse analysis refers to a number of approaches to analysing the use of language in a social-psychological context.

Discourse analysis is a term that describes a number of approaches to analysing the use of language in a social-psychological context. The focus is on examining the language of social interactions in the context in which they take place. It contrasts with linguistics, which is a study of the language itself. According to Cunliffe (2008, p. 80), 'discourse is viewed in various ways as talk, written text, social practice and/or physical and symbolic artefacts'. Potter (1997, p. 146) explains that discourse analysis 'emphasises the way versions of the world, of society, events and inner psychological worlds are produced in discourse'. In organisational and business research, it can be used to analyse naturally occurring talk (for example, conversations), but also contrived forms of talk and texts (for example, interviews, emails and other written forms of communication exchanged between organisational members).

Discourse analysis allows the researcher to investigate how language both constructs and reflects reality. We discussed the philosophical assumptions associated with different research paradigms in Chapter 3. The proponents of discourse analysis reject the notion that knowledge can only be generated through scientific objectivity since most people, including researchers, are not objective. Instead, they adopt a social constructionist perspective, which acknowledges

that we all have our own expectations, beliefs and cultural values. Consequently, we all construct our own versions of reality, which we convey through our use of language. Although discourse analysis can be described as adopting a constructionist perspective, in critical discourse analysis the researcher adopts a poststructuralist point of view and examines discourse from the perspective of rhetoric and focuses on where power lies within relationships.

The most prominent academic associated with the development of discourse analysis is Foucault (1972, 1977, 1980). Saussure (1974) argues that language creates social identities and social relationships and thus provides us with a perspective of the world we inhabit. This theme has been taken up by many others, including Johnston (2002), who contends that discourse analysis is concerned with what is happening when people exchange information, make decisions and form relationships. However, Scollen and Scollen (2012) suggest that differences in communication are less to do with cultural reasons and more to do with being members of different corporate and professional groups.

8.5.1 Using discourse analysis

Discourse analysis is not merely a general analysis of transcripts or other documents. Irrespective of what form the discourse takes (for example, talk or written communication), the person is trying to achieve something, and the analysis focuses on trying to identify the strategies being used to achieve the particular outcome. Potter (2004, p. 609) suggests there are three basic questions that need to be addressed:

- What is this discourse doing?
- How is this discourse constructed to make this happen?
- What resources are available to perform this activity?

The first step is to transcribe any audio recordings that are to be analysed. You can then start the process of identifying characteristics in the transcripts and/or other documents under analysis that will form the particular themes or discourses. Potter and Wetherell (1988, p. 171) identify the following interconnected concepts:

- function refers to the practical ways discourse might be used, for example, to explain, justify or excuse, as well as to legitimise the power of particular management groups
- variability refers to the fact that the same event, the same social group or the same personality can be used to describe the same thing in many different ways as function changes
- construction relates to the notion that discourses are manufactured out of pre-existing linguistic resources. In this manufacturing process, an active selection process takes place whereby some formulations will be chosen, and others will not.

If you are planning to use discourse analysis as a method for examining organisations and individuals, we advise you to discuss it fully with your supervisor at an early stage. We suggest that it is more suitable for PhD students than for undergraduates or students on a taught Master's programme.

8.5.2 Examples of studies using discourse analysis

There is considerable literature on discourse analysis in the social sciences, including several articles that examine business issues. Stead and Bakker (2010) provide a comprehensive guide to the literature and the authors make a strong argument for the use of discourse analysis as a process of critical self-reflection in career counselling and development so as to enhance ethical, fair and inclusive practices. We have selected articles that provide explanations of the method and how it is applied. We emphasise that in our opinion this is a method that is best suited for the advanced researcher.

Our first study (Hrynyshyn and Ross, 2011) provides a good discussion of the technique and explains how the researchers applied it in a study of the Canadian Auto Workers Union (CAW). The purpose of the study was to investigate how the CAW, and particularly its leadership, actively defines or frames workers' interests, problems and solutions and, as a result, how

it forms its strategy on the environment and climate change. The researchers conducted a critical discourse analysis of the union's policy documents and leadership statements with a view to uncovering implicit meanings in verbal and written communications, and visual representations. They contend that the systematic study of implicit meanings, through examination of the choice of words and symbols, helped reveal the actors' motivations for their activity, whether consciously articulated or not. In our opinion, the research adopted a hermeneutics methodology, which we discussed in Chapter 4. The analysis is based on the interpretation and understanding of text in the context of underlying historical and social forces.

The next study (Parkinson and Howorth, 2008) focuses on social entrepreneurs. The researchers provide a comprehensive discussion of this term, but as we are only concerned with their methods, we can regard it as referring to people who deliver community services using a business approach. Five local agencies (funders, intermediaries and support agencies) were asked to identify and nominate social entrepreneurs. The researchers collected their data through 20 tape-recorded, unstructured interviews, each lasting 45 to 60 minutes. The interviews were relaxed and conversational, starting with the request: 'Tell me what you do.' Prompts, such as 'how' and 'why' were used to facilitate reflection.

The first stage of the analysis of the 20 interviews used *Wmatrix* software to determine which linguistic features should be investigated further. A sample of five of the interviews was then selected for critical discourse analysis due to time constraints. These interviews were chosen to reflect differences that might be expected to influence the language used. The five interviews included differences in terms of the gender of the interviewee (three women and two men), local origin (three local and two newcomers), nature of their social enterprise activity and apparent high affinity or resistance to the enterprise discourse from an initial reading. Sections for analysis were selected either because of their relevance to the research question or because they contained moments of apparent crisis or cruces such as hesitation, redefinition, repetition, contestation or deliberation.

The critical discourse analysis of the five interviews took place in three stages:

1. The researchers took a broad view of the context in which the statements were made, how they connected to other debates and how the interviewees generally framed their spoken texts.
2. More detailed text analysis then looked at the micro-processes of discourse that shaped the text including text cohesion, ethos, grammar, theme, modality and word meaning.
3. The researchers examined social practice, which is concerned with how the interviewees reproduce or transform social structures in their spoken text and the intended and unintended effect of the texts on wider power relations and ideologies. The researchers concluded people 'doing' social enterprise appropriate or re-write the discourse to articulate their own realities.

Our final study (Harkness *et al.*, 2005) examines stress in the workplace. The purpose of the study was to describe how female clerical workers make sense of their experiences at work, while also considering the discursive world that they inhabit. A total of 22 female clerical workers from a large western Canadian city participated in seven focus groups (averaging three to four participants in each group) which lasted approximately two hours.

The researchers drew upon a number of other studies to establish the following procedures:

1. Coding through reading the transcripts repeatedly and taking note of illustrative quotes.
2. Categorising codes through rereading transcripts repetitively, looking for patterns, themes and a limited number of interpretative repertoires (that is, alternative ways of describing experiences of stress).
3. Identifying ideological dilemmas, subject positions and discursive strategies.
4. Extracting quotations from the transcripts to support the findings.
5. Refining the analysis and documentation in parallel.

8.5.3 Potential problems

Although discourse analysis offers a range of approaches to analysing the relationship between the use of language, social action and social theory, it suffers from a number of

potential problems. The main problem is that it is a time-consuming and specialised technique. You might find it hard to identify the context and the various interpretive repertoires, and match them to each other to develop an understanding of the function of the stories from the perspective of the speaker/author. It can be argued that there is much more to the world and meaning than what we talk about, and 'care must be taken not to imply that language users are merely conduits of socially constructed meanings and interests' (Cunliffe, 2008, p. 81).

8.6 Evaluating your analysis

Once you have selected a method of analysis and applied it, you will want to know how to evaluate your analysis. A number of authors have suggested various criteria that can be used to evaluate an interpretive study in its entirety, and these can be used to assess the quality of your analysis. Lincoln and Guba (1985) suggest that four criteria should be used:

- Credibility is concerned with whether the research was conducted in such a manner that the subject of the inquiry was correctly identified and described. Credibility can be improved by the researcher involving him or herself in the study for a prolonged period of time, by persistent observation of the subject under study to obtain depth of understanding, by using data triangulation and methodological triangulation, and by peer debriefing by colleagues on a continuous basis.
- Transferability is concerned with whether the findings can be applied to another situation that is sufficiently similar to permit generalisation.
- Dependability focuses on whether the research processes are systematic, rigorous and well documented.
- Confirmability refers to whether the research process has been described fully and it is possible to assess whether the findings flow from the data.

Leininger (1994) developed six criteria:

- Credibility
- Confirmability
- Transferability
- Saturation
- Meaning-in-context
- Recurrent patterning.

Although there are some differences between her definitions of the first three terms and those of Lincoln and Guba, the general themes are similar. Saturation is concerned with the researcher being fully immersed and understanding the project. This is very similar to the recommendations used by Lincoln and Guba to enhance credibility. In qualitative research, **data saturation** is reached when the inclusion of new data does not enhance or change the findings and further coding is no longer feasible. Meaning-in-context 'refers to data that have become understandable within holistic contexts or with special referent meanings to the informants or people studied in different or similar environmental contexts' (Leininger, 1994, p. 106). Recurrent patterning refers to the repetition of experiences, expressions and events that reflect identifiable patterns of sequenced behaviour, expressions or actions over time.

Data saturation is the stage in the analysis of qualitative data when the inclusion of new data does not enhance or change the findings, and further coding is no longer feasible.

The above recommendations stress how important it is that you are highly familiar with the qualitative data you have collected. You will need to be systematic and rigorous in your approach to the analysis, which means you must be clear about your methodology, methods for collecting data and the techniques you use to analyse the data. One procedure adopted by a number of researchers at the analysis stage is concerned with obtaining respondent validity. This involves discussing your findings with participants to obtain their reactions and opinions. This can give you greater confidence in the validity of your conclusions.

8.7 Conclusions

In this chapter, we have examined a number of different methods of analysing qualitative data. If you are conducting your research under an interpretivist paradigm, the majority of the data you will have collected are likely to be in a qualitative form. Even if you have taken a positivist approach, you might have collected some qualitative data. The main challenges when attempting to analyse qualitative data are how to reduce and restructure the data in a form other than extended text, both in the analysis and when presenting the findings. Unfortunately, few researchers describe their methods in enough detail to provide a comprehensive guide.

There are a number of methods and techniques which can be used to quantify the data. If that is not possible, or is philosophically unacceptable, you must devise some form of coding to represent the data to aid storage, retrievability and reconstruction. The synthesis and reorganisation of data should lead to the development of themes and patterns that you can use to confront existing theories or construct new theories. Many researchers find that the use of displays is extremely valuable for part, if not all, of their data analysis. Others decide a particular technique is more appropriate. Whichever approach you adopt, it is essential that you establish systems and procedures to allow you to manage and organise the raw data you have collected.

You need to remember that your purpose, when analysing the data, is to find answers to your research questions. Therefore, you need to keep your research questions at the front of your mind while you are conducting the analysis. No matter how good the techniques and procedures you adopt are, the quality of your analysis will depend on the quality of the data you have collected and your interpretation.

References for further reading

Beck, A. C., Campbell, D. and Shrives, P. J (2010) 'Content analysis in environmental reporting research: Enrichment and rehearsal of the method in a British–German context', *The British Accounting Review*, 42(3), pp. 207–22.

Bryman, A. (1988) *Quantity and Quality in Social Research*. London: Unwin Hyman.

Bryman, A. (2012) *Social Research Methods*, 4th edn. Oxford: Oxford University Press.

Corbin, J. and Strauss, A. (2008) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 3rd edn. Thousand Oaks, CA: SAGE.

Cunliffe, A. L. (2008) 'Discourse Analysis', in Thorpe, R. and Holt, R. (eds), *The SAGE Dictionary of Qualitative Management Research*. London: SAGE, pp. 81–2.

Czepiec, H. (1993) 'Promoting industrial goods in China: Identifying the key appeals', *International Journal of Advertising*, 13, pp. 257–64.

Demangeot, D. and Broderick, A. J. (2010) 'Exploration and its manifestations in the context of online shopping', *Journal of Marketing Management*, 26(13–14), pp. 1256–78.

Ekker, K. (2016) 'Emergency management training: Handling rich qualitative and quantitative data', *Journal of Intelligent & Fuzzy Systems*, 31(2), pp. 939–48.

Foucault, M. (1972) *The Archaeology of Knowledge* (trans. A. M. Sheridan). London: Tavistock.

Foucault, M. (1977) *Discipline and Punish: The Birth of the Prison* (trans. A. M. Sheridan). New York: Pantheon Books.

Foucault, M. (1980) *Power/Knowledge: Selected Interviews and Other Writings, 1972–1977* (ed. C. Gordon). Brighton: Harvester Press.

Gilbert, L. S. (2002) 'Going the distance: "closeness" in qualitative data analysis software', *International Journal of Social Research Methodology*, 5(3), pp. 215–28.

Glaser, B. G. and Strauss, A. L. (1967) *The Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Aldine de Gruyter.

Harkness, A. M. B., Long, B. C., Bermbach, N., Patterson, K., Jordan, S. and Kahn, H. (2005) 'Talking about work stress: Discourse analysis and implications for stress interventions', *Work & Stress*, 19(2), pp. 121–36.

Hooks, J. and van Staden, C. J. (2011) 'Evaluating environmental disclosures: The relationship between quality an extent measures', *The British Accounting Review*, 43(3), pp. 200–13.

Hrynyshyn, D. and Ross, S. (2011) 'Canadian autoworkers, the climate crisis, and the contradictions of social unionism', *Labor Studies Journal*, 3(1), pp. 5–36.

Jinkerson, D. L., Cummings, O. W., Neisendorf, B. J. and Schwandt, T. A. (1992) 'A case study of methodological issues in cross-cultural evaluation', *Evaluation and Program Planning*, 15, pp. 273–85.

Johnston, H. (2002) 'Verification and Proof in Frame and Discourse Analysis', in Klandermans, B. and Staggenborg, S. (eds) *Methods of Social Movement Research*. Minneapolis: University of Minnesota Press, pp. 62–91.

Johnston, L. (2006) 'Software and method: Reflections on teaching and using QSR NVivo in doctoral research', *International Journal of Social Research Methodology*, 9(5), pp. 379–91.

Lainé, M. (2019) 'Are the media biased? Evidence from France', *Journal of Economic Issues*, 53(3), pp. 774–98.

Leininger, M. (1994) 'Evaluation Criteria and Critique of Qualitative Research Studies', in Morse, J. M. (ed.) *Critical Issues in Qualitative Research Methods*. Thousand Oaks, CA: SAGE, pp. 95–115.
Lincoln, Y. S. and Guba, E. G. (1985) *Naturalistic Enquiry*. Newbury Park: SAGE.
Lindlof, T. R. (1995) *Qualitative Communication Research Methods*. Thousand Oaks, CA: SAGE.
Mehdizadeh, S. (2010) 'Self-Presentation 2.0: Narcissism and self-esteem on Facebook', *CyberPsychology, Behavior & Social Networking*, 13(4), pp. 357–64.
Miles, M. B. and Huberman, A. M. (1994) *Qualitative Data Analysis*. Thousand Oaks, CA: SAGE.
Morse, J. M. (1994) 'Emerging from the Data: The Cognitive Processes of Analysis in Qualitative Inquiry' in Morse, J. M. (ed.) *Critical Issues in Qualitative Research Methods*. Thousand Oaks, CA: SAGE, pp. 23–43.
Mostyn, B. (1985) 'The Content Analysis of Qualitative Research Data: A Dynamic Approach', in Brenner, M., Brown, J. and Canter, D. (eds) *The Research Interview, Uses and Approaches*. London: Academic Press, pp. 115–46.
Parkinson, P. and Howorth, C. (2008) 'The language of social entrepreneurs', *Entrepreneurship & Regional Development*. 20(3), pp. 285–309.
Peetz, T. B. and Reams, L. (2011) 'A content analysis of *Sport Marketing Quarterly*: 1992–2011', *Sport Marketing Quarterly*, 20 (4), pp. 209–18.
Potter, J. (1997) 'Discourse Analysis as a Way of Analysing Naturally Occurring Talk', in Silverman, D. (ed.) *Qualitative Research: Theory, Method and Practice*. London: SAGE.
Potter, J. (2004) 'Discourse Analysis', in Hardy, M. and Bryman, A. (eds), *Handbook of Data Analysis*. London: SAGE.
Potter, J. and Wetherell, M. (1988) *Discourse and Social Psychology: Beyond Attitudes and Behaviour*. London: SAGE.
Pullman, M., McGuire, K. and Cleveland, C. (2005) 'Let me count the words: Quantifying open-ended interactions with guests', *Cornell Hotel & Restaurant Administration Quarterly*, 46(3), pp. 323–45.
Quartiroli, A., Knight S. M., Etzel, E. F. and Monaghan, M. (2017) 'Using Skype to facilitate team-based qualitative research, including the process of data analysis', *International Journal of Social Research Methodology*, 20(6), pp. 659–66.
Saldaña, J. (2013) *The Coding Manual for Qualitative Researchers*, 2nd edn. Thousand Oaks, CA: SAGE.
Saussure, F. de (1974) *Course in General Linguistics*. Edited by Bally, C. and Sechehaye, A. in collaboration with Riedlinger, A. Translated by Baskin, W. London: Fontana.
Scollen, R. and Scollen, S.W. (2012) *Intercultural Communication – A Discourse Approach*, 3rd edn. Oxford: Wiley-Blackwell.
Silverman, D. (2013) *Doing Qualitative Research*, 4th edn. London: SAGE.
Stead, G. B. and Bakker, T. M. (2010) 'Discourse analysis in career counseling and development', *The Career Development Quarterly*, 59(1), pp. 72–86.
Strauss, A. L. and Corbin, J. (1998) *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 2nd edn. Thousand Oaks, CA: SAGE.

Activities

1 You intend to conduct research to examine the study habits of your fellow students. In the previous chapter, you discussed the advantages and disadvantages of two data collection methods you could use. Build on this by discussing the advantages and disadvantages of any two methods you could use to analyse the data.
2 You are interested in environmental issues. Using content analysis, construct a coding frame and analyse the contents of a national newspaper that provides international news coverage (today's copy). Use a data display to summarise the data resulting from your content analysis.
3 Run the tutorial on the qualitative data analysis (QDA) software to which you have access (for example, *NVivo*). Import an essay or paper you have written. Code the themes in each paragraph and indicate the relationships between themes. Generate a diagram. If you do not have access to QDA software, you can perform this task by hand. Print the paper in double spacing to allow room for codes and use different coloured highlighter pens to indicate themes. You can generate a diagram in *Microsoft Word* using SmartArt, Shapes, Tables, and so on, from the Insert menu.
4 If you have done Activities 2–4, choose one of them and write notes on the transferability, dependability and confirmability of your analysis (see section 8.6).
5 Read the following extract from an interview transcript carefully. Then summarise the key points using text, tables and/or figures to provide background information on this case study company.

Interview with CB (I) by Jill Collis (R), 22 July 20XX

I: First of all, I'd like to talk to you about the company in general and how it's managed. I don't know anything about the number of directors you have, and so on, so can you tell me, are you the main director and are you the person who's responsible for financial matters in the business?

R: Well, there are 2 directors – 2 shareholders – so we have equal status in the company, but I am more concerned with the financial side of the business.

I: And I already know some background about the company, so I'm not going to ask you about your main activities, but I'd like to move on to thinking about international activities that the business might have.

R: Well, they're fairly limited. We do sell our films abroad and some of the areas where we sell are places like Australia, although we've had some trouble, to be honest, with distributors in Australia. So that is at the moment in a state of sort of mini crisis, but we have sold in Australia. We sell in places like Hong Kong and Singapore. We sell in Germany through distributors. We sell a lot through a distributor in New York that's an internet distributor, and we do sell quite a lot of individual tapes direct to customers abroad, but our overall value of sales to non-UK customers is probably less than 10%. It's probably something like 6% at a guess. We also do some filming abroad.

I: Yes. So, do you make use of overseas staff at all – any short-time or contract staff?

R: Well, distributors, but they're really separate companies so we don't employ them as such.

I: So, they're like intermediaries between you and your customer?

R: Yes. They would do their own marketing and they would take on our films, they sell them and then take a percentage of the sales. As far as filming is concerned, we occasionally hire people at the site where we're filming. We will be doing that quite soon, for example, in Spain, but it'll probably only be a driver. It won't be very much. That sort of thing.

I: So very short-term contracts then.

R: Yes, and really casual labour really.

I: I'm just thinking about your overseas customers again. Do they find you through the internet?

R: Not as much as we'd like. We do get people. We are revamping our web site at the moment. We're hoping that that will yield lots more, if you like, passing trade, but at the moment our web site is only really just supporting our main marketing, which is through direct mail and established customers who've already bought from us in the past. So, for example, BFPO schools already know about us. They're on our mailing list. We send them a new catalogue and they'll order. There isn't a lot of proactive new marketing going on overseas, but we hope the new web site will change that.

I: Thanks very much. The next area I'd like to look at is size. I mentioned when I arrived that I don't actually know how many employees you have?

R: I'll just have to do a quick calculation. Including the directors?

I: Yes.

R: We have 7 full-time people plus freelancers, who sometimes do accumulate quite a lot of work in a year. Maybe 2 or 3 other freelancers who probably work for us something like 100 days a year – anything between 50 and 100 days a year (average 10–12 employees).

I: OK. Does 'freelancers' mean they're on short-term contracts?

R: Well, they work for other people. So they're freelancers – like editors, camera people – and they just are regular suppliers of ours, but they work for a range of other companies as well.

I: Right. You mentioned yourself and the other director being equal directors. Are you both involved in the day to day management of the business?

R: Yes, although since we've devolved the company into 3 separate sites, we've tended to divide the company up into areas of responsibility and not share all the information on an everyday basis about those different spheres. So, we tend to get on with our own little projects but meet regularly and discuss on an overall basis.

I: And is the other director...? I know you're very full-time. Is the other director full-time?

R: Yeah.

I: Do you have any non-executive directors on your board – you know, people who come in onto the board as advisors or anything like that?

R: We used to have, but they sold their shares probably 5 years ago now.

I: OK. Just thinking of when you used to have one then, what was the reason for them coming on the board?

R: Well, they were financiers. They were the original financiers of the company.

I: And they left when they had realised their investment as it were?

R: Yes, when they got their original money back. I mean the story of TV Choice is a very tortuous and tragic tale. Well, the original days were because we made big mistakes in what we were doing. We didn't start the company off doing what we're doing at the moment. We did something totally different.

I: Different products you mean?

R: Yeah. We were in publishing and we made a magazine called TV Choice. That's why we're called that. But we had major, major problems, but we did stay in business and we did manage to pay off all our creditors including shareholders and we eventually did deals with all of the people we owed money to and we end now as the sole proprietors of the business.

I: You mentioned that you're the person who mainly deals with the financial matters. Do you consult with other people in the firm? Is there somebody who also has some responsibility in that area?

R: Yeah. Well, there's my wife who does the accounts and, yes, we talk to our accountant, but I suppose she works from the other house and we do discuss the day to day financial matters of the company on a regular basis.

I: OK – and an accountant?

R: Yes, I mean he's really… I don't really talk to him very much to be honest, but he's there and he does the books.

I: Well, I've got a whole section of questions to talk about that, so I'll come back to that in a minute if I may…

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter and sections 15.2, 15.5, 15.7, 15.10, 15.11 and 15.12 in particular, which relate specifically to this chapter.

9

Integrated collection and analysis methods

Learning objectives

When you have studied this chapter, you should be able to:

- discuss the main issues in using integrated collection and analysis methods
- describe and apply the principles of grounded theory
- describe and apply repertory grid technique
- describe and apply cognitive mapping
- compare the strengths and weaknesses of methods.

9.1 Introduction

Although we have discussed several separate methods for collecting and analysing qualitative data in Chapters 7 and 8, in practice you will find that to some extent, the analytical process starts as soon as you begin collecting qualitative data. We are now going to examine integrated methods for collecting and analysing qualitative data where collection and analysis are very much intertwined. This chapter will help you to understand the close relationship between data collection and analysis in integrated methods and show you how to present the findings in your dissertation or thesis.

The first method we discuss is grounded theory. It can be described as an integrated method because it entails an iterative process of data collection, data analysis and theory building, which leads to further data collection and analysis, and so on. This generates theory that is 'grounded' in the research data. The second method is repertory grid technique, where the interviewee's personal constructs (concepts and ideas) regarding certain elements relating to the phenomenon under study are used to generate relationships between the pairs of elements and constructs. This generates quantitative data on a matrix (the grid) for subsequent analysis. The third method we describe is cognitive mapping, which is also based on the interviewee's personal constructs, but this time the relationships between constructs are summarised in a diagram (the map). All these methods are rigorous and systematic and can be used independently or in research design that incorporates methodological triangulation which involves using multiple methods from the same paradigm. It is important to remember that you must obtain approval from your supervisor and any other authority responsible for research ethics in your university or college before you start collecting your research data.

9.2 Grounded theory

Grounded theory is a systematic, iterative process for the joint collection, coding and analysis of data with a view to developing inductively derived theory.

You will remember that we mentioned **grounded theory** in our discussion of the main methodologies in Chapter 4. It is widely used under an interpretivist paradigm in business research as well as other social sciences. Grounded theory is associated with Glaser and Strauss (1967) and their contention that research should be conducted without *a priori* theory in order to build theory that is faithful to the phenomena under investigation and which illuminates the research problem or issue. 'Joint collection, coding and analysis of data is the underlying operation. The generation of theory, coupled with the notion of theory as process, requires that all three operations be done together as much as possible' (Glaser and Strauss, 1967, p. 43). Glaser (1978) suggests that the researcher should enter the research setting with as few predetermined ideas as possible. Of course, no one can completely distance themselves from the beliefs or the structures with which they have grown up or have developed since. However, the researcher needs to be aware of the presence of such prejudices. Once a prejudice has been recognised, its validity can be questioned, and it no longer remains a bias.

Drawing on Hutchinson, Johnston and Breckon (2010, p. 284), the key characteristics of grounded theory are:

- Iteration – Grounded theory is an iterative process in which early data collection and analysis inform subsequent sampling and analytical procedures, requiring concurrent involvement in data collection and analysis.
- Purposive and theoretical sampling – Sampling decisions are a function of the research question and the continuing development of theory.
- Coding – Analysis is achieved through coding and categorising the codes relating to concepts and their attributes identified from a wide range of observations.
- Theorising – The choice of technique for advancing theory development throughout the process depends on the epistemological and theoretical stance of the researcher.
- Making comparisons – Systematic comparisons are made within and between cases, or over time, to identify variations in the patterns.
- Theoretical density and theoretical saturation – There should be evidence of depth to the observations presented, leading to theory from which hypotheses can be generated. In addition, there should be theoretical saturation, which is reached when new data no longer reveals any further theoretical insights.

You might be aware that after years of collaboration, there was public academic disagreement between Glaser and Strauss about how grounded theory should be developed and the two researchers decided to go their separate ways. Glaser continued with his approach and his work is usually referred to as classic grounded theory or Glaserian grounded theory. In the meantime, Strauss began to collaborate with Corbin in a direction that they considered to be more fruitful. Both approaches have their followers, but you need to understand that these are two very different ways of conducting research. Therefore, if you are planning to use grounded theory, you must discuss your choice with your supervisor and find out which he or she recommends. If you are on an undergraduate or taught Master's programme, it is not likely that you will have sufficient time or experience to use Glaserian grounded theory. This is more appropriate for doctoral students, who have time to gain the necessary knowledge of philosophy and the philosophical assumptions of the methodology. We will now explain grounded theory as espoused by Strauss and Corbin, which does not require detailed knowledge of philosophy.

9.2.1 Using grounded theory

Strauss and Corbin (1990, p. 24) describe grounded theory as 'a systematic set of procedures to develop an inductively derived grounded theory about a phenomenon. The findings of the research constitute a theoretical formulation of the reality under investigation, rather than consisting of a set of numbers, or a group of loosely related themes'. Grounded theory is normally used in conjunction with interviews but can also be used with data collected from observation or any data collection method associated with an interpretist paradigm. It is important not to impose boundaries set by prior theory. It is difficult for researchers to rid themselves of the theoretical models and concepts they are familiar with that help them make sense of the world and the way it works. Once more, imagine you are watching one of the events at the Olympic Games. Try to ignore your existing knowledge about what the competitors, officials and audience are doing by pretending you are from another planet. Now start reflecting and analysing what you observe. It would require substantial study and reflection on your part to arrive at an explanatory theory that all the participants could understand. Perhaps the best advice is to approach the research, not with an empty mind, but with an open mind. Therefore, all data can be relevant in illuminating the study.

Coding

The first stage of analysis under a grounded theory methodology is coding. The codes are labels that enable the qualitative data to be separated, compiled and organised. According to Strauss and Corbin (1990, pp. 61, 96 and 116) there are three levels of coding:

- Open coding is 'the process of breaking down, examining, comparing, conceptualising and categorising data'. It represents the basic level, where the codes are simple and topical.
- Axial coding is 'a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories'. This is a more conceptual level than open coding and links the codes to contexts, consequences, patterns of interaction and causes. The codes are more abstract.
- Selective coding is 'the procedure of selecting the core category, systematically relating it to other categories, validating those relationships, and filling in categories that need further refinement and development'. This provides the storyline that frames the account.

It is important to emphasise that grounded theory requires the discovery and creation of codes from interpretation of the data. This contrasts with the approach under a positivist paradigm, where coding requires logically deduced, predetermined codes into which the data are placed.

The relationships between categories and subcategories discovered during the research should result from the information contained within the data or from deductive reasoning that is verified within the data. Relationships should not arise from previous assumptions that are not supported by the information in the data. Any views held by the researcher prior to the study could restrict his or her perceptions of the phenomenon under investigation. This might lead to important links and relationships remaining undiscovered or inaccurate deductions about the data, for example.

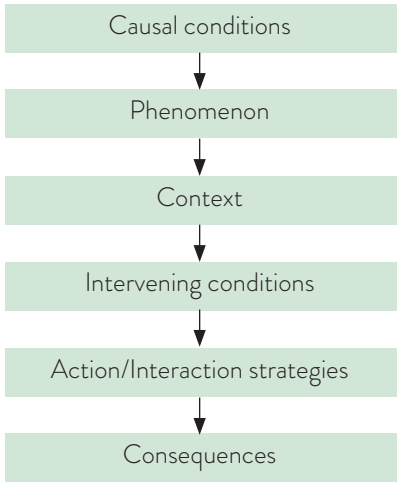
We will now examine the process in a little more detail. Open coding of raw data involves a number of processes. First, the researcher breaks down and labels the individual elements of information, making the data more easily recognisable and less complicated to manage. These codes are then organised into a pattern of concepts and categories, together with their properties. This is accomplished by classifying the different elements into distinct ideas (the concepts) and grouping similar concepts into categories and subcategories. The properties are those characteristics and attributes by which the concepts and categories can be recognised. The properties of each category of concepts must be defined along a continuum.

The labels by which the concepts and categories of concepts are known are entirely subjective (chosen by the researcher). However, the label should reflect their nature and content. As the concepts are grouped into more abstract categories, so too should the labels become more conceptual. The labels can come from a variety of sources; for example, technical literature, interviewees and informants – *in vivo* codes (Glaser, 1978; Strauss, 1987) – or from the researcher's own imagination and vocabulary. However, the labels should be explained. Labels with technical content or unfamiliar jargon can cause problems of interpretation to readers outside the field. Other problems can arise when common terms are used as codes; sometimes readers can be biased by a prior knowledge or understanding of a term which conflicts with or does not reflect what is intended by the researcher. Therefore, it is important that the researcher's interpretation of the code labels is given.

In practice, open coding and axial coding might take place concurrently. Axial coding is an extension of open coding that involves connecting categories and subcategories on a more conceptual level than was adopted at the open coding stage. Whereas the earlier stage of coding involved the breaking down and separation of individual elements, axial coding is the restructuring of the data and developing various patterns with the intention of revealing links and relationships. The process includes the development of the properties of concepts and categories of concepts, and linking them at the dimensional level. At this stage, the researcher will construct mini-theories about the relationships which might exist within the data and which need to be verified. Although the overall theoretical framework will not be discovered during axial coding, the mini-theories can be incorporated into and form part of the overall paradigm model that is being developed alongside the research. Box 9.1 shows the main stages of axial coding.

Box 9.1 Main stages in axial coding

1. Identifying the phenomenon: The phenomenon should be defined in terms of the conditions that give rise to its existence, and what causes its presence. It should be characterised in terms of the context in which it is situated. The action and interactional strategies that are used to manage the phenomenon should be developed and linked to the phenomenon, as well as the consequences of those strategies. This will form a pattern showing the relationships between specific categories, as follows:



2. Linking and developing by means of the paradigm: This is achieved through rigorous questioning and reflection, and by continually making comparisons. By identifying and defining the phenomenon, the researcher has already asked questions about the possible relationship between certain categories and subcategories and has linked them together in the sequence shown above. These statements, which relate to categories and subcategories, must be verified against data. This is part of the inductive/deductive process of grounded theory. Where further data support the statements of relationships, the researcher can turn the statements into hypotheses.
3. Further development of categories and subcategories in terms of properties and dimensions: This develops the ideas already generated within the identification of the phenomenon. It builds on the relationships discovered and purposefully tracks down other relationships, some of which will fall outside the paradigm model. The categories should be linked at the dimensional level. Within this further development is the recognition of the complexity of the real world. Although relationships are being discovered, not all the data will apply to the theory at all the times. These anomalies must not only be accepted, but must be incorporated into the research.

Selective coding is the process of selecting the core category, systematically relating it to other categories, validating these relationships and filling in categories that need further refinement. This process enables themes to be generated that can then be 'grounded' by referring to the original data.

Box 9.2 shows an example of coded concepts in an interview transcript.

Box 9.2 Example of coding from hazardous waste study

(A) Paragraphs from an interview relating to Hazardous Waste case-study

Interview S, 27 April

Paragraph 8
I don't think there is any doubt that on this job I readily accepted the advice of the civil engineering consultant, L, and didn't have the experience to question that advice adequately. I was not aware of the appropriate site investigation procedure, and was more than willing to be seduced by the idea that we could cut corners to save time and money.

Paragraph 9
But L's motives were entirely honorable in this respect. He had done a bit of prior work on a site nearby. And his whole approach was based upon the expectation that there would be fairly massive gravel beds lying over the clay valley bottom, and the fundamental question in that area was to establish what depth of piling was required for the factory foundations. He was assuming all along that piling was the problem. And he was not (and he knew he was not) experienced in looking for trouble for roads. His experience said that we merely needed a flight auger test to establish the pile depths.

Source: Architect S, a member of the design team involved in the incident, describing the decision of the civil engineering consultant, L, restricting the scope of the initial site investigation to the question of the need to have piled foundations for warehouse units.

(B) Significant concepts identified within paragraphs

Paragraph 8
Accepting professional advice
Criticising others' work
Cutting corners
Experience

Paragraph 9
Knowledge of local conditions
Selective problem representation obscures wider view
Experience

Source: Pidgeon, Turner and Blockley (1991, p. 160). With permission from Elsevier.

Theorising

The theoretical framework is developed by the researcher alternating between inductive and deductive thought. First, the researcher inductively gains information that is apparent in the research data. Next, a deductive approach is used to allow the researcher to turn away from the data, think rationally about the missing information and form logical conclusions. When conclusions have been drawn, the researcher reverts to an inductive approach and tests these tentative hypotheses with existing or new data. By returning to the data, the deducted suggestions can be supported, refuted or modified. Then, supported or modified suggestions can be used to form hypotheses and investigated more fully. It is this inductive/deductive approach and the constant reference to the data that helps ground the theory. Figure 9.1 illustrates the iterative nature of the process.

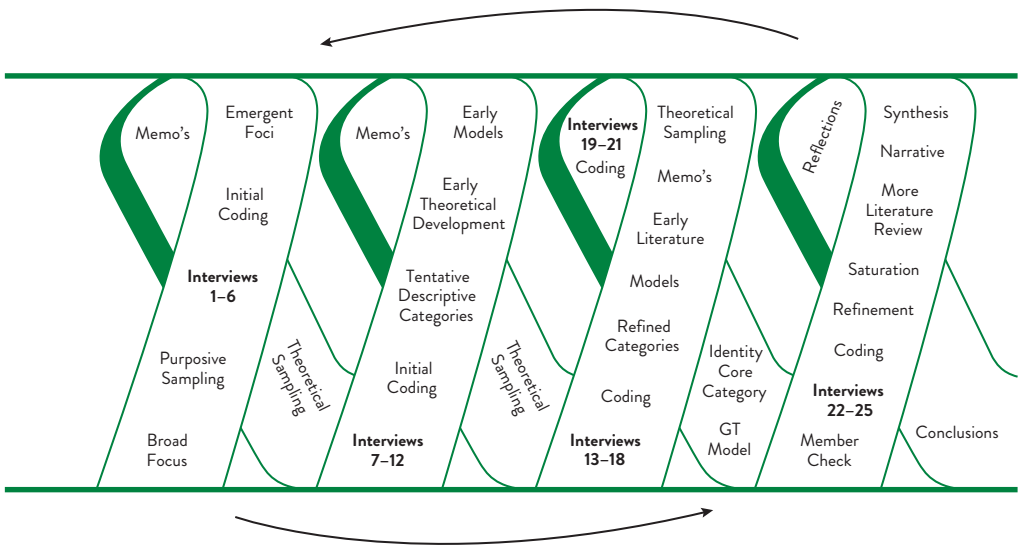


Figure 9.1 Developing grounded theory

Source: Hutchinson, Johnston and Breckon (2010, p. 286) Reprinted by permission of the publisher (Taylor & Francis Ltd, http://www.tandf.co.uk/journals).

Figure 9.1 emphasises the relationship between data collection, coding, analysis and theoretical development. As you can see, the interviews (or observations) are not completed altogether at the start of the study, but proceed throughout the research. If you use this method, you might find that you have to return to individuals and check your first assumptions or to collect more data. This leads to uncertainty over when you should stop collecting data. The answer is that you carry on until you have reached **theoretical saturation**. 'This means, until (a) no new or relevant data seems to be emerging regarding a category, (b) the category is well developed in terms of its properties and dimensions demonstrating variation, and (c) the relationships among categories are well established and validated' (Strauss and Corbin, 1998, p. 212).

Theoretical saturation is the stage in grounded theory when the inclusion of new data no longer reveals any further theoretical insights.

9.2.2 Studies using grounded theory

Grounded theory methodology is becoming increasingly popular in business research. Many researchers using grounded theory provide diagrams to explain the theory they have generated, as in our first example. Hussey and Ong (2005) investigated the financial reporting practices in one large organisation and identified three functions of financial reporting that were formed through the interplay between the objectives of the preparers and the stakeholders, together with political and environmental determinants. This affected the type of financial information that was disclosed, to whom it was disclosed and the mode of communication. The researchers identified a reinforcement effect or a destabiliser effect following the dissemination of the financial report, according to the extent to which the preparers and stakeholders were satisfied with the fulfilment of the desired function. The aftermath influences the determinants to formulate the function of the financial report in future years. Figure 9.2 illustrates this.

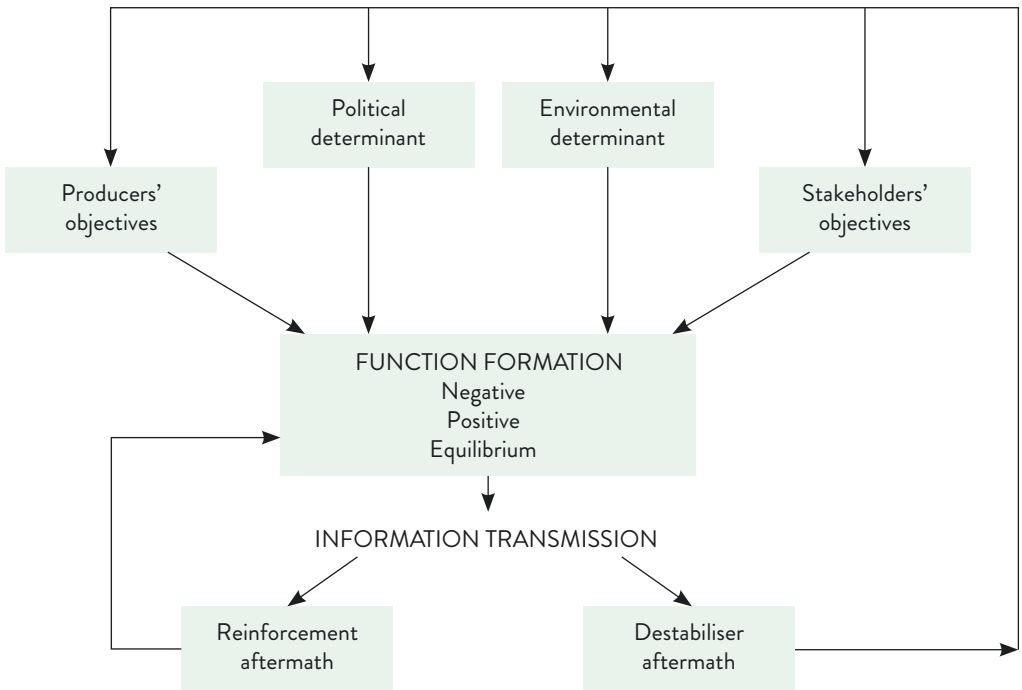


Figure 9.2 Substantive model of financial reporting

Source: Hussey and Ong (2005, p. 158).

Our second example (Kihl, Richardson and Campisi, 2008) is a study that investigated some of the issues faced by student athletes when there is an instance of academic corruption. The researchers identified three main consequences that led to harmful outcomes (negative treatment, sanctions and a sense of loss) in addition to some positive outcomes. Figure 9.3 shows the flow diagram that summarises their theoretical model.

9.2.3 Potential problems

Grounded theory presents a number of problems, which include the difficulty of dealing with the considerable amount of data generated and the generalisability of the findings. Not only is the research process very time-consuming, but it is set within a particular context, which could limit the generalisability of the findings. In such cases, the researchers might refer to the development of a substantive model based on the observable themes and patterns within the setting of the study rather than a theory.

Although coding plays a significant role in the analysis of qualitative data, you need to remember that this is only part of grounded theory methodology. If you only intend to use the

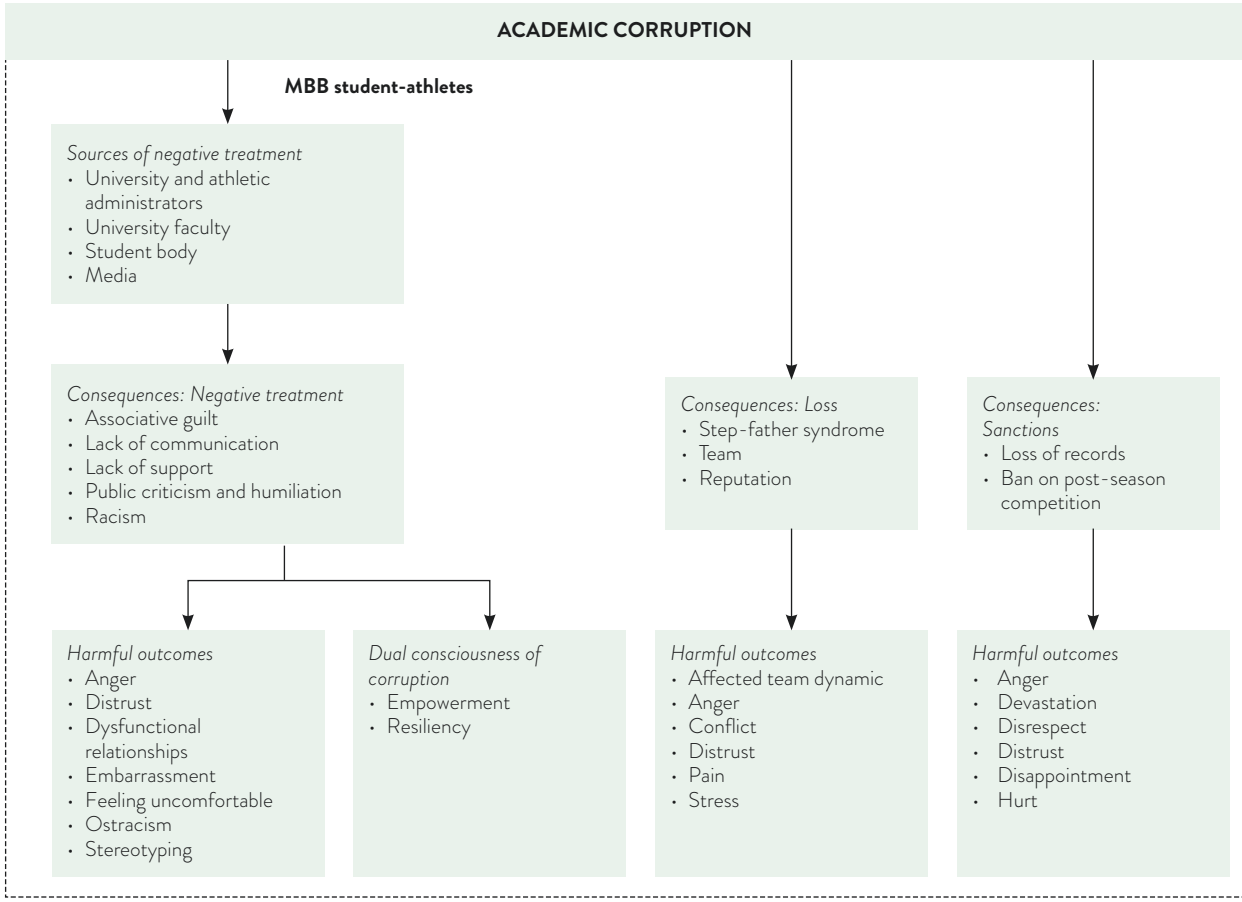


Figure 9.3 Theoretical model of academic corruption

Source: Kihl, Richardson and Campisi (2008, p. 284). With permission of Human Kinetics.

coding procedures from grounded theory, in your methodology chapter you will need to explain why you have not incorporated the generation of theory. This can be difficult since there are a number of alternative analytical procedures you might use. At the undergraduate level, your supervisor may only require you to demonstrate some of the important concepts and variables that would be part of a theory.

We emphasise that if you are planning to use grounded theory, you must discuss it with your supervisor at an early stage. Jones (2009) describes the experiences of a doctoral student who had to convince the committee that such a methodology was acceptable. His argument was that all other methodologies were inappropriate, which eliminated them as alternatives, leaving grounded theory as the only choice.

9.3 Repertory grid technique

Based on personal construct theory (Kelly, 1955), **repertory grid technique** is a form of structured interview during which a matrix (the grid) is developed that gives a mathematical representation of the personal constructs the interviewee uses to understand and manage his or her world. The technique 'allows the interviewer to get a mental map of how the interviewee views the world, and to write this map with the minimum of observer bias' (Stewart and Stewart, 1981, p. 5).

A **personal construct** is a set of concepts or general notions and ideas a person has in his or her mind about certain things. The underlying theory is that 'people strive to make sense of their world by developing a personal construct system: a network of hypotheses about how the world works' (Hankinson, 2004, p. 146). Our personal constructs are not necessarily fixed; as we gain new knowledge and experience, we develop new models to help us make

Repertory grid technique is a form of structured interview based on personal construct theory (Kelly, 1955) during which a matrix (the grid) is developed that gives a mathematical representation of the constructs the interviewee uses to understand and manage their world.

A **personal construct** is a set of concepts or general notions and ideas a person has in his or her mind about certain things.

sense of the world. Our construct system represents reality as we know it. Others may share our view of reality or perhaps only part of it if their construct systems overlap with ours. Inconsistencies in our personal construct systems help explain why we might view other people's behaviour as being at odds with ours.

9.3.1 Using repertory grid technique

It can be argued that at one level a repertory grid 'is nothing more than a labelled set of numbers' (Taylor, 1990, p. 105). However, it provides a structured way for interpretivists to assess individuals' perceptions and gather data that permits themes and patterns to be discerned based on quantitative data measured on an ordinal scale (see Chapter 10, section 10.3.1) that readily lends itself to statistical analysis. That would appeal if you are planning a positivist study, but if you are designing your study under an interpretivist paradigm, it is essential to seek explanation of the constructs, elements and scores from the interviewee at the time. In all cases, we recommend that you ask permission to audio record the interview and take notes.

Repertory grid technique requires the identification of elements and constructs, and a procedure for enabling participants to relate the constructs to the elements. The elements on the grid are the objects or concepts under discussion, and constructs are the characteristics or attributes of the elements. Following Kelly's original approach, many studies have used people as elements, but other studies have used occupations and work activities (for example Hunter, 1997) or organisations (for example, Barton-Cunningham and Gerrard, 2000; Dackert *et al.*, 2003).

Elements can be generated in several ways:

- by eliciting a topic of interest through discussion with the participants and drawing up a list of elements (usually between 5 and 10, as more could be hard to manage)
- by describing a situation and allowing the participant to identify the elements
- by providing a pool of elements and asking the participant to select a certain number of elements
- by providing predetermined elements.

A separate card is used to show the name of each element and these cards are used to elicit the constructs, using triads or dyads. The classical approach is to use triads, where the interviewer selects three cards at random to show the interviewee. He or she is first asked to decide which two are similar and what differentiates them from the third and then to think of a word or phrase for each similarity or difference between pairs in the triad. The process is repeated until a comprehensive list of personal constructs is obtained. The alternative approach is to use dyads, where pairs of cards are selected at random and the interviewee is asked to provide a word or phrase that describes each similarity or difference. We advise you to choose the method that is the most appropriate for exploring the participant's view of the phenomena under study.

The main stages in repertory grid technique are summarised in Box 9.3.

Box 9.3 Procedure for repertory grid technique

1. Determine the focus of the grid.
2. Determine the elements in advance or agree them with each interviewee (approximately 5–10).
3. Write each element on a separate card.
4. Decide whether to use triads or dyads.
5. Select the appropriate number of cards at random.
6. Ask the interviewee to provide a word or phrase that describes each similarity and difference between the pairs of elements.
7. Use these words or phrases as the constructs on the grid.

8. Explain the rating scale to the interviewee (for example, 5 = high, 1 = low)
9. Ask the interviewee to indicate the number closest to his or her view and explain the reason.
10. Construct a grid for each interviewee based on his or her responses and scores.

In an ideographic approach, the grid is based on the unique elements and personal constructs elicited from the interviewee, and the scores he or she gives that measure relationships between each element and construct. These describe his or her world and the grid might have very little in common with the grids of other interviewees. In a nomothetic approach, predetermined elements and/or constructs are used, which facilitate comparison across cases and aggregation of the scores in the grids (Tan and Hunter, 2002). At a very simple level you can detect emerging patterns, but in a positivist study you might want to take a statistical approach.

9.3.2 Examples of studies using repertory grid technique

Our first example is a study that used repertory grid technique to investigate employees' constructs in relation to a set of elements based on organisational systems (Dunn and Ginsberg, 1986). Box 9.4 shows an example of the repertory grid for one of the employees interviewed. If you refer to the article, you will see that the researchers used the data from the repertory grids to calculate three indices of cognitive content, which allowed them to measure differences in the structure and content of reference frames.

Box 9.4 Sample individual repertory grid

Constructs	Elements (rating scale 1–7)					
	Inventory management system	Strategic planning system	Office automation	Decision support system	Quality working circle	Collateral organization
Technical quality	6	5	4	2	1	3
Cost	2	1	4	6	5	3
Challenge to status quo	6	1	2	4	5	3
Actionability	1	6	2	4	5	3
Evaluability	6	1	2	5	4	3

Source: Based on Dunn and Ginsberg (1986, p. 964). Reproduced with permission of SAGE Publications.

A second example is a study by Brook (1986), who used repertory grid technique in conjunction with interviews and questionnaires (methodological triangulation) to measure the effectiveness of a management training programme. The grid was based on typical interpersonal situations encountered by managers in their daily work, together with two elements referring to performance before and after training, and two elements relating to examples of their best and worst performance. The situations she used to elicit the elements were as follows (Brook, 1986, Table 3, p. 495):

- a time when I delegated an important task to a co-worker
- the time when I actively opposed the ideas of my controlling officer (or someone in authority)
- a time I had to deal with a problem brought to me by a member of my staff
- a time I had to make an important decision concerning my research (or other work)

- a time when I had a professional association with some outside organisation (business, industry, etc.)
- the occasion when I made (or proposed) changes in the running and conduct of section meetings or other procedures of a similar nature
- an occasion when I felt most satisfied with my work performance
- an occasion when I felt least satisfied with my work performance
- my professional self *now*
- my professional self *a year ago*.

She found that the repertory grids provided 'rich and varied data on individual subjects which could then be validated against other information obtained from before-and-after interviews and questionnaires' (Brook, 1986, p. 495).

The next study (Lemke, Clark and Wilson, 2011) used repertory grid technique during 40 interviews with customers to examine the quality of their experience. The researchers identified nine suppliers as the elements of the grid and then used the triadic method to establish the constructs. During the interview, the customer was shown three cards, each of which displayed the name of one of the nine suppliers. The customers were asked how two of the suppliers differed from the third. This generated the first construct. Next, the interviewee was asked to state the opposite of this construct, so that the labels could be used as the anchors on either end of a scale. The interviewee was then asked to rate all nine suppliers on this construct using a five-point scale. The interviewee was shown another three cards displaying the names of another triad of suppliers and asked to explain how two of them differed from the third, but using a different reason from the explanation given for the first construct. This process continued until no further constructs could be identified. Not surprisingly, several constructs appeared in more than one interview and it was possible to reduce the total number of constructs to 119. These were then categorised into 17 experience categories. To ensure the reliability of the categorisation process, not only did the research team meet to discuss and agree the categories, but they also called upon the help of two independent scholars to ensure the analysis was managed appropriately.

This was a major study involving three experienced researchers and two independent scholars, and conducting 40 interviews would be too time-consuming for an undergraduate or taught Master's student. To avoid this problem, some researchers use a literature search or a sample of interviewees to establish the constructs. Some academics might be opposed to this, so if you are planning to do this, it is important that you discuss it with your supervisor first.

Identifying the elements and constructs and then completing the grid with the ratings given by the interviewees is only part of the method. Interpretivists will be interested in gaining an understanding of the scores on the grids from a qualitative analysis of the explanations given by the interviewees when they were completing the grid. If the researcher has not used a standard set of elements and constructs for all interviewees, content analysis can be used to count the frequency of occurrence of elements and constructs with a view to identifying common trends. It is also possible to compare individuals' grids for cognitive content and structure.

The scores on the repertory grid can be analysed statistically. The particular statistics used should be appropriate for variables measured on an ordinal scale (see Chapters 10 and 11). If you have sufficient data, cluster analysis and factor analysis can be useful for aiding the interpretation of the data. You need to remember that if your hypotheses are not underpinned by theory or deductive reasoning, a mathematical 'relationship' might be found that is entirely spurious.

9.3.3 Potential problems

The main problem with repertory grid technique is that it is very time-consuming. In addition, participants might find it difficult to compare and contrast the triads or dyads of the elements or describe constructs in the prescribed manner. There is also the challenge of how to aggregate data from individual grids. It is possible to examine a relatively small matrix for patterns and differences between constructs and elements. However, a large matrix would require the use of software to generate the grid and analyse the data. A follow-up interview with the participant increases the validity of the statistical analysis, but you will need to bear in mind that the meaning given to events and experiences can change over time.

Although repertory grid technique has been used in positivist studies, it is built upon personal construct theory which lies within the interpretative paradigm. If you want to use repertory grid technique to collect quantitative data for statistical purposes, you are designing your study under a positivist paradigm and you need to be aware that there is some debate over this when you justify your methodology in your dissertation or thesis.

9.4 Cognitive mapping

Cognitive mapping attempts to extend personal construct theory (Kelly, 1955) and is widely used in business research to analyse and structure written or verbal accounts of problem solving. The underlying theory is that different people interpret data in different ways and therefore they solve problems in different ways. As already explained, people make sense of the world by developing a network diagram of personal constructs that help them understand it. When decision makers have to resolve new and complex problems they cannot process all information that would be relevant, but can reflect on their existing cognitive maps to determine what action should be taken. From a researcher's point of view, if we can gain understanding of the decision maker's cognitive map, we will be in a better position to understand his or her decision-making process.

Cognitive mapping is a method based on personal construct theory that structures a participant's perceptions of a problem in the form of a diagram.

9.4.1 Using cognitive mapping

Cognitive mapping is often used in projects concerned with the development of strategy and can be useful in action research, which is a methodology we discuss in Chapter 4. It can be used to summarise interview transcripts or other documentary data in a way that promotes reflection and analysis of the problem, leading to potential solutions. If interviews are used to gather the data, the questions asked should focus on the factors that affect the problem, the concepts relating to the problem, why those concepts are important to the interviewee and how they are related. The main stages in cognitive mapping are as follows:

- An account of the problem is broken into phrases of about ten words which retain the language of the person providing the account. These are treated as distinct concepts which are then reconnected to represent the account in a graphical format. This reveals the pattern of reasoning about a problem in a way that linear text cannot.
- Pairs of phrases can be united in a single concept where one provides a meaningful contrast to the other. These phrases are the personal constructs in Kelly's theory, where meaning is retained through contrast.
- The distinct phrases are linked to form a hierarchy of means and ends; essentially explanations leading to consequences. This involves deciding on the status of one concept relative to another. There are a number of categories or levels defined in a notional hierarchy that help the user make these decisions. Meaning is retained through the context.

Drawing on Ackermann, Eden and Cropper (1990), Box 9.5 shows a procedure for cognitive mapping that focuses on strategic issues.

Box 9.5 Procedure for cognitive mapping

1. Construct your map on a single A4 page so that links can be made.
2. Start mapping about two-thirds of the way up the paper in the middle, displaying the concepts in small rectangles of text.
3. Separate the sentences into phrases.
4. Build up a hierarchy.
5. Identify goals and potential strategic issues as the discussion unfolds.
6. Retain opposite poles for additional clarification.
7. Add meaning to concepts by placing them in the imperative form; include actors and actions if possible.

8. Retain validity by not abbreviating words and phrases used by the problem owner.
9. Identify the option and outcome within each pair of concepts.
10. Ensure that a generic concept is superordinate to specific items that contribute to it.
11. Code the first pole as the one that the problem owner sees as the primary idea.
12. Tidy up the map to provide a more complete understanding of the problem.

Source: Ackermann, Eden and Cropper (1990). With permission. For further information on mapping for research, see: Eden, C. and Ackermann, F. (1998) 'Analysing and Comparing Idiographic Causal Maps' in Eden, C. and Spender, J.-C. (eds), *Managerial and Organizational Cognition.* London: SAGE, pp. 192–209.

Cope is a software program that has been developed to aid cognitive mapping. There is no pre-set framework, other than the nodes and linkages convention. This means the researcher can impose any structuring convention that seems appropriate. The program can handle complex data, which are held in a database in a form that is amenable to analysis and presentation. As its name suggests, *Cope* aids the management of large amounts of data, but it also reduces the need for early data reduction and compels the researcher to be explicit about the assumptions he or she is using to structure and analyse the data. It can be used to build models that retain the meaning of the data and aid 'the development of theoretical accounts of phenomena' (Cropper, Eden and Ackermann, 1990, p. 347). This makes it a useful tool for researchers using grounded theory or the general analytical procedure associated with Miles and Huberman (1994). Figure 9.4 shows an example of a cognitive map using *Cope*.

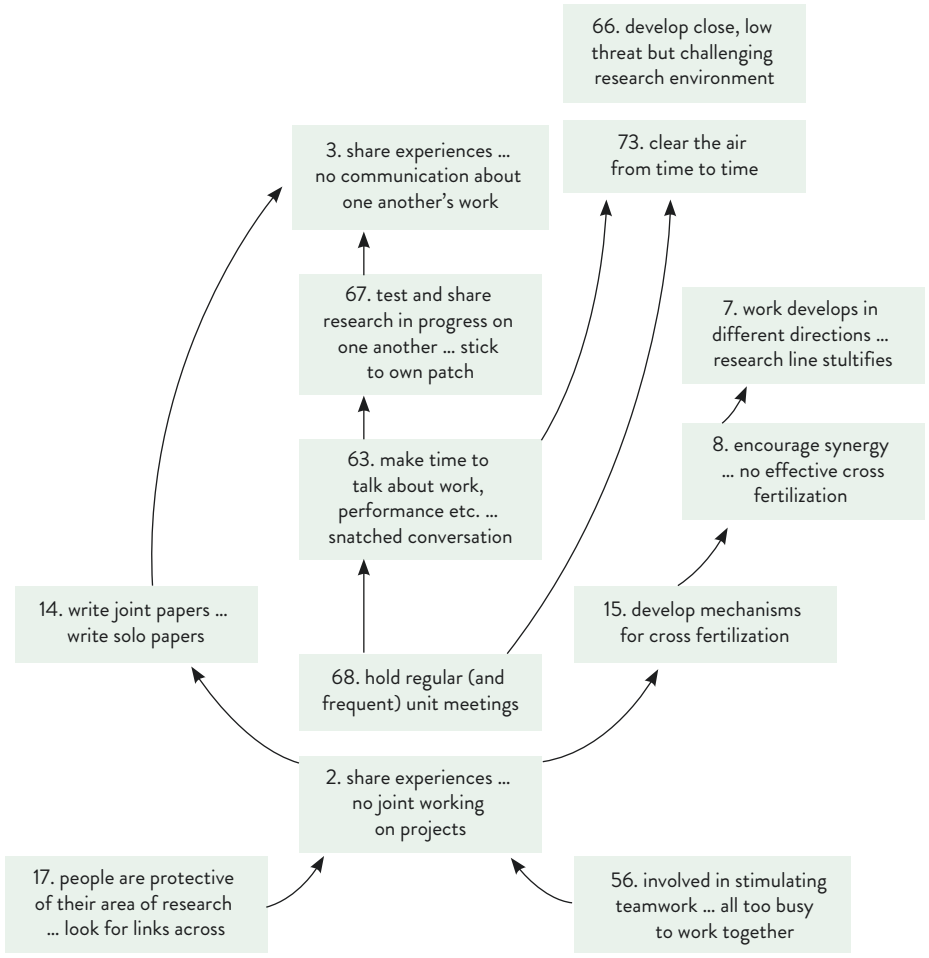


Figure 9.4 Example of a cognitive map

Source: Cropper, Eden and Ackermann (1990, p. 350). Reproduced with permission of SAGE Publications.

9.4.2 Example of a study using cognitive mapping

Boujena, Johnston and Merunka (2009) used interviews in combination with cognitive mapping to investigate customers' reactions to sales force automation systems (software information system used to automate some sales and sales force management functions in a business). The researchers conducted semi-structured interviews with seven buyers from different industries. The interviewees were asked to identify the benefits they perceived when dealing with a salesperson using a sales force automation system. The first stage of the analysis was to identify themes in the interview data using the general analytic procedure described by Miles and Huberman (1994). The themes were then refined by referring to the literature to construct meta-categories (a meta-category is a category about categories).

The researchers also conducted a lexical analysis by counting the words used most frequently by buyers when identifying benefits and presenting the frequencies and frequency percentages in a simple table. To obtain an in-depth understanding of customers' perceptions, a cognitive map was generated for each interviewee and all the maps were subsequently aggregated to a single cognitive map. To ensure validity, each individual was shown their map and asked if it accurately represented the causal relationships. Figure 9.5 shows the causal map for one of the customers.

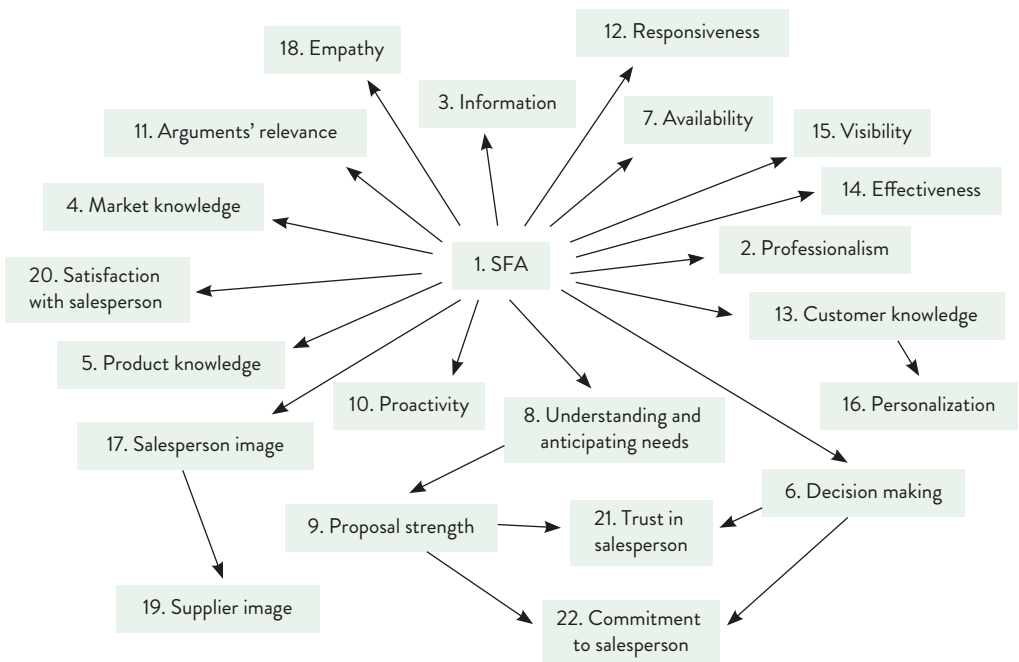


Figure 9.5 Sample individual causal cognitive map

Source: Boujena, Johnston and Merunka (2009, p. 143).

This research incorporates many of the lessons that we have discussed in this chapter and the previous two. To conduct a successful qualitative research project, you do not need to collect a large amount of data: the number of interviews or observations can be small. However, the data you collect must be as complete as possible and qualitative researchers will often refer to the data being 'rich'.

9.4.3 Potential problems

Cognitive mapping shares some of the problems of repertory grid technique: it is time-consuming and if you are using interview data, you might need to conduct a follow-up interview with the participant to increase the validity of the analysis. When reflecting on the generalisability of your findings, you will need to remember that the map represents the participant's

thinking about a particular problem at a particular point in time. The links representing relationships between concepts reveal patterns rather than causality. If you are analysing interview data, the map is a product of the researcher's analysis of data produced from interaction between the researcher and the participant. The use of qualitative data analysis (QDA) software, such as *Cope*, addresses the challenge of how to manage the data and facilitates the generations of a professional looking cognitive map.

9.5 Conclusions

Although you might decide not to use the integrated methods explained in this chapter, they will help deepen your understanding of research methods and help you justify the choices you have made. Regardless of your paradigm, it is essential that you know how you are going to analyse your research data. One of the advantages of integrated methods is that that collection and analysis are intertwined. As all the methods we have described in this chapter involve conducting interviews, make sure that you are thoroughly familiar with the different ways in which interpretivists (see Chapter 7) and positivists (see Chapter 10) conduct interviews.

Some of the methods we have covered in this chapter demonstrate how a matrix (repertory grid techniques) or diagram (cognitive mapping) can be used to collect and analyse your research data as well as summarise the findings in your dissertation or thesis. We advise caution if you are an undergraduate or a student on a taught Master's programme who is considering using grounded theory. The approach is very time-consuming and the task of developing new theory is difficult. However, it can be made easier if you use diagrams as you proceed with your research. If you are an MPhil or doctoral student planning to use grounded theory, you should discuss the matter with your supervisor to ensure that he or she is in agreement with the particular approach you intend to take when using this framework.

You must obtain approval from your supervisor and any other authority responsible for research ethics in your university or college before you collect any research data. This will ensure that you consider the ethical issues involved. As a general rule, you should inform the participants of the purpose of the research and, where practicable, obtain their written consent to take part. You must ask for permission if you are planning to take notes or record observations or interviews you conduct as part of a study based on grounded theory, repertory grid technique or cognitive mapping.

Deciding to adopt an integrated approach to the collection and analysis of data does not preclude other analytical methods in your research project (methodological triangulation). The more you analyse the data, the more you will extract interesting insights and illumination of the phenomenon you are studying. If your supervisor agrees, you might decide to include both qualitative and quantitative analyses, and we will start our discussion on collecting data for statistical analysis in the next chapter.

References for further reading

Ackermann, F., Eden, C. and Cropper, S. (1990) 'Cognitive Mapping: A User Guide', *Working Paper No. 12*. Glasgow: Strathclyde University, Department of Management Science.

Barton-Cunningham, J. and Gerrard, P. (2000) 'Characteristics of well-performing organisations in Singapore', *Singapore Management Review*, 22(1), pp. 35–65.

Boujena, O., Johnston, W. J. and Merunka, D. A. (2009) 'The benefits of sales force automation: A customer's perspective', *Journal of Personal Sales and Sales Management*, XXIX(2), pp. 137–50.

Brook, J. A. (1986) 'Research applications of the repertory grid technique', *International Review of Applied Psychology*, 35, pp. 489–500.

Cropper, S., Eden, C. and Ackermann, F. (1990) 'Keeping sense of accounts using computer-based cognitive maps', *Social Science Computer Review*, 8(3), pp. 345–66.

Dackert, I., Jackson P. R., Brenner, S. O. and Johansson, C. R. (2003) 'Eliciting and analysing employees' expectations of a merger', *Human Relations*, 56(6), pp. 705–13.

Dunn, W. and Ginsberg, A. (1986) 'A sociocognitive network approach to organizational analysis', *Human Relations*, 39(11), pp. 955–75.

Glaser, B. (1978) *Theoretical Sensitivity*. Mill Valley: Sociology Press.

Glaser, B. and Strauss, A. (1967) *The Discovery of Grounded Theory*. Chicago: Aldine.

Hankinson, G. (2004) 'Repertory grid analysis: An application to the measurement of distant images', *International Journal of Nonprofit and Voluntary Sector Marketing*, 9(2), pp. 145–54.
Hunter, M. G. (1997) 'The use of RepGrids to gather interview data about information system analysts', *Information Systems Journal*, 7, pp. 67–81.
Hussey, R. and Ong, A. (2005) 'A substantive model of the annual financial reporting exercise in a non-market corporate', *Qualitative Research in Accounting and Management*, 2(2), pp. 152–70.
Hutchinson, A. J., Johnston, L. H. and Breckon, J. D. (2010) 'Using QSR-NVivo to facilitate the development of a grounded theory project: An account of a worked example', *International Journal of Social Research Methodology*, 13(4), pp. 283–302.
Jones, J. W. (2009) 'Selection of grounded theory as an appropriate research methodology for a dissertation: One student's perspective', *The Grounded Theory Review*, 8(2), pp. 23–34.
Kelly, G. A. (1955) *The Psychology of Personal Constructs: A Theory of Personality*. New York: Norton.
Kihl, L. A., Richardson, T. and Campisi, C. (2008) 'Toward a grounded theory of student athletes suffering and dealing with academic corruption', *Journal of Sport Management*, 22(3), pp. 273–302.
Lemke, F., Clark, M. and Wilson, H. (2011) 'Customer experience quality: An exploration in business and customer contexts using repertory grid', *Journal of the Academy of Marketing Science*, 39(6), pp. 846–68.
Miles, M. B. and Huberman, A. M. (1994) *Qualitative Data Analysis*. Thousand Oaks, CA: SAGE.
Pidgeon, N. F., Turner, B. A. and Blockley, D. I. (1991) 'The use of grounded theory for conceptual analysis in knowledge elicitation', *International Journal of Man–Machine Studies*, 35, pp. 151–73.
Stewart, V. and Stewart, A. (1981) *Business Applications of Repertory Grid*. Maidenhead: McGraw-Hill.
Strauss, A. (1987) *Qualitative Analysis for Social Scientists*. New York: Cambridge University Press.
Strauss, A. and Corbin, J. (1990) *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park: SAGE.
Strauss, A. and Corbin, J. (1998) *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*, 2nd edn. Newbury Park: SAGE.
Tan, F. and Hunter, M. G. (2002) 'The repertory grid technique: A method for the study of cognition in information systems', *MIS Quarterly*, 26(1), pp. 39–57.
Taylor, D. S. (1990) 'Making the most of your matrices: Hermeneutics, statistics and the repertory grid', *International Journal of Personal Construct Psychology*, 3, pp. 105–19.

Activities

1 In pairs, use repertory grid technique to examine students' study habits. Select roles (researcher or interviewee) and agree the elements. Start designing the grid with the elements as the headings of the columns. Write each element on a card or small piece of paper. Using dyads, randomly select two cards and ask the interviewee to provide a word or phrase that describes each similarity and difference between the pairs of elements. Use these words or phrases as the constructs on the grid. Take a copy of the blank grid (for the next exercise). Using a rating scale of 1 to 5 (where 5 = high, 1 = low), ask the interviewee to indicate the number closest to his or her view and explain the reason. Take notes of the reasons. Complete the grid by adding the scores.
2 Continue the exercise by swapping roles and complete the second grid using the same rating scale of 1 to 5. Reflect on the similarities and differences in the scores. How would you explain them?
3 Divide into two groups and debate the motion that repertory grid technique is a suitable method for interpretivists. One group argues for the motion and the other against it.
4 Compare repertory grid technique and cognitive mapping in the context of the validity and generalisability of the findings.
5 Discuss the advantages and disadvantages of grounded theory as a framework for business research.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter and sections 15.2, 15.5, 15.7, 15.10 and 15.11 in particular, which relate specifically to this chapter.

10

Collecting data for statistical analysis

Learning objectives

When you have studied this chapter, you should be able to:

- select a random sample
- classify variables according to their level of measurement
- describe the main methods for collecting data for statistical analysis
- discuss the strengths and weaknesses of different methods
- design questions for questionnaire and interview surveys.

10.1 Introduction

In this chapter, we focus on the main methods used to collect primary research data for subsequent statistical analysis. The methods are appropriate if you are designing a study under a positivist paradigm. You can read this chapter quite independently from Chapter 7, which focuses on the collection of qualitative data for non-numerical analysis. However, if you have already studied Chapter 7, you will notice that some of the methods we describe are similar, as they can also be adapted for use under a positivist paradigm. Some students use the terms quantitative or qualitative methods, but we suggest that you avoid these ambiguous phrases as it is the data rather than the means of collecting or analysing the data that are in numerical or non-numerical form.

You will remember from Chapter 4 that the two main methodologies associated with positivism are experimental studies and surveys. Since experimental studies are not widely used in business research for practical and ethical reasons, we focus on the methods used to collect primary research data when a survey methodology is adopted. We start by examining the main issues, which include the important question of how to select a random sample. We then explain the different measurement levels of the variables about which numerical or non-numerical data will be collected. This paves the way for a detailed discussion on the use of survey questionnaires and interview schedules. We also describe critical incident technique, which can be incorporated in either method. The close relationship between collecting and analysing the research data means it is important to think ahead to the statistical methods you will use when you are developing questions for self-completion questionnaires and interviews. Therefore, we also provide detailed advice on how to design your questions and code them ready for statistical analysis.

10.2 Main issues in collecting data for statistical analysis

All researchers are interested in collecting **data** about the phenomena they are studying. You will remember that in Chapter 1 we defined data as known facts or things used as a basis for inference or reckoning. Some authors distinguish between data and **information** by defining information as the knowledge created by organising data into a useful form. Obviously, this depends on how items of data are perceived and how they are used. For example, if you are a positivist, you might collect data relating to the variables under study via a questionnaire survey, which you subsequently analysed using statistics. You probably consider that this process allowed you to turn data into information that makes a small contribution to knowledge. On the other hand, the respondents to your survey might consider that what they gave you was information in the first place.

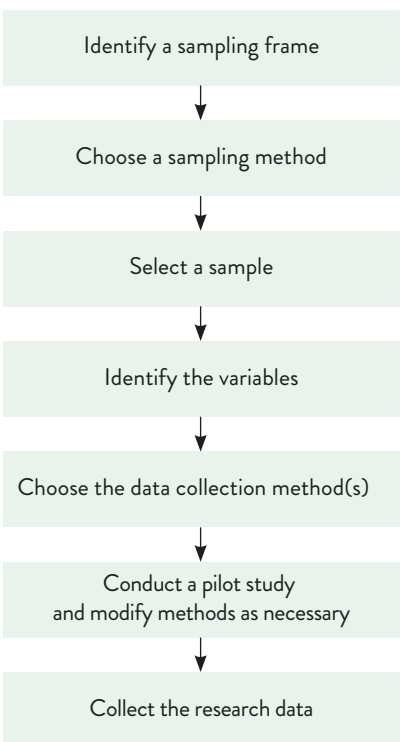


Figure 10.1 Overview of data collection in a positivist study

Your research data can be quantitative (in numerical form) or qualitative (in non-numerical form, such as text or images). Data can also be classified by source. Your study could be based on an analysis of **secondary data** (data collected from an existing source) or on an analysis of **primary data** (data you have generated by collecting them from an original source, such as an experiment or survey). In a large study, your analysis might be based on both primary and secondary data. Typical sources of secondary data include archives, commercial databases, government and commercially produced statistics and industry data, statutory and voluntary corporate reports, internal documents and records of organisations, and information in printed and web-based publications. The business librarian at your university or college will be able to tell you more about the archives and databases available to you.

Data are known facts or things used as a basis for inference or reckoning.

Information is the knowledge created by organising data into a useful form.

Primary data are generated from an original source, such as your own experiments, surveys, interviews or focus groups.

Qualitative data are data in a non-numerical form.

Quantitative data are data in a numerical form.

Secondary data are collected from an existing source, such as publications, databases and internal records.

A **population** is a body of people or collection of items under consideration for statistical purposes.

A **sample** is a subset of a population.

A **sampling frame** is a record of the population from which a sample can be drawn.

A **unit of analysis** is the phenomenon under study about which data are collected and analysed.

Generalisability is the extent to which the research findings (often based on a sample) can be extended to other cases (often a population) or to other settings.

We will conclude this section on the main issues in collecting data for statistical analysis with an overview of the data collection process in a positivist study (see Figure 10.1). However, it is important to realise that this is purely illustrative, and the process is not as linear as the diagram suggests. Moreover, research data can be generated or collected from different sources and more than one method can be used.

10.2.1 Identifying a sampling frame for a positivist study

A **sampling frame** is a record of the population from which a **sample** can be drawn, and a **population** is a body of people or collection of items under consideration for statistical purposes. To find out how many items there are in the population, you need to find a suitable sampling frame. For example, if you were conducting research where employees are the **unit of analysis**, the human resources (HR) department of the business may be willing to supply a staff list. If you were planning to conduct a business questionnaire or interview survey, you would start by looking for a business register or database containing names, such as *Fame, Dun & Bradstreet* or *DataStream*, that gives sufficient information to allow you to identify those that meet your inclusion criteria. For example, perhaps you are interested in companies of a particular size, in a particular industry, in a particular geographical area. Once you have a list of all the relevant businesses, you have a sampling frame. Ideally, it will list every item of interest in the population that falls within the scope of your study. If the population is relatively small, you can select the whole population; otherwise, you will need to select an unbiased sample from the population.

Table 10.1 Determining sample size from a given population

Population	Sample size
10	10
100	80
200	132
300	169
400	196
500	217
700	248
1,000	278
2,000	322
3,000	341
4,000	351
5,000	357
7,000	364
10,000	370
20,000	377
50,000	381
75,000	382
≥ 1,000,000	384

Source: Adapted from Krejcie and Morgan (1970, p. 608), with permission of SAGE Publications.

10.2.2 Sample size

What constitutes an appropriate sample size depends on a number of factors, which include the purpose of your study and whether you want to generalise from your results. **Generalisability** is the extent to which the research findings (often based on a sample) can be extended to other cases (often a population) or to other settings. For an undergraduate or taught Master's dissertation or thesis, it is common to accept a degree of uncertainty in the conclusions you draw, so selecting a random sample of sufficient size to allow your results to be generalised may not be vital to your study. Nevertheless, you still need a sample that is large enough to address your research questions because too small a sample may preclude some important statistical tests among groups or subsets within the sample (for example, looking for differences between industry sectors). Therefore, the greater the expected variation within the sample, the larger the sample required. In addition, the larger the sample, the better it will represent the population.

For example, perhaps your research focuses on the financial structure of small companies in the paper recycling industry in the London postal area. Your unit of analysis is a small company, which you decide to define as a private limited company with up to 50 employees. You decide to use the *Fame* database to identify companies that fit your criteria and your investigations show that there are 32 such companies. If you conduct your research on these 32 companies, your research findings will relate only to paper recycling companies of this size in London and you will not be able to extend the results of your study to any larger companies in that sector in London or to any companies outside London. On the other hand, perhaps you are investigating the performance of all small companies in all industries throughout the UK. In this case, your unit of analysis is still a small company and you can still use the *Fame* database as the sampling frame, but this time you find that there are thousands of companies that fit your criteria. To save the expense and inconvenience of investigating all these companies, it is acceptable to reduce the number to a manageable size by selecting a random sample.

If you are planning to conduct a questionnaire survey, you will also need to take account of your expected response rate when considering your sample size. Unfortunately, response rates can be as low as 10% or less. Recent surveys in your field or your own pilot survey will give you some idea of the response rate you can expect.

The factors that must be considered when determining the appropriate number of subjects to include in a sample are discussed in detail by Blair, Czaja and Blair (2014); essentially, it is a question of deciding how accurate you want your results to be and how confident you want to be in that answer.

If generalisability is important, you will need to determine the minimum sample size to allow the results from a random sample to be generalised to the population. This is much higher for a small population than it is for a large population. Table 10.1 (see previous page) shows that 'as the population increases, the sample size increases at a diminishing rate and remains relatively constant at slightly more than 380 cases' (Krejcie and Morgan, 1970, p. 610).

If you are planning to use online survey software, you may find there is a free sample size calculator.

10.2.3 Methods for selecting a random sample for a positivist study

A **random sample** is an unbiased subset of a population that is representative of the population because every member had an equal chance of being selected.

A **random sample** is an unbiased subset that represents the population. Every member of the population has a chance of being chosen as in a lottery where every number has a chance of being drawn and each number can only occur once. Because a random sample represents the population, the results are generalisable, which means they can be taken as being true for the whole population. The sample will be biased if the researcher or someone else chooses it or asks for volunteers, or if inducements are offered, because the sample may have characteristics that others in the population do not possess. 'It is vital to obtain a random sample to get some idea of variation… To build general conclusions on… limited data is a bit like a lazy evolutionist biologist finding a few mutant finches… in a population on day one of a field outing then returning home to claim that all finches of this species display the same properties' (Alexander, 2006, p. 20).

Choosing an appropriate method for selecting a random sample is important as it avoids the problem of sampling bias, which refers to situations where the sample does not reflect the characteristics of the target population. One way to select a random sample is to allocate consecutive numbers to every member of the population and then select a sample based on the random numbers from a random number table (see Appendix at the end of this book) or an online random number generating service (for example, https://www.random.org/integers/). If using an online number generator, make sure you select the option that generates randomised sequences of integers (numbers) as this will ensure that each number can only occur once. This method is a superior to the pseudo-random number algorithms typically provided by databases and computer programs.

Alternatively, you can generate random numbers in *Microsoft Excel*. To do this, open a spreadsheet and click on the cell where you want the random number to be shown (for example, A1 in Figure 10.2). From the menu at the top, select Formulas and then Math & Trig. This opens a drop-down list of mathematical functions. Scroll down and select RAND and then click OK. A random number between 0 and 1 will appear in cell A1 and the complete function =RAND () appears in the formula bar. Generate another random number by moving to another cell and pressing F9 on the keyboard. If you want to select a random number between 0 and 100, click on the cell where you want the random number to be shown and type =RAND*100 into the formula bar. If you want a random number between 0 and 1,000, type =RAND*1000. If you want a random number between 500 and 1,000, type =RANDBETWEEN(500, 1000).*1000.

You can then use the random numbers you have generated to help you select a random sample. Start by allocating a row number to every member of the population in your sampling frame and select a sample based on the random numbers you have generated or those given in the random number table.

An alternative method is to use systematic sampling. This offers the advantage of simplicity, compared with random sampling, and ensures that the population is sampled evenly. However, there is some risk of under-representation and there might be bias if the researcher reorders or restructures the population. In systematic sampling, you choose the first subject from a random starting point and choose the remainder at fixed sampling intervals. The sampling interval is calculated by dividing the population by the desired sample size (n), as illustrated in Box 10.1. You then take every 'nth' subject until you have selected a sample of the size you require.

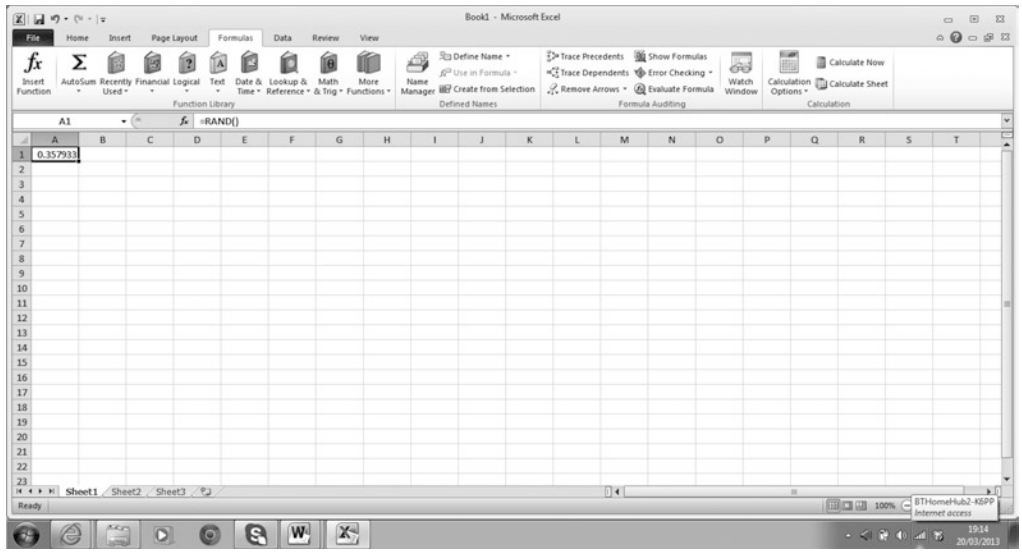


Figure 10.2 Generating a random number in *Microsoft Excel*

Source: Used with permission from *Microsoft*.

Box 10.1 Example of systematic sampling

Population: 10,000
Sample size: 370

Divide the population by the required sample size:

$$\frac{10{,}000}{370} = 27$$

Select a randomly chosen number between 1 and the required sample size of 27 (we have chosen 3). List the subjects in the population and number them. Then select the 3rd subject and every 27th one thereafter until 370 subjects have been selected:

3, 30, 57, 84, 111, 138, 165, and so on

Stratified sampling overcomes the problem that a simple random sample might result in some members of the population being significantly under-represented or over-represented. It does this by taking account of each identifiable strata of the population. For example, if your sampling frame consists of all the employees in an insurance company, you may identify the following strata: senior managers, supervisors and clerical staff. You would then need to find out how many there were in each category and work out what percentage of the whole this represents, so that you can ensure that the same proportions are reflected in the sample. Box 10.2 shows an example.

Box 10.2 Example of stratified sampling

Population: 500 (1% senior managers, 5% supervisors, 94% clerical staff)
Sample size: 217

217 × 1% = 2 senior managers
217 × 5% = 11 supervisors
217 × 94% = 204 clerical staff
Total 217

Other sampling methods include:

- Quota sampling is widely used in marketing research and involves creating a small unbiased population for research purposes. It is useful for situations when it is impractical to survey everyone in a population.
- Cluster sampling involves making a random selection from a sampling frame listing groups of units rather than individual units. Every individual belonging to the selected groups is then interviewed or examined. This can be a useful approach, particularly for face-to-face interviews, where for time or economy reasons it is necessary to reduce the physical areas covered. For example, a certain number of project teams within a company might be selected and every member of the selected teams interviewed.
- Multi-stage random sampling is used where the groups selected in a cluster sample are so large that a subsample must be selected from each group. It involves taking a series of simple random samples in stages. For example, first select a sample of companies in a particular industry sector. From each company, select a sample of departments and from each department select a sample of managers to survey.

Vox pop What has been the biggest challenge in your research so far?

Maysara, MBA student investigating healthcare systems management in the Occupied Palestinian Territory

I could not find any publications on my subject in the Middle East, so I was hoping to conduct a survey of a random sample of the Palestinian public. But this was not possible due to the politico/demographic set-up of the Palestinian territories. So, I ended up doing an online survey which could only target a specific group of the Palestinian public.

10.3 Variables

Once you have determined which method you will use to select a sample, you will need to turn your attention to the variables about which you will collect data. You will remember that under positivism, research is deductive and one of the purposes of the literature review is to identify theories and models so that you can develop a **theoretical framework** and **hypotheses** for your study. As explained in Chapter 3, a theory is a set of interrelated variables, definitions and propositions that specifies relationships among the variables. A **variable** is an attribute or characteristic of the phenomenon under study that can be observed and measured. Researchers collect data relating to each variable and use this **empirical evidence** to test their hypotheses.

Before you can collect any research data, you need to understand the properties of the variables relating to the phenomena you are studying. We have just described a variable as an attribute or characteristic of the phenomenon under study that can be observed and measured. You can see from this definition that variables are usually taken to be numerical and this is because any non-numerical observations can be quantified by allocating a numerical code (Upton and Cook, 2006). For example, the responses to open questions in a survey can be examined to identify the main themes and then a number given to each theme or category.

A **theoretical framework** is a collection of theories and models from the literature which underpins a positivist study. Theory can be generated from some interpretivist studies.

A **theory** is a set of interrelated variables, definitions and propositions that specifies relationships among the variables.

A **variable** is a characteristic of a phenomenon that can be observed or measured.

A **hypothesis** is a proposition that can be tested for association or causality against empirical evidence.

Empirical evidence is data based on observation or experience.

A **ratio variable** is measured on a mathematical scale with equal intervals and a fixed zero point.

10.3.1 Measurement levels

The level at which a variable is measured has important implications for your subsequent choice of statistical methods. 'A level of measurement is the scale that represents a hierarchy of precision on which a variable might be assessed' (Salkind, 2006, p. 100). There are four levels of measurement, which we will examine in decreasing order of precision:

- A **ratio variable** is a quantitative variable measured on a mathematical scale with equal intervals between points and a fixed zero point. The fixed zero point permits the highest

level of precision in the measurement and allows us to say how much of the variable exists (it could be none) and compare one value with another. For example, using sea level as the fixed zero point, we can measure altitude in feet or metres. This means we can say that one aeroplane is flying at an altitude measured in metres that is twice as high as another aeroplane. If we use kilometres as the measurement scale, we can measure the distance by train from London to Brussels. If we use time as the measurement scale, we would designate the time of departure from London as the fixed zero point and compare the average time of the journey by high speed train with the time by air. This allows us to say that, the mean (average) train journey is only 10% longer than by air.

An **interval variable** is measured on a mathematical scale with equal intervals and an arbitrary zero point.

An **ordinal variable** is measured using numerical codes to identify order or rank.

A **nominal variable** is measured using numerical codes to identify named categories.

- An **interval variable** is a grouped quantitative variable measured on a mathematical scale that has equal intervals between points and an arbitrary zero point. This means you can place each data item precisely on the scale and compare the values. For example, the interval between an IQ score of 100 and 115 is the same as the interval between 110 and 125, but it is not possible to say that someone with an IQ of 120 is twice as intelligent as someone with an IQ of 60. Temperature is another example: If the temperature was 1° centigrade yesterday and 2° centigrade today, we know that today is warmer by an interval of 1°, but we cannot say that today is twice as warm as yesterday because 0° centigrade does not mean there is no temperature! With only an arbitrary zero point, we cannot say that the difference between two points on the scale is a precise representation of the variable under study.
- An **ordinal variable** is measured using numerical codes to identify order (ranks). This allows you to see whether one observation is ranked more highly than another observation. For example, degree classifications of candidates applying for a job (1, 2.1, 2.2 or 3), their location preferences (1st, 2nd or 3rd) or their rating of their key skills (using a scale of 1 to 5, where 5 = high and 1 = low). Therefore, ordinal variables provide categorical measures.
- A **nominal variable** is measured using numerical codes to identify named categories. For this reason, it is described as a categorical variable. Each observation is placed in one of the categories. For example, you may have a variable for the gender of an applicant for a job (two categories), ethnicity (several categories) and qualifications (several categories). If it is not possible to anticipate all the categories, you can include a category labelled 'Other'. This is also used if you subsequently find some of your named categories contain very few observations.

One of the reasons why it is important to identify the level of measurement of variables is that it has implications for your statistical analysis. If you have collected data from ratio or interval variables, and the data meet certain distributional assumptions, you can use parametric tests, which are based on the mean. On the other hand, if your data come from ordinal or nominal variables you will need to use the less powerful non-parametric methods. We examine this further in the next two chapters.

10.3.2 Discrete and continuous quantitative variables

A **continuous variable** is a ratio or interval variable measured on a scale where the data can take any value within a given range, such as time or length.

A **discrete variable** is a ratio or interval variable measured on a scale that can take only one of a range of distinct values, such as number of employees.

Quantitative variables measured on a ratio or interval scale can be discrete or continuous. A **discrete variable** can take only one value on the scale. For example, the number of sales assistants in a baker's shop on different days of the week might range from 1 to 5 and the variable can only take the values 0, 1, 2, 3, 4 or 5. Therefore, a value of 1.3 or 4.6 sales assistants is not possible.

On the other hand, a **continuous variable** can take any value between the start and end of a scale. For example, the amount of fruit and vegetables wasted in a hotel kitchen each day might vary from 0 kg to 10 kg and the variable can take any value between the start and end of the scale. Therefore, the data for Monday could be 3 kg exactly, but on Tuesday it could be 3.5 kg and on Wednesday 2.75 kg. In practice, there is considerable blurring of these definitions. For example, it can be argued that income is a discrete ratio variable, because income is a specific value within a range of values. However, because there are so many different possibilities when incomes are taken down to the last penny or cent, income is generally considered to be a continuous variable. Weight is certainly a continuous variable, but if the weighing scales are only accurate to the nearest tenth of a kilogram, the results will be from the distinct range of values, 0.1, 0.2, 0.3, 0.4, and so on.

10.3.3 Dichotomous and dummy variables

A **dichotomous variable** is a variable that has only two possible categories, each with an assigned value. 'Gender' is an example of a natural dichotomous variable where the two groups are male and female, although additional categories are becoming more common. Gender can be described as a categorical variable. Sometimes a variable that is not a natural dichotomy can be recoded into a new dummy variable. A **dummy variable** is a dichotomous quantitative variable that is coded 1 if the characteristic is present and 0 if the characteristic is absent. Perhaps you have collected data relating to the variable 'age', which measures the number of years since the business was started in five-year periods (< 5 years, 6–10 years, 11–15 years, 16–20 years, and so on). You could collapse this variable into a new dummy variable called Maturity with two groups coded as 1 = Mature (≥ 5 years old) and 0 = Otherwise. If you do this, keep the original variable with its precise information in case you need it, because one of the disadvantages of recoding it into a dichotomous variable is that all this detail is lost.

A **dichotomous variable** is a variable that has only two possible categories, such as gender.

A **dummy variable** is a dichotomous quantitative variable coded 1 if the characteristic is present and 0 if the characteristic is absent.

There are a number of different arguments you could use to support how you treat a dichotomous variable in terms of the level of measurement. Using the above example of 'maturity', you might say that since the values represent a named category, it is a nominal variable with two groups named 'young' and 'mature'. Alternatively, you could argue that since the mature group has more of the original variable than the young group, it is an ordinal variable. Since there are only two values, you might decide to ignore the question of equal intervals and treat it as an interval variable. Finally, you might conclude that the 0 represents a natural zero point that indicates that the business is not a mature business; in other words, the variable is a dummy variable where 0 = the characteristic of maturity is absent and 1 = the characteristic is present. Therefore, you treat it as a ratio variable. However, you are only likely to find support for the first of these arguments and we advise that you discuss the others with your supervisor before using them to justify your choice of statistical methods.

10.3.4 Hypothetical constructs

Finding a measurement scale for variables such as the age of the businesses in your study or financial variables is not difficult, as there are widely accepted measures such as the number of years since the business was started and monetary measures, respectively. However, if your variables were abstract ideas such as intelligence or honesty, you will need to search the literature to find a suitable measurement scale or develop your own **hypothetical construct**. A construct is a set of concepts or general notions and ideas a person has about certain things. Because a construct is a mental image or abstract idea, it cannot be observed, and it is difficult to measure. Consequently, positivists develop a category or numerical scale to measure opinion and other abstract ideas. For example, intelligence has been measured by psychologists as a numerical hypothetical construct called intelligence quotient (IQ), which is based on the individual's score from a carefully designed test.

A **hypothetical construct** is an explanatory variable that is based on a scale that measures opinion or other abstract ideas that are not directly observable.

Apart from saving you time, the main advantages of finding an existing hypothetical construct, rather than developing your own, are that the validity of the measure is likely to have been tested and you can compare your results with others based on the same construct. Examples include social stratification categories, frequency categories, ranking and rating scales (see section 10.5.4).

10.3.5 Dependent and independent variables

In many statistical tests, it is necessary to identify the **dependent variable** (DV) and the **independent variable** (IV). A dependent variable is a variable whose values are influenced by one or more independent variables. Conversely, an independent variable is a predictor variable that influences the values of a dependent variable. For example, in an experimental study, the intensity of lighting (IV) in the workplace might be manipulated to observe the effect on the productivity levels (DV), or a stressful situation might be created by generating random loud noises (IV) outside the workplace window to observe the effect on the completion of complex tasks (DV).

A **dependent variable** is a variable whose values are influenced by one or more independent variables.

An **independent variable** is a variable that influences the values of a dependent variable.

In some cases, the independent variable does not influence the dependent variable directly and the relationship depends on a third variable known as a mediating variable. The mediating variable is the means by which the independent variable brings about changes on a dependent variable and helps explain the relationship between them. A moderating variable is a variable that affects the direction and/or the strength of the relationship between the

dependent and independent variables. A moderating variable can be qualitative (for example, gender, qualifications/skills or experience) or quantitative (for example, age, weekly hours worked or level of reward).

An extraneous variable is any variable other than the independent variable that might have an effect on the dependent variable. For example, if your study involves an investigation of the relationship between productivity and motivation, you may find it difficult to exclude the effect of other factors, such as a heatwave, a work-to-rule, a takeover or anxiety caused by personal problems. A confounding variable is one that obscures the effect of another variable. For example, employees' behaviour may be affected by the novelty of being the centre of the researcher's attention or by working in an unfamiliar place for the purposes of a controlled experiment.

10.4 Data collection methods

The two main data collection methods we discuss in this section are self-completion questionnaires and interviews. We also describe critical incident technique, which can be incorporated in either method. These are widely used methods in positivist studies, but you should also explore other methods mentioned in previous studies in your field. Before you start collecting any data, you need to have a list of the population of people or collection of items under consideration. If the population is too large to include them all in your questionnaire or interview survey, you will need to decide on a method for selecting a suitable sample. Remember that you must also obtain ethical approval if your study involves human participants.

A **questionnaire** is a method for collecting primary data in which a sample of respondents are asked a list of carefully structured questions chosen after considerable testing, with a view to eliciting reliable responses.

In Chapter 7, we drew attention to the importance of using rigorous methods for recording research data that also provide evidence of the source. If the participant is not providing written responses, you will need to jot down the main points in a notebook. This necessarily means leaving out items and all the details, which can lead to distortions, errors and bias. Even shorthand writers sometimes have a problem in deciphering their notes afterwards, and you need to be aware that relying on your notes will be inadequate. Audio and/or video recording overcomes these problems and leaves you free to concentrate on taking notes of other aspects, such as attitude, behaviour and body language, if these are relevant to your understanding of the phenomena under study. You can use a specific recording device or the facilities on your telephone or laptop. The important thing to remember is that you need to obtain the participant's agreement to being recorded.

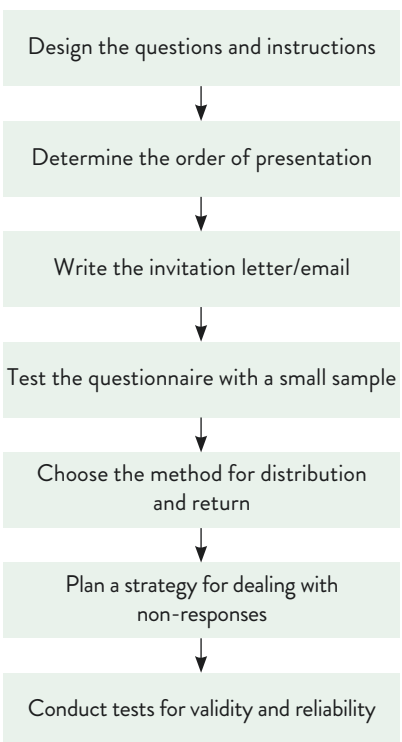


Figure 10.3 Designing a questionnaire

10.4.1 Questionnaires

A **questionnaire** is a list of carefully structured questions, which have been chosen after considerable testing with a view to eliciting reliable responses from a particular group of people. The aim is to find out what they think, do or feel because this will help you address your research questions. Of course, this raises the issue of confidentiality, which we examined in Chapter 2. When a questionnaire is used in an interview, many researchers call it an interview schedule. You may also come across the term research instrument, which is a questionnaire or interview schedule that has been used and tested in a number of different studies. In a face-to-face or telephone interview, the answers to the questions are recorded by the interviewer. However, in a postal or online survey, the questionnaire is completed by the respondent. This is cheaper and less time-consuming, but there are a number of other factors that you should be aware of if you are conducting an interview survey and we discuss these in the next section.

Questionnaires or interview schedules are also used in a Delphi study, where the aim is to gather opinions from a carefully selected group of experts. Once the responses have been summarised, the results are returned to the participants so that they can re-evaluate their original answers once they have seen the responses of the group. This process is repeated a number of times until there is a consensus. Unlike a focus group, the experts do not meet or know the identities of the other group members.

The main steps involved in designing a questionnaire are summarised in Figure 10.3.

Question design is concerned with the type of questions, their wording, the order in which they are presented, and the reliability and validity of the responses. We discuss this in detail in section 10.5. You will need to explain the purpose of the study, since the respondents need to know the context in which the questions are being posed. This can be achieved by starting the questionnaire with an explanation or attaching a covering letter. It is very important that you apply the principles for ethical research we explained in Chapter 2.

It is essential that you pilot or test your questionnaire as fully as possible before distributing it. At the undergraduate level, you could ask your supervisor, friends and family to play the role of respondents. Even if they know little about the subject, they can still be very helpful in spotting a range of potential problems (see section 10.5). However, the best advice is to try your questionnaire out on people who are similar to those in your sample. If you are a Master's or doctoral student, you may find it takes several drafts, with tests at every stage, until you are satisfied, so allow plenty of time for this important part of the process.

In Chapter 7, we saw that unstructured and semi-structured interviews are widely used by interpretivists, whereas positivists prefer structured interviews or questionnaire surveys. There are a number of ways in which questionnaires can be distributed and we now discuss the main distribution methods. Each method has strengths and weaknesses. As cost is often an important factor, the best method for a particular study often depends on the size and location of the sample.

- By mail – This is a commonly used method of distribution that is fairly easy to administer. The questionnaire and invitation to participate are posted to the population or the sample, usually with a prepaid envelope for returning the completed questionnaire. If you are conducting an internal survey in a particular company, it may be possible to use the internal mail. If it is a large survey, you will need to consider the cost of printing, postage and stationery. You should also leave plenty of time for getting the questionnaire printed, folding and inserting the contents, sealing the envelopes and franking or stamping them. However, one of the drawbacks is that response rates of 10% or less are not uncommon and this introduces the problem of sample bias because those who respond may not be representative of the population. Response rates can be increased by keeping the questionnaire as short as possible (for example, two sides of A4) and using closed questions of a simple and non-sensitive nature.
- By telephone – This is also a widely used method to employ as it reduces the costs associated with face-to-face interviews, but still allows some aspect of personal contact. A relatively long questionnaire can be used. A telephone survey can be helpful if your questionnaire includes complex or sensitive questions. However, achieving the desired number of responses may require a very large sampling frame and you may need to consider the cost of buying specialist recording equipment and possibly the cost of a great many telephone calls. Moreover, your results may be biased towards people who are available and willing to answer questions in this way.
- Online – Web-based tools, such as *SurveyMonkey, Kwiksurveys, Freeonlinesurveys and Qualtrics*, allow you to create your own survey and email it to potential respondents. You can view the preliminary results as they come in and the data file can be exported to *Microsoft Excel*, *IBM® SPSS® Statistics* and other software packages for analysis. Like the last two methods of distribution, online surveys are now so widely used that obtaining sufficient responses could take some time and the results might be biased. If your survey is large, you may have to pay a fee to the service provider.
- Face-to-face – The questionnaire can be presented to respondents in the street, at their homes, in the workplace or any convenient place. It is time-consuming and can be expensive if you have to travel to a particular location to meet an interviewee. However, this method offers the advantage that response rates can be fairly high and comprehensive data can be collected. It is often very useful if sensitive or complex questions need to be asked. Where the interview is conducted outside working hours, it is possible to use a lengthy questionnaire. It is important that you take precautions to ensure your personal safety when using the face-to-face method (see Chapter 2). We look at interviews in more detail in the next section.
- Group distribution – This method is only appropriate where the survey is conducted in a small number of locations or a single location. You may be able to agree that the sample or

subgroups are assembled in the same room at the same time, such as the canteen during a quiet period in the afternoon. You can then explain the purpose of the survey and how to complete the questionnaire, while being available to answer any queries. This is a convenient, low-cost method for administering questionnaires and the number of usable questionnaires is likely to be high.

- Individual distribution – This is a variation of group distribution. If the sample is situated in one location, it may be possible to distribute, and collect, the questionnaires individually. As well as a place of work, this approach can be used in theatres, restaurants, and even on trains and buses. It is normally necessary to supply pens or pencils for the completion of the questionnaires. You may encounter problems with sample bias if you use this method; for example, you may only capture patrons who visit a theatre on a Monday, or travel at a particular time. However, if properly designed, this method can be very precise in targeting the most appropriate sample.

Dillman, Smyth and Christian (2014) offer detailed advice on planning and conducting a survey, including how and when to use mail, telephone and/or online surveys to maximum advantage. However, you should bear in mind that there are two major problems associated with questionnaire surveys. The first is questionnaire fatigue. This refers to the reluctance of many people to respond to questionnaire surveys because they are inundated with unsolicited requests by mail, email, telephone and in the street. The second problem is what to do about non-response bias, which can be present if some questionnaires are not returned. Non-response bias is crucial in a survey because your research design will be based on the fact that you are going to generalise from the sample to the population. The most common way of dealing with these problems is to send a follow-up request to non-respondents. If you intend to do this, you will need to keep a record of who replies and when. If you are conducting a postal questionnaire survey, we advise you to send a fresh copy of the questionnaire (perhaps printed on different coloured paper or with an identifying symbol in addition to the unique reference number). In Chapter 12, we explain how you can use a generalisability test to check for non-response bias in your sample. We discuss the problem of item non-response (non-response to particular questions) and the need for a reliability test in section 10.5.5.

10.4.2 Using interviews under a positivist paradigm

An **interview** is a method for collecting primary data in which a sample of interviewees are asked questions to find out what they think, do or feel.

As explained in Chapter 7, an **interview** is a method for collecting data in which selected participants (the interviewees) are asked questions to find out what they do, think or feel. Verbal or visual prompts may be required. Under a positivist paradigm the interview is likely to be based on a questionnaire (also referred to as an interview schedule), which means the questions are planned and each interviewee is asked the questions in the same order.

In a large interview survey many interviewees are needed, and this gives rise to the problem of obtaining access to an appropriate sample. You will need to explain the purpose of the study, since the interviewees need to know the subject of the interview and the context in which you will ask your questions. Obtaining a sample and conducting the interviews can be very time-consuming and there may be travel and hospitality costs to consider. In some studies, a self-completion questionnaire may be more appropriate.

There are three main interviewing methods:

- Face-to-face interviews are the traditional method and still widely used. The interview can be conducted in the participant's place of work, home or any convenient public place. The main advantage of face-to-face interviews is that comprehensive data can be collected. The presence of the interviewer makes it easier to ask complex or sensitive questions, provide clarification and get the participant's undivided attention, but of course this depends on the time and place of the interview. If the interview is conducted outside working hours, it may be possible to conduct a longer interview than is possible during the busy working day. However, interviewing is time-consuming and can be expensive if you have to travel any distance to meet participants. It is important that you take precautions to ensure your personal safety when meeting participants (see Chapter 2) and plan how you will record the interview.
- Telephone interviews are also widely used and offer the advantage of personal contact without the cost of travel. If the interview is conducted during working hours, it may not

be possible to conduct such a long interview as you could using the face-to-face method. However, there are fewer constraints on the geographical location of the sample and no travelling costs. Nevertheless, you may need to budget for the cost of the telephone calls, particularly if you are conducting international research. You will also think about how you will record the interviews.

- Online interviews using video conferencing such as *Skype*, *FaceTime* and *WhatsApp* are increasingly popular. This method can be particularly useful for international research where face-to-face interviews are impractical and telephone interviews are too costly. Online interviews can be conducted at a time and place that is convenient to both the interviewer and the interviewee. In addition, the interviewee may feel more at ease being able to see the face of the interviewer, which is not possible during a telephone interview. However, online methods introduce some limitations on your choice of sample, as the participants must have access to the Internet and this type of software, as well as being willing and able to use this type of software. In common with the other two methods, you will need to plan how you will record the interviews.

As you can see, each of these interview methods has its own combination of strengths and weaknesses. Cost is often an important factor and the best method for a particular study may depend on the size, location and accessibility of the sample.

Under a positivist paradigm, structured interviews are used with closed questions, and each question will have a set of predetermined answers. There may be some open questions, which allow the respondent to answer in his or her own words. In a large structured face-to-face or telephone interview, a questionnaire is prepared in advance and is completed by the interviewer from the responses given by the interviewee (for example, interviews used in a marketing research surveys). Sometimes, semi-structured interviews are used where some of the questions are pre-prepared, but the interviewer is able to add additional questions in order to obtain more detailed information about a particular answer or to explore new (but relevant) issues that arise from a particular answer. Completely unstructured interviews are associated with an interpretivist paradigm (see Chapter 7).

Structured interviews make it easy to compare answers because each interviewee is asked the same questions. However, in a semi-structured the issues discussed, the questions raised and the matters explored change from one interview to the next, as different aspects of the topic are revealed. This process of discovery is the strength of such interviews, but it is important to recognise that the emphasis and balance of the issues that emerge may depend on the order in which you interview the participants. In semi-structured interviews, it may be difficult to keep a note of the questions and answers, controlling the range of topics and, later, analysing the data.

You must ask the interviewee's permission to record the interview using an audio recorder. After putting your interviewee at ease, you may find it useful to spend a little time establishing a rapport before starting to record. You can offer to switch the recorder off if your interviewee wants to discuss confidential or sensitive information and seek permission to continue to take notes. You may find that this encourages a higher degree of frankness. We discussed the issue of confidentiality in Chapter 2. We offer the following advice on asking personal and/or sensitive questions:

- Do not conduct interviews within hearing distance of others.
- Explain to the interviewee that their answers will be anonymous and will not be held against them.
- How you ask questions is critical. Use words that are non-threatening and familiar to the respondents. For example, when explaining the purpose of the questionnaire, rather than saying you are conducting research into absenteeism in their workplace, say you are looking at working patterns.
- Do not start the interview with a sensitive or personal question as this could make the interviewee feel vulnerable and refuse to participate. Instead, lead up to such questions slowly and ask them towards the end of the interview.
- You may find that participants will answer questions about past indiscretions more readily than questions about current behaviour. For example, they may admit to stealing from their employer at some time in the past, but be unwilling to disclose that they have done so recently.

These suggestions raise ethical issues and you must determine your own position on this. If you find your interviewee is showing signs of resisting some topics, the best advice is to drop those questions. However, this will alert you to the likelihood that these may be interesting and important issues and you may wish to find an alternative way of collecting the data, such as diary methods or observation (see Chapter 7).

In a positivist study, you will need to ensure that all the interviews are conducted in the same way to avoid interviewer bias. This means that not only should the same questions be asked, but also that they should be posed in the same way. Furthermore, you must ensure that each respondent will understand the question in the same way. This is known as stimulus equivalence and demands considerable thought and skill in question design. In Box 10.3, we offer advice on reducing interviewer bias.

Box 10.3 Checklist for reducing interviewer bias

- Prior to the interviews, pilot the questions to ensure that they are clear enough, and the interviewees will be able to answer them.
- On the day, make sure that the interviewee is ready and willing to be interviewed and knows how long the interview will take.
- Read each question exactly as it is written in the questionnaire.
- Be patient and read each question slowly, using the same intonation and emphasis.
- Ask the questions in the same order.
- Ask every question that applies.
- Do not answer the question for the respondent.
- Show interest by paying attention when the respondent is answering, but do not show approval or disapproval.
- Record exactly what the respondent says.
- Make sure you have understood each answer and that the answer is adequate.

There is also potential for inadvertent class, race or sex bias. Another problem is that the interviewee may have certain expectations about the interview and give what he or she considers is the 'correct' or 'acceptable' answer to the question. To some extent, this can be overcome by increasing the depth of the interview. You should bear in mind that recent events may also affect the interviewee's responses. For example, he or she may have just received news of a promotion, a salary increase, a cut in hours, a reprimand or bad news about a member of the family. If time allows, you will find it useful to arrive at the interview venue 15 minutes beforehand to assimilate the atmosphere and the environment, and spend the first few minutes putting the interviewee at ease. It is difficult to predict or measure bias. Nevertheless, you should be alert to the fact that it can distort your data and hence your findings.

The most common form of interview is one-to-one. Some researchers find it useful to have two interviewers to help ensure that all the issues are fully explored and notes are made of nuances and relevant non-verbal factors. Sometimes the interviewee is accompanied by another person (often to ensure that all the questions you ask can be answered). You must be alert to the fact that more than one interviewer or interviewee will change the dynamics of the interview. Another problem is that an interviewee may be 'wearing two hats'. For example, the finance director of a company may also be a director of other companies or involved in other organisations; an employee may also be a trade unionist or a shareholder. When you are asking questions, you must determine which 'hat' the interviewee is wearing, and whether he or she is giving a personal opinion or making a policy statement.

As well as deciding on the structure and recording of an interview, you must also be able to bring it to a satisfactory conclusion and let the interviewee know that it is ending. One device is to say that you have asked all the questions you had in mind and ask whether the interviewee has any final comments. You should then conclude by thanking them and

reassuring them that you will be treating what they have told you as confidential. After you have left the interview, it is beneficial to add further notes.

Despite some disadvantages, interviews permit the researcher to ask complex questions and ask follow-up questions, which is not possible in a self-completion questionnaire. Thus, further information can be obtained. An interview may permit a higher degree of confidence in the replies than responses to a self-completion questionnaire and can take account of non-verbal communications such as the attitude and behaviour of the interviewee.

10.4.3 Critical incident technique

Critical incident technique is a method for collecting data about a defined activity or event based on the participant's recollections of key facts. Developed by Flanagan (1954), it allows important facts to be gathered about behaviour in defined situations 'in a rather objective fashion with only a minimum of inferences and interpretation of a more subjective nature' (p. 335). Although it is called a technique, it is not a set of rigid rules, but a flexible set of principles that can be modified and adapted according to the circumstances. In Chapter 7, we explained how it can be used as the basis for a semi-structured interview under an interpretivist paradigm and we will now look at its use under a positivist paradigm.

Critical incident technique is a method for collecting data about a defined activity or event based on the participant's recollections of key facts.

Flanagan recommended that only simple types of judgements should be required of observers, who should be qualified. All observations should be evaluated by the observer in terms of an agreed statement of the purpose of the activity. The procedure for establishing the general aims of an activity, the training of the interviewers and the manner in which observations should be made are all predetermined. What is of prime interest to researchers is the way in which Flanagan concentrates on an observable activity (the incident), where the intended purpose seems to be clear and the effect appears to be logical; hence, the incident is critical.

We showed Flanagan's example of a form for collected effective critical incidents in Chapter 7. In this chapter, we will look at an example taken from a questionnaire survey of householders (MacKinlay, 1986), which contained six open questions. The questionnaire allowed a third of an A4 page per question for the reply, but some respondents added additional sheets. The questions were preceded by an explanation, as shown in Box 10.4.

Box 10.4 Example of critical incident technique in a questionnaire

These questions are open-ended and I have kept them to a few vital areas of interest. All will require you to reflect back on decisions and reasons for decisions you have made.

1. Please think about an occasion when you improved your home. What improvements did you make?
2. On that occasion what made you do it?
3. Did you receive any help? If 'yes', please explain what help you received.
4. Have you wanted to improve your home in any other way but could not?
5. What improvements did you wish to make?
6. What stopped you from doing it?

Source: MacKinlay (1986) cited in Easterby-Smith, Thorpe and Lowe (1991, p. 84).

It is likely that many researchers use this approach without realising it. One of the benefits is that it allows the researcher to collect data about events chosen by the respondent because they are memorable, rather than general impressions of events or vicarious knowledge of events. In interviews, it can be of considerable value in generating data where there is a lack of focus or the interviewee has difficulty in expressing an opinion.

One of the problems associated with methods based on memory is that the participant may have forgotten important facts. In addition, there is the problem of post-rationalisation, where the interviewee recounts the events with a degree of logic and coherence that did not exist at the time.

10.5 Designing questions

Once you have decided on the method and you have identified the variables about which you need to collect data to test your hypotheses, you are ready to start designing the actual questions you will ask. In this section, we focus on **designing questions** for a positivist study, where the research data generated will be analysed using statistical methods. Before you can decide what the most appropriate questions will be, you must gain a considerable amount of knowledge about your subject to allow you to develop a theoretical or conceptual framework and formulate the hypotheses you will test. Your subject knowledge will come from your taught and/or independent studies; your theoretical framework (sometimes referred to as a conceptual framework) that underpins the hypotheses you will test will be drawn from your literature review. The statistical methods you will use will be described in your methodology chapter.

Questions should be presented in a logical order and it is often beneficial to move from general to specific topics. This is known as funnelling. In complex questionnaires, it may be necessary to use filter questions, where respondents who have given a certain answer are directed to skip a question or batch of questions. For example, 'Do you normally do the household shopping? *If YES, go to next question; if NO, go to Question 17.*'

In addition to designing the questions themselves, in a self-completion questionnaire you also give precise instructions (for example, whether to tick one or more boxes, or whether a number or word should be circled to indicate the response). The clarity of the instructions and the ordering and presentation of the questions can do much to encourage and help respondents. These factors also make the subsequent analysis of the data easier.

Classification questions collect data about the characteristics of the unit of analysis, such as the respondent's job title, age or education; or the geographical region, industry, size or age of the business. If you wish to make comparisons with previous studies, government statistics or other publications, it is essential to use the same categories. Classification questions collect data that will enable you to describe your sample and examine relationships between subsets of your sample. Remember, you should only collect data about variables you will use in your analysis.

There is some debate over the best location for classification questions. Some authors believe that they are best placed at the beginning, so that respondents gain confidence in answering easy questions; others prefer to place them at the end, so that the respondent starts with the more interesting questions. If your questions are of a sensitive nature, it may be best to start with the non-threatening classification questions. If you have a large number of classification questions, it could be better to put them at the end, so that the respondent is not deterred at the start. Remember to allocate a unique reference number to each questionnaire. This will enable you to maintain control of the project and, if appropriate, you will be able to identify which respondents have replied and send follow-up letters to those who have not. If you are using data triangulation, (see section 4.5) you will also be able to match data about the unit of analysis from different sources.

10.5.1 General rules

It is essential to bear your target audience in mind when designing your questions. If your sample is composed of intelligent people, who are likely to be knowledgeable about the topic, you can aim for a fairly high level of complexity, but the general rule is to keep your questions simple. Box 10.5 summarises the general rules for designing questions.

Box 10.5 General rules for designing questions

- Provide a context by briefly explaining the purpose of the research.
- Only ask questions that are needed for the analysis.
- Keep each question as short and as simple as possible.
- Only ask one question at a time.
- Include questions that serve as cross-checks on answers to other questions.

- Avoid jargon, ambiguity and negative questions.
- Avoid leading questions and value-laden questions that suggest a "correct" answer.
- Avoid calculations and memory tests.
- Avoid questions that could cause offence or embarrassment.

These fundamental aspects of question design are important, because once you have asked the questions there is often little you can do to enhance the quality of the answers. It can be helpful to the respondent if you qualify your questions in some way, perhaps by referring to a specific time period, rather than requiring the respondent to search their memory for an answer. For example, instead of asking, 'Have you ever bought Fair Trade coffee?' you might ask, 'Have you bought Fair Trade coffee in the past three weeks?' A question can also be qualified by referring to a particular place. For example, 'What are your views on the choice of fair-trade coffee in your local supermarket?'

If the issue addressed in the question is complex or rigid, we might wish to add some generality to it. For example, 'Do you travel to work in your own car?' might be taken to mean every day. This can be generalised by inserting the word 'normally' or 'usually', thus: 'Do you normally travel to work in your own car?' A question can also be made more general by inserting the word 'overall' or the term 'in general'. For example, 'In general, are you satisfied with the level of service you obtain from the company?' However, in some questions, precision may be important and desirable.

Coolican (2009) identifies a number of pitfalls to avoid when deciding on the order in which questions should be asked, which we now examine:

- Respondents tend to agree rather than disagree with statements (known as response acquiescence). Therefore, you should mix positive and negative questions to keep them thinking about their answers.
- The respondent may try to interpret the aim of the question or questionnaire, or set up emotional blocks to some questions. Therefore, you should ensure that both positive and negative items appear, and that less extreme statements are presented first.
- Some answers may be considered more socially desirable than others. For example, you want to ask, 'How often do you take a bath/shower each week?' Respondents who do not wash very often may not give a valid answer, and instead they give one that fits the image they wish to present. You can try to address this problem by putting in some statements that only those respondents who are answering to impress would choose (for example, more than twice a day), but if your pilot test produces too many of these responses, you should discard your questionnaire or interview schedule.

In the remainder of this section, we examine the different types of questions you can ask and the importance of incorporating features that will enhance your results and assist in the later analysis of the responses you receive.

10.5.2 Open and closed questions

A positivist approach suggests **closed questions**, which allow the respondent to choose from predetermined answers. For example, questions seeking facts, such as the respondent's age (where the predetermined answers are given in age bands) or job title (where the respondent chooses from a list). Other closed questions may seek opinions (for example, a question where the predetermined answers are given in the form of statements with which the respondent can agree or disagree).

However, there may be some **open questions**, which allow the respondents to answer in their own words. Subsequently, each response is examined carefully to identify the key words, phrases or themes across the answers, and placed in a category with a numerical code, which represents a nominal variable. For example, in a survey of the directors of small companies, question 3 asked whether they would have the accounts audited even if the company were

A **closed question** requires a 'yes' or 'no' answer, or a very brief factual answer, or requires the respondent to choose from a list of predetermined answers.

An **open question** cannot be answered with a simple 'yes' or 'no', or a very brief factual answer, but requires a longer, developed answer.

not legally required to do so, and were given a choice of 'yes' (coded 1 or 2 as shown in Box 10.6) or 'no' (coded 0). Box 10.6 shows this closed question and the subsequent open question that asked them to give their reasons. An initial analysis identified nine categories across the responses and the following values allocated to each, with no order implied: 1 = cost savings, 2 = no benefit, 3 = check, 4 = good practice/governance, 5 = assurance for shareholders, 6 = assurance for customers/suppliers, 7 = assurance for bank/lenders, 8 = exit plans, 9 = other.

Box 10.6 Examples of closed and open questions

3. Would you have the accounts audited if not legally required to do so? *(Tick one box only)*

Yes, the accounts are already audited voluntarily	☐	(1)
Yes, the accounts would be audited voluntarily	☐	(2)
No	☐	(0)

Please give reasons for your answer

.....

.....

Source: Adapted from Collis (2003).

Closed questions are very convenient and are usually easy to analyse, since the range of potential answers is limited and can be coded in advance. On the other hand, open questions offer the advantage that the respondents are able to give their opinions as precisely as possible in their own words. For undergraduates and Master's students, who often have to work within a tight time frame, it is advisable to keep the number of open-ended questions to the minimum in a large survey. Moreover, all researchers need to be aware that a large number of open questions may deter busy respondents from replying.

10.5.3 Multiple-choice questions

Multiple-choice questions are those where the participant is asked a closed question and selects his or her answer from a list of predetermined responses or categories. It may be difficult to provide sufficient, unambiguous categories to allow the respondent to give an unequivocal answer. An example of this is a question that seeks to ascertain respondents' occupations. Even in a fairly small organisation there may be quite a wide range of occupations; you cannot provide a full list because it would take up too much room. As a general guide, approximately six predetermined responses or categories are usually sufficient. In interviews, you will find it helpful to have a printed copy of the choice of answers to show the interviewee. This means he or she can study the list rather than have to memorise all the alternatives. The interviewee then simply tells you his or her choice.

When deciding on categories, you must take care to use terms that mean something to the participants, so that you can have confidence in their replies. For example, you may use the term 'Accountant' as one of your job title categories, meaning a person who has passed the necessary exams to become a member of one of the accountancy bodies. However, some respondents may attribute a wider meaning to this term, and you may find that a bookkeeper or credit controller sees himself or herself as belonging to this category.

In a single organisation, it is usually possible to construct categories for factual questions that people will understand. If you are taking a random sample of the population, it becomes much harder. If you are uncertain that you have covered all possibilities, you should add an 'Other' category that allows the respondent to provide their own category and a 'Don't know' category if this is likely to apply.

Box 10.7 shows two examples of multiple-choice questions and their associated answers. Whereas question 1 expects only one response, question 5 asks respondents to tick as many boxes as apply. It is important to give clear instructions.

Box 10.7 Examples of multiple-choice questions (fact)

1. Is the company a family-owned business? *(Tick one box only)*

Wholly family-owned (or only 1 owner)	☐	(1)
Partly family-owned	☐	(2)
None of the shareholders are related	☐	(0)

5. Apart from Companies House, who normally receives a copy of the company's statutory accounts? *(Tick as many boxes as apply)*

(a) Shareholders	☐
(b) Bank and other providers of finance	☐
(c) Directors/managers who are not shareholders	☐
(d) Employees who are not shareholders	☐
(e) Major suppliers and trade creditors	☐
(f) Major customers	☐
(g) Tax authorities	☐
(h) Other *(Please state)*	☐

Source: Adapted from Collis (2003).

Sometimes a question is phrased so that the respondent is presented with a range of opinions and has to select the one that most closely resembles their own. The drawback with this type of question is that it takes up considerable space and does not capture the respondents' opinions in their own words. As a result, you cannot be certain about how closely it matches their opinions. However, it can sometimes be useful for dealing with sensitive issues, since it identifies different responses. It can also be useful as a means of cross-checking other questions by presenting the situation in a different way. Box 10.8 shows an example of a question that could be used to evaluate how well students worked together on a group assignment.

Box 10.8 Example of a multiple-choice question (opinion)

Thinking about your assignment group, which of the following statements is closest to your view? *(Tick one box only)*

(a) We are a very happy and friendly group	☐	(1)
(b) We get on better than most of the other groups	☐	(2)
(c) We have our ups and downs like any other group	☐	(3)
(d) We tend to be less argumentative than other groups	☐	(4)
(e) We have had some unresolved conflicts	☐	(5)

10.5.4 Ranking and rating scales

Another approach is to ask respondents to rank a list of items and Box 10.9 shows an example. Unfortunately, the responses to such questions can be disappointing. Often respondents will not have gone through this type of exercise before and may be unwilling to spare the time to think about it. You may find that after ranking the first three, they leave the others blank because they have been unwilling or unable to decide a rank for the remaining items. If you would like to include a ranking question, keep the number of items as low as possible (preferably no more than six).

Box 10.9 Example of a ranking question

Please rank the following five learning resources:

(Rank the most useful resource as 1, the next most useful as 2, and so on)

The activities during the lectures	☐
The activities during the tutorials	☐
The lecture notes on *Blackboard*	☐
The recommended textbook	☐
Feedback from the progress tests	☐

The most straightforward way to collect opinions is to set a simple question requiring a 'Yes' or 'No' response. This elicits a clear response, but it does not offer any flexibility. It may force the respondents into giving an opinion when they do not hold one. Because opinion and other abstract ideas are difficult to observe and measure, you may decide to use a rating scale, to measure intensity of opinion and other abstract ideas. This allows respondents to give a more discriminating response and allows them to indicate if they feel neutral. Box 10.10 shows an example where respondents are asked to indicate their level of agreement with a set of statements using a rating scale of 1 to 5. If there had been more room, each number might have had a label (for example 5 = Strongly agree, 4 = Agree, 3 = Neutral, 2 = Disagree, 1 = Strongly disagree). Unlike ranking, where 1 represents the top of the scale, you will find it useful to follow the convention of allocating 1 to the lowest level of agreement, importance, usefulness, or whatever it is your rating scale is measuring. This will make it easier to interpret the results of your statistical analysis.

Box 10.10 Example of a question using an intensity rating scale

4. What are your views on the following statements regarding the audit?

(Circle the number closest to your view)

	Agree				Disagree
(a) Provides a check on accounting records and systems	5	4	3	2	1
(b) Improves the quality of the financial information	5	4	3	2	1
(c) Improves the credibility of the financial information	5	4	3	2	1
(d) Has a positive effect on company's credit rating score	5	4	3	2	1

Source: Adapted from Collis (2003).

The example in Box 10.10 shows a particular type of intensity rating scale known as a Likert scale that is often used in multiple-item measures of attitudes. Sometimes the midpoint on the scale is omitted to force the choice between agreeing and disagreeing.

An advantage of using ranking and rating scales is that a number of different statements can be provided in a list, which makes economical use of the space and is easy for the respondent to complete. Moreover, these ordinal variables are measured at a higher level than a nominal variable requiring a simple 'Yes' or 'No' answer, which has implications for the type of statistic tests that can be used in your analysis. Box 10.11 gives examples of commonly used scales.

Box 10.11 Examples of intensity, frequency and evaluation rating scales

General adjectives

5 Very/Extremely/Strongly satisfied/important/agree, etc.
4 Fairly/Quite/Moderately
3 Slightly/Weakly
2 Not very/Hardly
1 Not at all satisfied/important/agree, etc.

Directional general adjectives

5 Very/Extremely/Strongly satisfied, important, agree, etc.
4 Moderately/Fairly/Mostly
3 Neutral/Undecided/Unsure
2 Moderately/Fairly/Mostly
1 Very/Extremely/Strongly dissatisfied/unimportant/disagree, etc.

Directional comparisons

5 Much better
4 Better
3 About the same
2 Worse
1 Much worse

Frequency

5 All the time
4 Most of the time
3 Sometimes
2 Seldom/Rarely
1 Never/Not at all

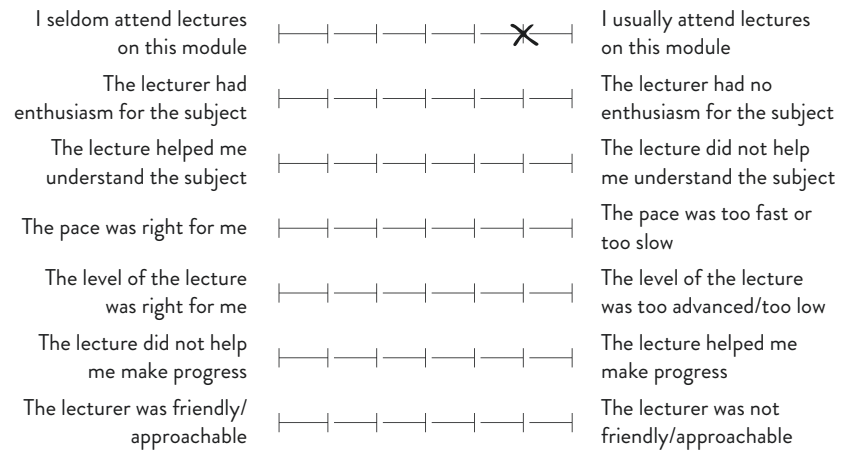
Evaluation

5 Excellent
4 Very good
3 Average
2 Poor
1 Very poor

A semantic differential rating scale is a type of rating scale that is used to capture underlying attitudes and feelings. The respondent is asked to rate a single phenomenon on a series of dimensions. Each dimension is described by a pair of bipolar adjectives placed at each end of a line which usually has seven points placed evenly along it. The respondents are asked to indicate their opinion by placing a cross on one of the seven points on the scale. Box 10.12 shows an example that might be familiar to you. You will see that the respondent is encouraged to read each dimension carefully because the positive end of the scale is not always on the right-hand side.

Box 10.12 Examples of a semantic differential rating scale

Think of the last lecture you attended. For each of the following dimensions, place a cross (x) on one of the 7 points on the line that best indicates your experience (the first item shows an example).



10.5.5 Reliability and validity

If you decide to use a rating scale to measure an abstract concept such as an ability or trait that is not directly observable (in other words, your explanatory variable is a hypothetical construct), you will want to be sure that the scale will measure the respondents' views reliably. **Reliability** refers to the accuracy and precision of the measurement and absence of differences in the results if the research were repeated. Reliability is important, even if the concepts, dimensions and scales have been used by many other researchers because your sample is likely to differ in some respects from the samples of other studies.

Reliability refers to the accuracy and precision of the measurement and absence of differences in the results if the research were repeated.

For example, perhaps you want to investigate the abstract concept of professionalism among qualified accountants. You search the literature and decide to use the five dimensions of professionalism identified in a seminal study by Hall (1968):

- The use of the professional organisation as a major reference
- A belief in service to the public
- Belief in self-regulation
- A sense of calling to the field
- Autonomy.

You then conduct interviews with accountants and generate a number of indicators for each dimension. These form the basis of the statements you ask respondents to rate in your questionnaire, such as the following which relate to the first dimension (the professional organisation as a major reference):

- I attend the local meetings of my professional body.
- I participate in professional development workshops for members.
- I read the newsletters and reports sent by my professional body.
- I read about new issues on the website of my professional body.
- I use the technical information on the website of my professional body.
- I use the technical information on the websites of other professional bodies.
- I can contact my professional body if I need technical support.

The **validity** of the measure is also important. This is concerned with the extent to which the measure captures the concept you are trying to measure; in other words, whether the data collected represent a true picture of the concept. The reason why there may be doubt lies in the problem that our questions may contain errors (perhaps they are worded ambiguously), the respondent may become bored or there may be antagonism between the researcher and the participants leading to item non-response. Typical examples include failing to answer questions that apply or not following instructions by ticking more than one box when only one choice was allowed. There are a number of ways of dealing with such problems, such as making an educated guess based on the respondent's other answers or using statistical methods. If you have a large number of non-responses to a particular question across the sample, it usually means the question design was at fault and the data from that question should not be used in your analysis. If a respondent returns an incomplete questionnaire or one where questions that are crucial to your analysis are not answered, you will have to discard it.

Validity is the extent to which a test measures what the researcher wants it to measure and the results reflect the phenomena under study.

In Chapter 12 (section 12.5.4), we explain how you can use a reliability test to check the reliability of the rating scale. The important thing to remember is that the responses to your questions may turn out to be highly reliable, but the validity of your results will be very low if your questions do not measure what you intended them to measure. Therefore, it is important that the questions you ask correspond with the explanation you give respondents regarding the purpose of your study; otherwise, the questions may seem irrelevant and they may lose interest in answering them.

10.5.6 Eliminating questions

Having decided on the questions you wish to ask, it is common to find that you have far too many. Use the checklist given in Figure 10.4 to help you determine which questions you should retain and which you should drop.

You must be alert to the possibility that some of the issues you wish to investigate may be offensive or embarrassing to the respondents. We do not recommend you ask any sensitive questions in a self-completion questionnaire. Not only is it likely to deter respondents from answering the sensitive question, but it may discourage them from participating at all.

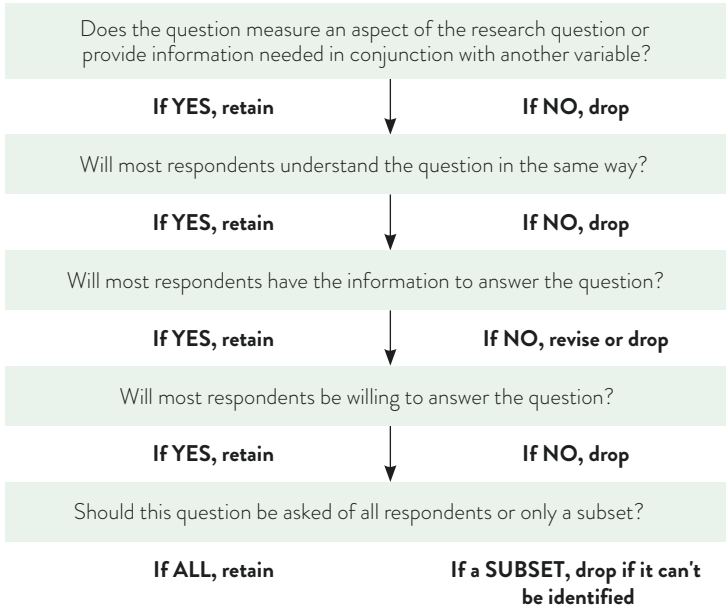


Figure 10.4 Checklist for eliminating questions

10.6 Coding questions

Although it can be argued that **coding questions** is more closely related to data analysis than data collection, it is important to consider at this stage how you will analyse your research data and what software is available to help you with this task (for example, *Microsoft Excel*, *Minitab* and *IBM® SPSS® Statistics*). *SPSS* is widely used in business research because it can process large amounts of data, and we will be introducing the principles of data entry and analysis using *SPSS* in the next chapter.

10.6.1 Coding closed questions

Pre-coding questions for statistical analysis as part of the questionnaire design makes the subsequent data entry easier and less prone to error. Where this is not possible, it is important to remember to keep a record of the codes used for each question and what they signify. This is essential if you are using a third party to input your data and when you are describing the variables in your analysis and interpreting the results of your statistical analysis.

It is usual to reserve certain code numbers for particular purposes. For nominal variables where only one can be selected, allocate a different code to each so that the answer can be identified. For nominal variables where more than one answer may apply, each variable is treated independently: use 1 to indicate the box has been ticked (the characteristic is present) and leave blank if it has not been ticked. This will be interpreted by *SPSS* as a 'missing' data, which means a non-response. Depending on your planned analysis, you may wish to use 0 if the box has not been ticked (the characteristic is not present). Similarly, it is usual to code the answer 'yes' as 1 and the answer 'no' as 0. There is no need to pre-code ordinal variables because they use a numerical rating scale.

You may have noticed that the examples of questions we used in this chapter were pre-coded. Box 10.13 shows an example of a completed questionnaire. Look carefully at the way in which the potential answers have been coded. Each code is discretely shown in brackets next to the relevant box. There are no hard and fast rules about where to place the codes, and you may find that it makes more sense to put the codes at the top of a column of boxes for some sets of variables. You simply need to adopt a location that improves the accuracy and efficiency of processing the data, while not confusing the respondent. In this example, a smaller, lighter font has been used to reduce the likelihood of the respondent becoming distracted by codes.

Box 10.13 A pre-coded questionnaire

URN 42

1. Is the company a family-owned business? *(Tick one box only)*

Wholly family-owned (or only 1 owner)	☐	(1)
Partly family-owned	☐	(2)
None of the shareholders are related	☐	(0)

2. How many shareholders (owners) does the company have?

(a) Total number of shareholders	☐
Breakdown:	
(b) Number of shareholders with access to internal financial information	☐
(c) Number of shareholders without access to internal financial information	☐

3. Would you have the accounts audited if not legally required to do so?
(Tick one box only)

Yes, the accounts are already audited voluntarily	☐	(1)
Yes, the accounts would be audited voluntarily	☐	(2)
No	☐	(0)

Please give reasons for your answer

.....

.....

4. What are your views on the following statements regarding the audit?
(Circle number closest to your view)

	Agree				Disagree
(a) Provides a check on accounting records and systems	5	4	3	2	1
(b) Improves the quality of the financial information	5	4	3	2	1
(c) Improves the credibility of the financial information	5	4	3	2	1
(d) Has a positive effect on company's credit rating score	5	4	3	2	1

5. Apart from Companies House, who normally receives a copy of the company's statutory accounts? *(Tick as many boxes as apply)*

(a) Shareholders ☐
(b) Bank and other providers of finance ☐
(c) Employees who are not shareholders ☐
(d) Major suppliers and trade creditors ☐
(e) Major customers ☐
(f) Tax authorities ☐
(g) Other *(Please state)*..... ☐

6. Do you have any of the following qualifications/training?
(Tick as many boxes as apply)

(a) Undergraduate or postgraduate degree ☐
(b) Professional/vocational qualification ☐
(c) Study/training in business/management subjects ☐

Source: Adapted from Collis (2003).

Earlier in this chapter, we suggested that you should pilot your questions before commencing your data collection in earnest. We also recommend that once you have your test data, you also pilot your coding. Amending coding errors now will save you valuable time and effort later when errors can only be painstakingly corrected by hand on every record sheet or questionnaire.

10.6.2 Coding open questions

Statistical analysis can only be conducted on quantitative data. Open questions where the answer takes a numerical value do not need to be coded (for example, dates or financial data). However, open questions where you are unable to anticipate the response (including those where you provide an 'Other' category) will result in qualitative data that cannot be coded until all the replies have been received. The task of recording and counting frequencies accurately and methodically can be helped by using tallies. A tally is just a simple stroke used to count the frequency of occurrence of a value or category in a variable. You jot down one upright stroke for each occurrence until you have four; the fifth is drawn horizontally across the group, like a five-bar gate. You can then count in fives until you get to the single tallies. Box 10.14 shows tallies being used to help record the frequencies for the second part of question 3, which was designed as an open question to capture the respondents' reasons for a particular action.

Box 10.14 Using tallies to count frequencies

3. Would you have the accounts audited if not legally required to do so?
(Tick one box only)

Yes, the accounts are already audited voluntarily	☐	(1)
Yes, the accounts would be audited voluntarily	☐	(2)
No	☐	(0)

Please give reasons for your answer

Voluntary audit

Assurance for third party 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	35
Good practice 𝍸 𝍸 𝍸 𝍸	19

No audit

No benefit/no need 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 I	36
Cost savings 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 II	32

10.7 Conclusions

In this chapter, we have discussed the methods you can use to select a sample under a positivist paradigm, if the population is too large to be used. If you want to generalise the results from the sample to the population, you must select a random sample of sufficient size to represent the population and allow you to address your research questions. We have also investigated the main methods for collecting primary data under a positivist paradigm. You should now be in a position to make an informed choice, bearing in mind that some methods can be adapted for use under either paradigm, and you can use more than one method. You must obtain ethical approval from the appropriate authority in your institution before you collect any data if your study involves human participants.

We have also examined how you can classify variables according to their level of measurement, which has important implications for how you design your questions and the statistical tests you can use to analyse your research data. There are a number of ways in which questions can be designed, including the use of hypothetical constructs to measure abstract ideas. We have discussed these matters and explained how questions in questionnaires and other data record sheets can be pre-coded for subsequent statistical analysis.

There is considerable choice in methods for distributing questionnaires. If you are using interviews, you must use rigorous methods to record the research data that provide evidence of the source. The important thing to remember is that you need to obtain the participant's agreement if you intend to audio record the interview and take notes.

References for further reading

Alexander, D. (2006) 'The devil with Dawkins', *Times Higher Education*. London: TSL Education, 3 February, p. 20.

Blair, J., Czaja, R. F. and Blair, E. A. (2014) *Designing Surveys: A Guide to Decisions and Procedures*. Thousand Oaks, CA: SAGE.

Collis, J. (2003) *Directors' Views on Exemption from Statutory Audit*, URN 03/1342, October, London: DTI. [Online]. Available at: http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file25971.pdf (Accessed 20 February 2013).

Coolican, H. (2009) *Research Methods and Statistics in Psychology*, 5th edn. London: Hodder Arnold.

Dillman, D. A., Smyth, J. D. and Christian, L. M. (2014) *Internet, Phone, Mail, and Mixed-Mode Surveys: The Tailored Design Method*, Hoboken, NJ: John Wiley & Sons.

Flanagan, J. C. (1954) 'The critical incident technique', *Psychological Bulletin*, 51(4), July, pp. 327–58.

Hall, R. H. (1968) 'Professionalism and bureaucratization', *American Sociological Review*, 33, pp. 92–104.

Krejcie, R. V. and Morgan, D. W. (1970) 'Determining sample size for research activities', *Educational and Psychological Measurement*, 30, pp. 607–10.
MacKinlay, T. (1986) *The Development of a Personal Strategy of Management*, M.Sc. thesis, Manchester Polytechnic, Department of Management, cited in Easterby-Smith, M., Thorpe, R. and Lowe, A. (1991) *Management Research*. London: SAGE.
Salkind, N. J. (2006) *Exploring Research*. Upper Saddle River, NJ: Pearson International.
Upton, G. and Cook, I. (2006) *Oxford Dictionary of Statistics*, 2nd edn. Oxford: Oxford University Press.

Activities

1 You are interested in environmental issues. Discuss the advantages and disadvantages of collecting secondary data, such as the newspaper or television news coverage, compared with primary data.

2 General lecture questionnaire

Think about the last lecture you attended and complete the following questionnaire. This is just an exercise and you won't be asked to identify the lecture or the lecturer or reveal your ratings. When you've finished, jot down what you like or dislike about the questionnaire from your perspective as a 'respondent'. Then form a group to discuss your views on the instructions, the layout and the questions.

GENERAL LECTURE QUESTIONNAIRE

The purpose of this questionnaire is to obtain your views and opinions about the lectures you have been given during the course from this lecturer to help him evaluate his teaching.

Please ring the response that you think is the most appropriate to each statement. If you wish to make any comments in addition to those ratings, please do so on the back page.

The lecturer	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
1. Encourages student participation in lectures	5	4	3	2	1
2. Allows opportunities for asking questions	5	4	3	2	1
3. Has a good lecture delivery	5	4	3	2	1
4. Has good rapport with students	5	4	3	2	1
5. Is approachable and friendly with students	5	4	3	2	1
6. Is respectful towards students	5	4	3	2	1
7. Is able to reach student level	5	4	3	2	1
8. Enables easy note taking	5	4	3	2	1
9. Provides useful printed notes*	5	4	3	2	1
10. Would help students by providing printed notes	5	4	3	2	1
11. Has a good knowledge of his subject	5	4	3	2	1
12. Maintains student interest during lectures	5	4	3	2	1
13. Gives varied, lively lectures	5	4	3	2	1
14. Is clear and comprehensible in lectures	5	4	3	2	1
15. Gives lectures which are too fast to take in	5	4	3	2	1
16. Gives audible lectures	5	4	3	2	1
17. Gives structured, organised lectures	5	4	3	2	1
18. Appears to be enthusiastic for his subject	5	4	3	2	1

*Please answer if applicable

Source: Anon.

3 Now put on your researcher's hat and redesign the general lecture questionnaire and pilot it with two fellow students. Stay with them while they complete it so you can ask them how useful they found the instructions and how easy they found it to answer the questions. Ask them what they liked and did not like about it.

4 Design a one-page, self-completion questionnaire to find out what brand of toothpaste people normally buy and their reasons. If you did this activity in Chapter 4, you may want to make some improvements with the new knowledge you have gained from studying this chapter. It is likely that your first question will list various brands of toothpaste and ask the respondent to indicate the one he or she normally uses. Base your subsequent questions on the information you can extract from the following interview transcript.

Researcher: Why did you buy the brand of toothpaste you are using at present?

Interviewee: Well, my wife and I usually get the one that's on special offer. It's not that money is tight – that's what she chooses to do. So, we tend to get the one where there's money off, 25% extra free, two for the price of one, and so on. But last week the brand on special offer was a new one – we hadn't seen it before. It's really good because it has a strong minty taste. I don't like the ones with fancy fruit flavours. This new one's good – I like it a lot. [Pause] What's it called, now? I can't remember the name of it at the moment. [Pause] That's funny because I clean my teeth at least twice a day, so I see the tube often enough! Anyway, my wife likes it too and I think we'll buy it again, even if it's not discounted when we need to the next tube. When you get to my age it is important to look after your teeth, you know!

- Number each question and pre-code your variables (apart from any open questions).
- Make a note of whether the level of measurement of each variable is nominal, ordinal, interval or ratio.
- Identify your dependent variable and independent variables.

5 Pilot your toothpaste questionnaire with two fellow students. Stay with them while they complete it so you can ask them how useful they found the instructions and how easy they found it to answer the questions. Ask them what they liked and did not like about it.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter and sections 15.2, 15.5, 15.7, 15.10 and 15.12 in particular, which relate specifically to this chapter.

11

Analysing data using descriptive statistics

Learning objectives

When you have studied this chapter, you should be able to:

- differentiate between descriptive statistics and inferential statistics
- enter data into *SPSS*, recode variables and create new variables
- generate frequency tables, charts and other diagrams
- generate measures of central tendency and dispersion
- generate measures of normality.

11.1 Introduction

If you have adopted a positivist paradigm, you will have collected quantitative data and you will need to quantify any qualitative research data. If your knowledge of statistics is somewhat rusty, you should find this chapter useful as it contains key formulae for some of the basic techniques, together with step-by-step instructions and worked examples. However, you may prefer to enter your data into a software program, such as *Microsoft Excel*, *Minitab* or *SPSS*. In this chapter, we introduce you to *IBM® SPSS® Statistics*, which is widely used in business research because it can process a large amount of data.

SPSS provides a data file where data can be stored, which is similar to a spreadsheet. Once the data have been entered or imported into *SPSS*, frequency tables, charts, cross-tabulations and a range of statistical tests can be performed quickly and accurately. The resulting output can then be pasted into your dissertation or thesis. Whether you decide to calculate the statistics yourself or use software, you will need to determine which statistics are appropriate for the data you have collected and how to interpret the results. This chapter and the next will give you guidance.

Statistics is a body of methods and theory that is applied to quantitative data.

A **statistic** is a number that describes a sample.

A **parameter** is a number that describes a population.

A **population** is a precisely defined body of people of objects under consideration for statistical purposes.

A **random sample** is an unbiased subset of a population that is representative of the population because every member had an equal chance of being selected.

Descriptive statistics are a group of statistical methods used to summarise, describe or display quantitative data.

Inferential statistics are a group of statistical methods and models used to draw conclusions about a population from quantitative data relating to a random sample.

Univariate analysis is the analysis of data relating to one variable.

Bivariate analysis is the analysis of data relating to two variables.

Multivariate analysis is the analysis of data relating to three or more variables.

11.2 Key concepts in statistics

The term **statistics** was introduced by Sir Ronald Fisher in 1922 (Upton and Cook, 2006) and refers to the body of methods and theory that is applied to quantitative data. Moore *et al.* (2009, p. 210) define a **statistic** as 'a number that describes a sample'. For example, you could calculate the mean number of employees in a sample of companies to describe the average size of the sample. A statistic can be used to estimate an unknown **parameter**, which is a number that describes a **population**. Thus, if you had a **random sample** that was a representative of the population, you could use the sample mean to estimate the average number of employees in the population of companies. A random sample is a representative subset of the population where observations are made, and a population includes the totality of observations that might be made (as in a census).

Research data can be secondary data (for example, a survey of a sample of annual reports using content analysis), primary data (for example, a survey of a sample of companies using questionnaires) or both. In addition to quantitative data, you may have collected some qualitative data (for example, themes you have identified in the narrative sections of the annual reports or categories you have identified from responses to open questions in the questionnaire survey). You can see from the definition of statistics that statistical methods can only be applied to quantitative data, so you will need to quantify any qualitative data beforehand. You can do this by identifying each nominal variable and recording the frequency of occurrence of each category it contains. You will remember that in the previous chapter we recommended using tallies to aid the counting of frequencies.

Statisticians commonly draw a distinction between descriptive statistics and inferential statistics. **Descriptive statistics** are used to describe and summarise the data in a more compact form and can be presented in tables, charts and other graphical forms. They aid understanding of the features of a specific data set and allow patterns to be discerned that are not apparent in the raw data. The main purpose of descriptive statistics is to provide a brief summary of the samples and the measures of the data. **Inferential statistics** are 'statistical tests that lead to conclusions about a target population based on a random sample and the concept of sampling distribution' (Kervin, 1992, p. 727).

In an undergraduate dissertation, the research may be designed as a small, descriptive study. If so, you may be able to address your research questions by using descriptive statistics to explore the data from individual variables (hence the term **univariate analysis**). However, at postgraduate level, you are likely to design an analytical study. Therefore, you are more likely to use descriptive statistics at the initial stage and then go on to use inferential statistics (or other techniques) in a bivariate and/or multivariate analysis. We will examine the statistics used in **bivariate analysis** (analysis of data relating to two variables) and **multivariate analysis** (analysis of data relating to three or more variables) in the next chapter.

11.3 Getting started with *SPSS*

11.3.1 The research data

We are going to use real business data collected for a postal questionnaire survey of the directors of small private companies (Collis, 2003) that focused on their option to forgo the statutory audit of their accounts. Do not worry if you know nothing about this topic, as no prior knowledge is required. You may remember seeing extracts from the questionnaire as we illustrated some of the questions in the previous chapter. The survey was commissioned by the UK government as part of the consultation on raising the turnover threshold for audit exemption in company law from £1 million to £4.8 million, which would extend this regulatory relaxation to a greater number of small companies. The literature showed that although some of the companies that already qualified for audit exemption were no long having their accounts audited, others were continuing to do so on a voluntary basis. This led to the following research question: What are the factors that have a significant influence on the directors' decision to have a voluntary audit?

Very briefly, the theoretical framework for the study was that the emphasis on turnover in company law at that time implied a relationship between size and whether the cost of audit exceeded the benefits. Agency theory (Jensen and Meckling, 1976) suggests that audit would be required where there was information asymmetry between 'agent' and 'principal' (for example, the directors managing the company and external owners, or between the directors and the company's lenders and creditors).

Based on this framework, a number of hypotheses were formulated. Each hypothesis is a statement about a relationship between two variables. The null hypothesis (H_0) states that the two variables are independent of one another (there is no relationship) and the alternative hypothesis (H_1) states that the two variables are associated with one another (there is a relationship). Using inferential statistics, the hypotheses are tested against the empirical data and the alternative hypothesis is accepted if there is statistically significant evidence to reject the null hypothesis (in other words, the null hypothesis is the default). Here is the first hypothesis in the null and the alternative form:

H_0 Voluntary audit does not increase with company size, as measured by turnover.
H_1 Voluntary audit increases with company size as measured by turnover.

In the past, it was usual to present hypotheses in the null form, but today it is more common to use the alternative form. You are advised to discuss this with your supervisor to see whether he or she has a preference. Box 11.1 lists the nine hypotheses for the study, which are stated in the alternative form.

Box 11.1 Hypotheses to be tested

H1 Voluntary audit is positively associated with turnover.
H2 Voluntary audit is positively associated with agreement that the audit provides a check on accounting records and systems.
H3 Voluntary audit is positively associated with agreement that it improves the quality of the financial information.
H4 Voluntary audit is positively associated with agreement that it improves the credibility of the financial information.
H5 Voluntary audit is positively associated with agreement that it has a positive effect on the credit rating score.
H6 Voluntary audit is negatively associated with the company being family-owned.
H7 Voluntary audit is positively associated with the company having shareholders without access to internal financial information.
H8 Voluntary audit is positively associated with demand from the bank and other lenders.
H9 Voluntary audit is positively associated with the directors having qualifications or training in business or management.

The sampling frame used was *Fame*. This is a database containing financial and other information from the annual reports and accounts of more than 8 million companies in the UK and Ireland. At any one moment in time, some of these companies are dormant, some are in the process of liquidation, some have not yet registered their accounts for the latest year, and some do not qualify for audit exemption on the grounds of the public interest (for example, listed companies and those in the financial services sector). A search of the database identified a population of 2,633 active companies within the scope of the study in 2003 (likely to qualify for audit exemption if the turnover threshold were raised), and which had registered their accounts for 2002. The questionnaire was sent to the principal director of each company with an accompanying letter explaining the purpose of the research and that it had been commissioned by the then Department for Trade and Industry.[1] After one reminder, 790 completed questionnaires were received, giving a response rate of 30%. This unexpectedly high rate was undoubtedly due to the use of the government logo on the questionnaire, since response rates from small businesses are usually considerably lower. We are going to use this survey data to illustrate some of the key features of *SPSS*. The data file is available at macmillanihe.com/Business-Research-5e.

The identity of the respondents will not be revealed as they were assured anonymity. This was achieved through the use of a unique reference number (URN) known only to the researcher. Box 11.2 shows the responses given by respondent 42.

Box 11.2 Questionnaire completed by respondent 42

URN 42

1. Is the company a family-owned business? *(Tick one box only)*

Wholly family-owned (or only 1 owner)	☑	(1)
Partly family-owned	☐	(2)
None of the shareholders are related	☐	(0)

2. How many shareholders (owners) does the company have?

(a) Total number of shareholders	2
Breakdown:	
(b) Number of shareholders with access to internal financial information	2
(c) Number of shareholders without access to internal financial information	0

3. Would you have the accounts audited if not legally required to do so? *(Tick one box only)*

Yes, the accounts are already audited voluntarily	☐	(1)
Yes, the accounts would be audited voluntarily	☐	(2)
No	☑	(0)

Please give reasons for either answer

.....

.....

4. What are your views on the following statements regarding the audit? *(Circle number closest to your view)*

	Agree			Disagree	
(a) Provides a check on accounting records and systems	5	4	(3)	2	1
(b) Improves the quality of the financial information	5	4	3	(2)	1
(c) Improves the credibility of the financial information	5	4	3	(2)	1
(d) Has a positive effect on company's credit rating score	5	4	3	(2)	1

1. In subsequent restructuring exercises, the Department of Trade and Industry was replaced by the Department for Business, Enterprise and Regulatory Reform, which in turn was succeeded by the Department of Business, Innovation and Skills. In 2016, the latter merged with the Department of Energy and Climate Change to become the Department for Business, Energy and Industrial Strategy.

5. Apart from Companies House, who normally receives a copy of the company's statutory accounts? *(Tick as many boxes as apply)*

(a) Shareholders ☑

(b) Bank and other providers of finance ☐

(Other variables omitted from this example)

6. Do you have any of the following qualifications/training?

(Tick as many boxes as apply)

(a) Undergraduate or postgraduate degree ☐

(b) Professional/vocational qualification ☐

(c) Study/training in business/management subjects ☐

Turnover data taken from 2002 accounts on Fame: £74.411k

Source: Adapted from Collis (2003).

11.3.2 Labelling variables and entering the data

Our illustrations are based on *IBM® SPSS® Statistics v20*. You run the program in the same way as any other software. For example, *start* ⇒ All Programs ⇒ [name of the version available to you]. If your programs are on a local area network, *SPSS* may be in a separate folder for mathematical and/or statistics packages. The program usually opens with a screen inviting you to choose what you would like to do. Select Type in data and *SPSS* Data Editor will then open a new data file in Data View (see Figure 11.1), in which each row of cells represents a different case (for example, a respondent to a questionnaire survey) and each column represents a different variable. If you are using secondary research data that you have exported to a *Microsoft Excel* spreadsheet, you can simply copy and paste it into the *SPSS* Data Editor.

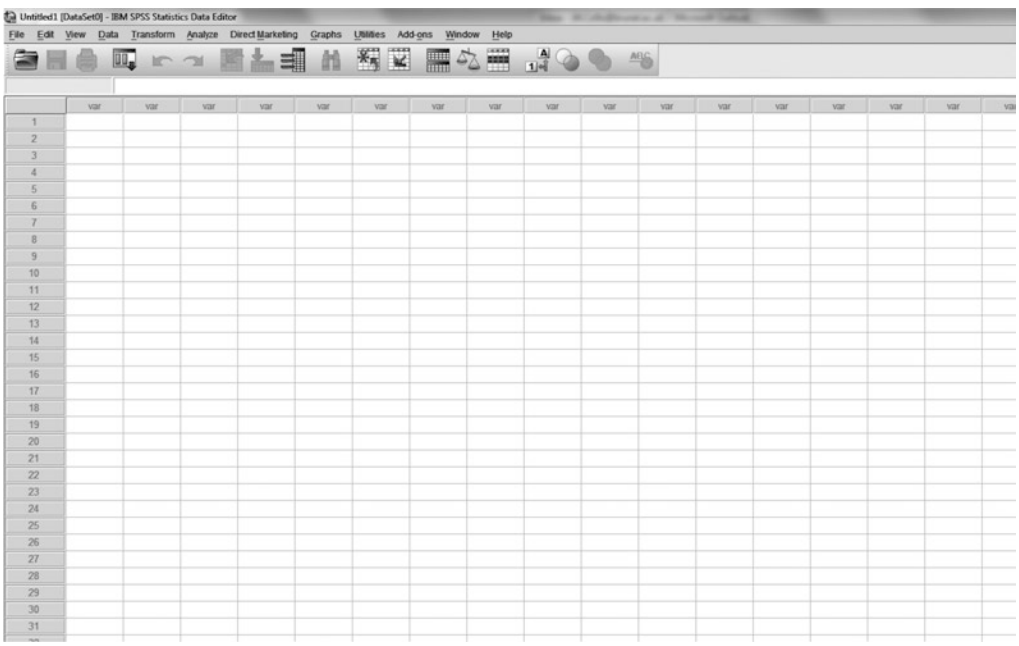


Figure 11.1 *SPSS* Data Editor

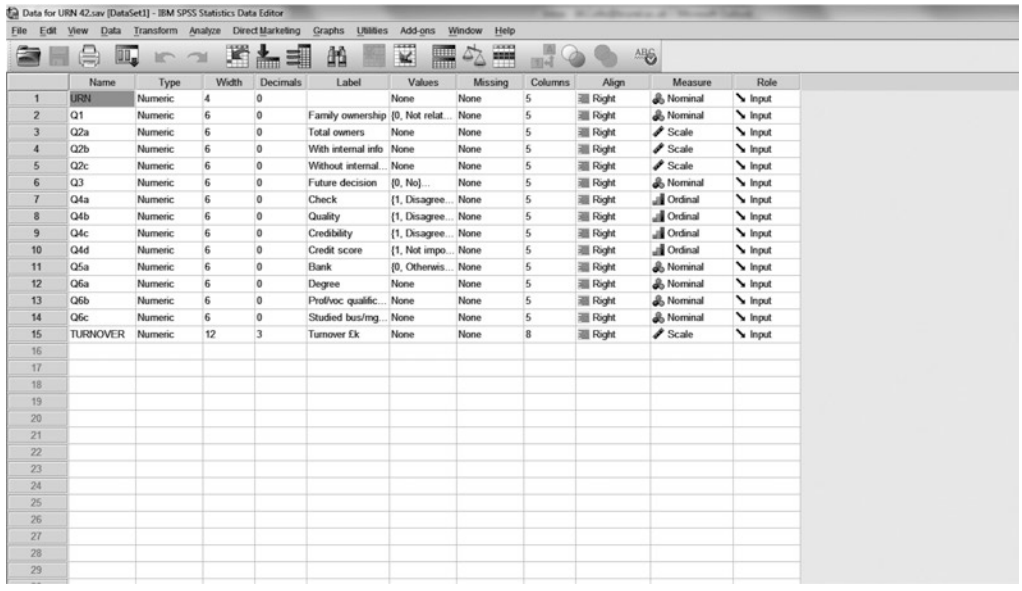
Now switch from Data View to Variable View by clicking on the tab at the bottom left of the screen and you can start naming and labelling your variables:

- Under Name, type a short word to identify the variable. In this survey, each respondent was given a unique reference number (URN) so that primary data from the questionnaire survey could be matched to secondary data from *Fame*. Therefore, you might decide to type URN as the name for the first variable. The second variable relates to the first question, so you might want to name it Q1. You will find that *SPSS* prevents you from using a number as the first character or any spaces. Initially you will find this a quick and easy way to name your variables.
- Under Decimals, amend the default to reflect the number of decimal places in the data for that variable. For example, for Q1 you will select 0 decimal places, whereas for turnover you will need to select 3 decimal places.
- Under Labels, type a word or two that adds information to the name of the variable. For example, Family ownership for Q1; Total owners for Q2a; With internal info for Q2b; Without internal info for Q2c. For Q4, you might decide to use a keyword, such as Check for Q4a; Quality for Q4b; Credibility for Q4c; Credit score for Q4d.
- Under Values, enter the codes and what they signify. For example, in Q4, 1 = Disagree and 5 = Agree (once you have entered this information, you can copy and paste it to other variables using the same codes); for Q6, 1 = Yes and 0 = Otherwise. TURNOVER does not need any codes entered because it is a ratio variable.

SPSS provides a default measure for missing data (or no response), so unless you have a particular reason to enter a code for a non-response, move on to Measurement. *SPSS* gives you a choice of Scale (use for ratio or interval variables), Ordinal or Nominal. If you need to jog your memory to make these decisions, refer to Chapter 10, section 10.3.1).

At this point, save the file (File, Save As) and name it Data for URN 42.sav. Figure 11.2 shows the screen at this stage in the process.

Next return to Data View and enter the data values (the observations) for respondent 42, including the data for turnover, which for the convenience of this exercise is shown as a note at the end of the questionnaire. Notice that if you place your cursor over the name of a variable, *SPSS* will reveal the label you added in Variable View. For example, by placing the cursor on the variable Q4a, the label Check is displayed, which was used to remind us that this variable relates to the role of the audit as a check on accounting records and systems (see Figure 11.3). This is a very useful feature that helps ensure you enter the data in the appropriate column.


Data for URN 42.sav [DataSet1] - IBM SPSS Statistics Data Editor

File Edit View Data Transform Analyze Direct Marketing Graphs Utilities Add-ons Window Help

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align	Measure	Role
1	URN	Numeric	4	0		None	None	5	Right	Nominal	Input
2	Q1	Numeric	6	0	Family ownership	{0, Not relat...	None	5	Right	Nominal	Input
3	Q2a	Numeric	6	0	Total owners	None	None	5	Right	Scale	Input
4	Q2b	Numeric	6	0	With internal info	None	None	5	Right	Scale	Input
5	Q2c	Numeric	6	0	Without internal...	None	None	5	Right	Scale	Input
6	Q3	Numeric	6	0	Future decision	{0, No}...	None	5	Right	Nominal	Input
7	Q4a	Numeric	6	0	Check	{1, Disagree...	None	5	Right	Ordinal	Input
8	Q4b	Numeric	6	0	Quality	{1, Disagree...	None	5	Right	Ordinal	Input
9	Q4c	Numeric	6	0	Credibility	{1, Disagree...	None	5	Right	Ordinal	Input
10	Q4d	Numeric	6	0	Credit score	{1, Not impo...	None	5	Right	Ordinal	Input
11	Q5a	Numeric	6	0	Bank	{0, Otherwis...	None	5	Right	Nominal	Input
12	Q6a	Numeric	6	0	Degree	None	None	5	Right	Nominal	Input
13	Q6b	Numeric	6	0	Prof/voc qualific...	None	None	5	Right	Nominal	Input
14	Q6c	Numeric	6	0	Studied bus/mg...	None	None	5	Right	Nominal	Input
15	TURNOVER	Numeric	12	3	Turnover £k	None	None	8	Right	Scale	Input

Figure 11.2 Variable view of data for URN 42.sav

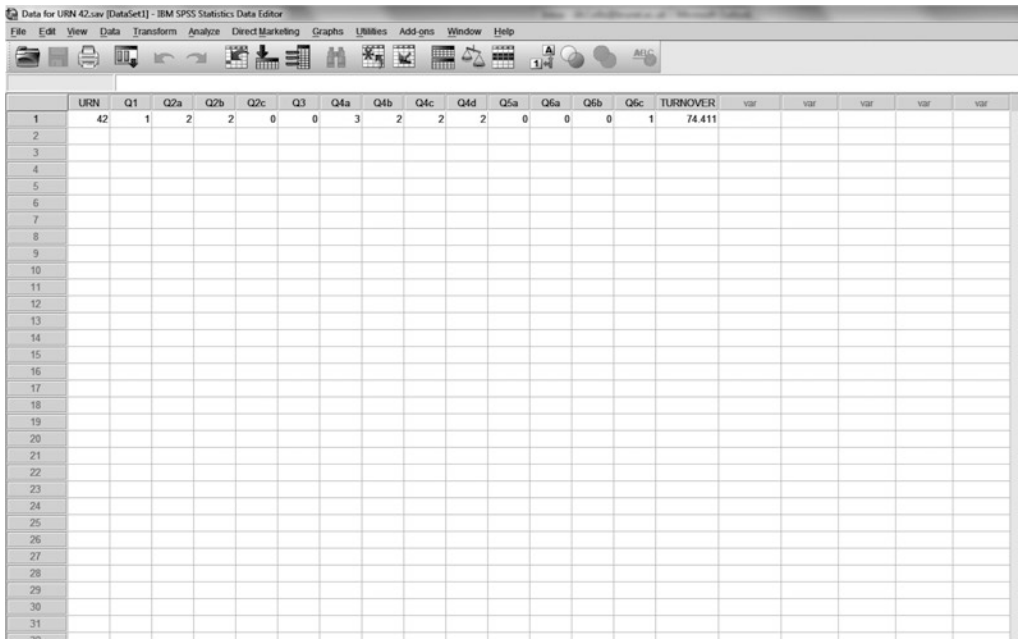


Figure 11.3 Data view of data for URN 42.sav

11.3.3 Recoding variables

In the previous chapter, we mentioned situations where you might have collected data in a particular form for one purpose, but you subsequently want to recode the data and create a different variable in a new, simpler form called a **dummy variable**. This is a **dichotomous variable** containing only two categories, where 1 = the characteristic is present and 0 = the characteristic is absent. When recoding variables, it is important to keep the original variable in case you need the more detailed and precise information for another purpose. We will illustrate how to recode a variable with Q1, which collected data about the extent to which the company is family-owned. We are going to recode it into a new variable called FAMILY, which will have two groups: companies that are wholly family-owned (or have only one owner) and those that are not.

A **dichotomous variable** is a variable that has only two possible categories, such as gender.

A **dummy variable** is a dichotomous quantitative variable coded 1 if the characteristic is present and 0 if the characteristic is absent.

In Variable View, select the whole of row 3 to position the new variable above it:

- From the menu, select Edit ⇒ Insert Variable.
- Name the new variable FAMILY and label it as Q1.
- Under Values, enter the details for the two groups: 1 = Wholly family-owned, 0 = Otherwise.
- Change the number of decimal places to 0 and change the measurement level to nominal.

From the menu, select Transform ⇒ Recode into Different Variables.

- From the list of variables on the left, select Q1 and use the arrow button ➡ to move it into the Input Variable --> Output Variable box.
- Type FAMILY in the Output Variable Name box and click Old and New Values.
- Under Old value, click System-missing and under New value click System-missing and then click Add.
- Under Old value, type 1 and under New value, type 1 and click Add.
- Under Old value, click All other values and under New value, type 0 and click Add ⇒ Continue ⇒ Change and OK.

Figure 11.4 illustrates the recoding process.

When you have finished, return to Data View and carry out a visual check that the value 1 in the new dummy variable coincides with the value 1 in the original variable. This is just an exercise, but when you enter your own research data, you will not start recoding any variables until you have finished entering all the observations for your sample. Remember that it is essential to verify the accuracy of your recoding instructions by checking the outcome. With a large number of cases, it is not practical to use a visual check and we suggest you compare the total frequencies for each category in the old and new variables instead. We will show you how to generate frequency tables in the next section. If you find you have made a mistake, simply go through the steps for recoding the variable again.

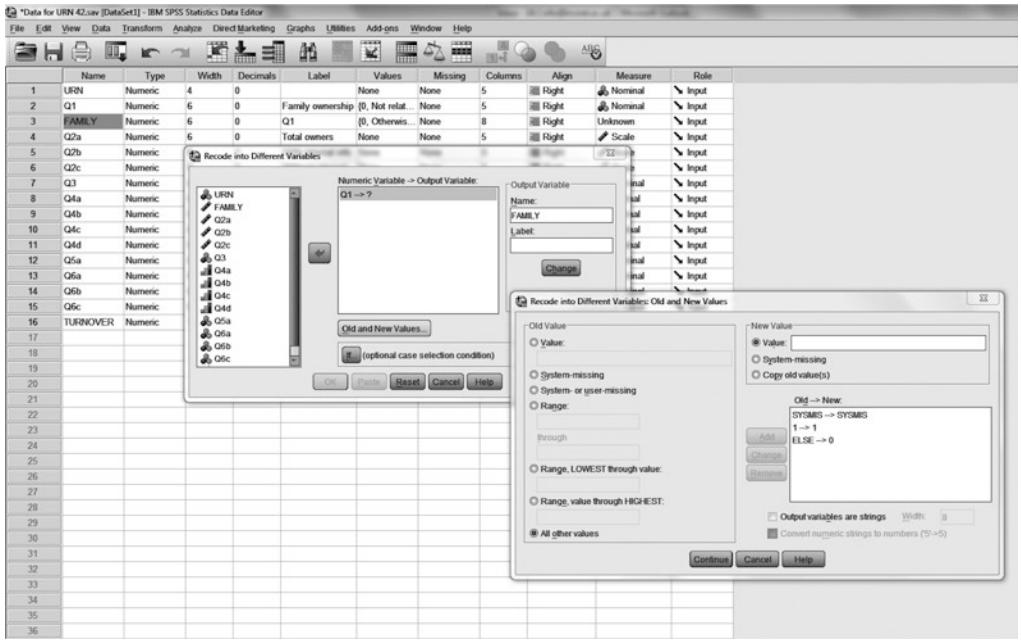


Figure 11.4 Recoding into a different variable

Reprint Courtesy of International Business Machines Corporation, © International Business Machines Corporation.

You can reinforce and extend your knowledge of recoding by creating three more dummy variables:

- Recode Q2c into EXOWNERS, where 1 = External owners, 0 = Otherwise. Do this by recoding SYSMIS --> SYSMIS, 0 --> 0, ELSE --> 1.
- Recode Q3 into VOLAUDIT, where 1 = Yes, 0 = No. Do this by recoding SYSMIS --> SYSMIS, 0 --> 0, ELSE --> 1.
- Recode Q6a, Q6b and Q6c into EDUCATION, where 1 = Degree, qualifications or training, 0 = Otherwise. This is a bit more complicated. As each variable will make a contribution to the new variable, recode 1 --> 1 for each variable in turn. Then check Data View to see the new variable accurately reflects your instructions. If so, from the menu select Transform ⇒ Recode ⇒ Into same variable and after selecting Education, recode 1 --> 1, ELSE --> 0. Then in Data View carry out a last visual check on the accuracy of the outcome. As already mentioned, this is essential when working with your own data, as you will not do any recoding until you have finished entering the data for your entire sample.

At this point, you may have begun to think that it would be more convenient if the names we used for the four variables in Q4 were more informative, like the names of the new variables you have created. Renaming them is easy. Go into Variable View and under Name, type CHECK instead of Q4a and under Label, type Q4a instead of Check. Carry out a similar reversal for Q4b, Q4c and Q4d. Although using the question numbers was useful at the data entry stage, this small change will aid the next stage, which involves analysing the variables and

Table 11.1 Variables in the analysis

Variable	Definition	Hypothesis	Expected sign
VOLAUDIT	Whether the company would have a voluntary audit (1, 0)		
TURNOVER	Size of company as measured by turnover (£k)	H1	+
CHECK	Audit provides a check on accounting records and systems (5 = Agree, 1 = Disagree)	H2	+
QUALITY	Audit improves the quality of the financial information (5 = Agree, 1 = Disagree)	H3	+
CREDIBILITY	Audit improves the credibility of the financial information (5 = Agree, 1 = Disagree)	H4	+
CREDIT SCORE	Audit has a positive effect on the credit rating score (5 = Agree, 1 = Disagree)	H5	+
FAMILY	Whether the company is wholly family-owned (1, 0)	H6	-
EXOWNERS	Whether the company has external shareholders (1, 0)	H7	+
BANK	Whether the statutory accounts are given to the bank/lenders (1, 0)	H8	+
EDUCATION	Whether the respondent has qualifications/training in business or management (1, 0)	H9	+

interpreting the results. When you have finished, save the file and exit. Table 11.1 now summarises the variables in the analysis, where for some tests we will be describing VOLAUDIT as the dependent variable (DV) and the others as the independent variables (IVs).

We are now ready to examine some of the descriptive statistics used to explore data in a univariate analysis. The methods we are going to use are simple statistical models, which will help us describe the data. Box 11.3 summarises the statistics we are going to generate.

Box 11.3 Univariate analysis

Descriptive statistics

Frequency distribution
- Percentage frequency

Measures of central tendency
- Mean
- Median
- Mode

Measures of dispersion
- Range
- Standard deviation

Measures of normality
- Skewness
- Kurtosis

11.4 Frequency distributions

In statistics, the term **frequency** refers to the number of observations for a particular data value in a variable (the frequency of occurrence of a quantity in a ratio or interval variable and a category in an ordinal or nominal variable). A **frequency distribution** is an array that summarises the frequencies for all the data values in a particular variable (Upton and Cook, 2006). For example, the data values in the survey for the variable TURNOVER were the figures reported in the companies' 2006 annual accounts. If no company had precisely the same figure for turnover as another, the

A **frequency** is the number of observations for a particular data value in a variable.

A **frequency distribution** is an array that summarises the frequencies for all the data values in a particular variable.

number of observations for each data value would be 1. If the variable is measured on an ordinal scale (for example, CHECK, which is coded 1–5) or a nominal scale (for example, FAMILY, which is coded 1 or 0), the data values are the codes and the number of observations are the number of companies in each category.

A frequency distribution can be presented for one variable (univariate analysis) or two variables (bivariate analysis) in a table, chart or other type of diagram. Even if you only have a very small data set (say, 20 data values or less), an examination of how the values are distributed will aid your interpretation of the data.

11.4.1 Percentage frequencies

A **percentage frequency** is a descriptive statistic that summarises a frequency as a proportion of 100.

A **percentage frequency** is a familiar statistical model, which summarises frequencies as a proportion of 100. It is calculated by dividing the frequency by the sum of the frequencies and then multiplying the answer by 100. This can be expressed as a formula:

$$\text{Percentage frequency} = \frac{f}{\sum f} \times 100$$

where

f = the frequency
$\sum$ = the sum of

Example

The survey found that 633 companies out of 790 in the sample had a turnover of less than £1 million. Putting these figures into the formula:

$$\frac{633}{790} \times 100 = 80\%$$

The formula we have used is not difficult to understand, but if you are not a statistician, you may find the mathematical notation somewhat mysterious. However, it is merely a kind of shorthand that speeds up the process of writing the formulae and, once you know what the symbols represent, you can decipher the message. As we are going to show you how to use *SPSS* to generate the statistics you require, we will not examine the mathematical side.

11.4.2 Creating interval variables

In a large sample, you may find it useful to recode ratio variables into non-overlapping groups and create a new interval variable measured on an equal-interval scale. For example, the original variable TURNOVER was recoded into a different variable named TURNOVERCAT with five groups containing equal intervals of £1m. You need to take care that you can allocate each item of data to the appropriate group without ambiguity. Therefore, you should not use intervals of £0–£1m, £1m–£2m, £2m–£3m, and so on, because a value of £1m could be placed in either the first or the second group and a value of £2m could be placed in either the second or the third group. The correct intervals are £0–£0.99m, £1m–£1.99m, £2m–£2.99m, and so on. When deciding how many groups to create, you need to bear in mind that too few might obscure essential features and too many might emphasise minor or random features. A rule of thumb might be 5 to 10, depending on the range of values in the data.

Creating an interval variable allows the overall pattern in the frequencies and percentage frequencies to be discerned. However, much of the detail is lost in the process, so it is important to recode into a different variable (rather than the same variable) and keep the original precise information in case you need it for another purpose later on.

11.4.3 Generating frequency tables

Although a frequency table can be generated for a ratio variable, it is more usually associated with variables that contain groups or categories, such as interval, ordinal or nominal variables. To

generate a frequency table in *SPSS*, start the program in the usual way and open the file named Data for 790 cos.sav.

- From the menu, select Analyze ⇒ Descriptive Statistics ⇒ Frequencies ...
- From the list of variables on the left, select TURNOVERCAT and use the arrow button ➦ to move it into the Variable(s) box on the right (see Figure 11.5). If you also wanted to generate frequency tables for other variables, you would simply move them into the box on the right at this point.

The default is to display the frequency tables, so click OK to see the output (see Table 11.2).

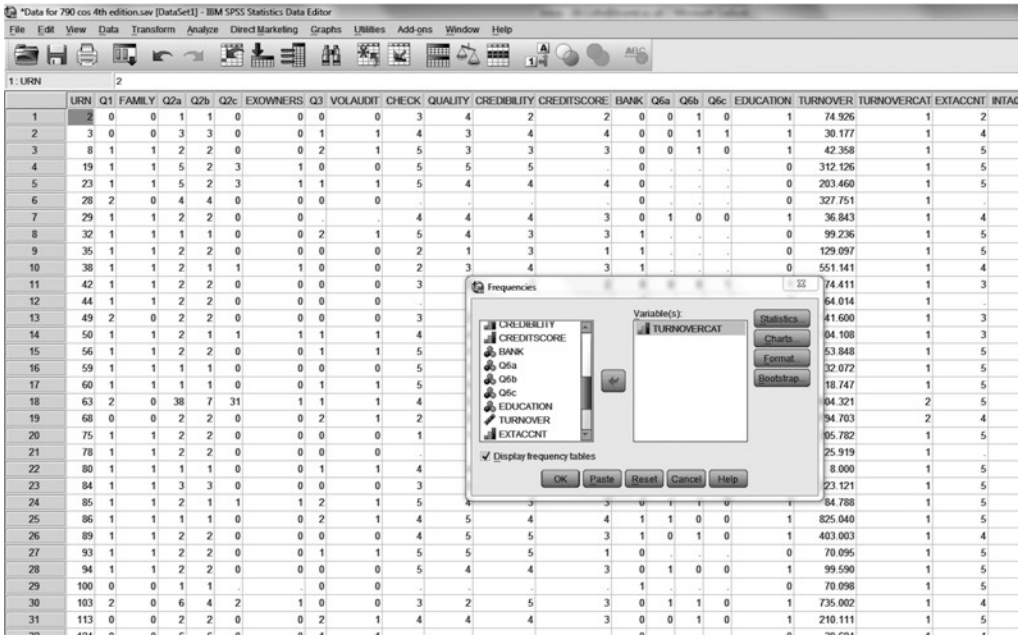


Figure 11.5 Generating a frequency table

Reprint Courtesy of International Business Machines Corporation, © International Business Machines Corporation.

Table 11.2 Frequency table for TURNOVERCAT

Statistics

TURNOVERCAT

N	Valid	790
	Missing	0

TURNOVERCAT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 Under £1m	633	80.1	80.1	80.1
	2 £1m–£1.99m	55	7.0	7.0	87.1
	3 £2m–£2.99m	37	4.7	4.7	91.8
	4 £3m–£3.99m	40	5.1	5.1	96.8
	5 £4m–£4.9m	25	3.2	3.2	100.0
	Total	790	100.0	100.0	

To copy a table from the *SPSS* output file into a *Microsoft Word* document, left click with your mouse on the table to select it, and from the menu at the top of the screen, select Edit then Copy and you will then be able to paste the table into your document. You need to remember that every table should be accompanied by one or more paragraphs of explanation.

Table 11.2 shows the presentation of univariate data for a variable containing grouped data, but if you want to analyse data from two such variables, you need to generate a cross-tabulation. We will demonstrate this with the grouped data from the interval variable TURNOVERCAT and the categorical data from the dummy variable VOLAUDIT. You can generate a cross-tabulation for these two variables in *SPSS* using the following procedure:

- From the menu at the top, select Analyze ⇒ Descriptive Statistics… ⇒ Crosstabs and use the arrow button to move VOLAUDIT into Column(s) and TURNOVERCAT into Row(s).
- The default is to show the count of the observations, but it is often more useful to show the percentages. Be wary of showing too much data in a table (generally no more than 20 items of data) as this can detract from the main message. As we have put the dependent variable in the column(s), it makes sense to show the column percentages rather than the row percentages. To do this, select Cells and under Percentages select Column (see Figure 11.6).
- Then click Continue and OK to see the output (see Table 11.3).

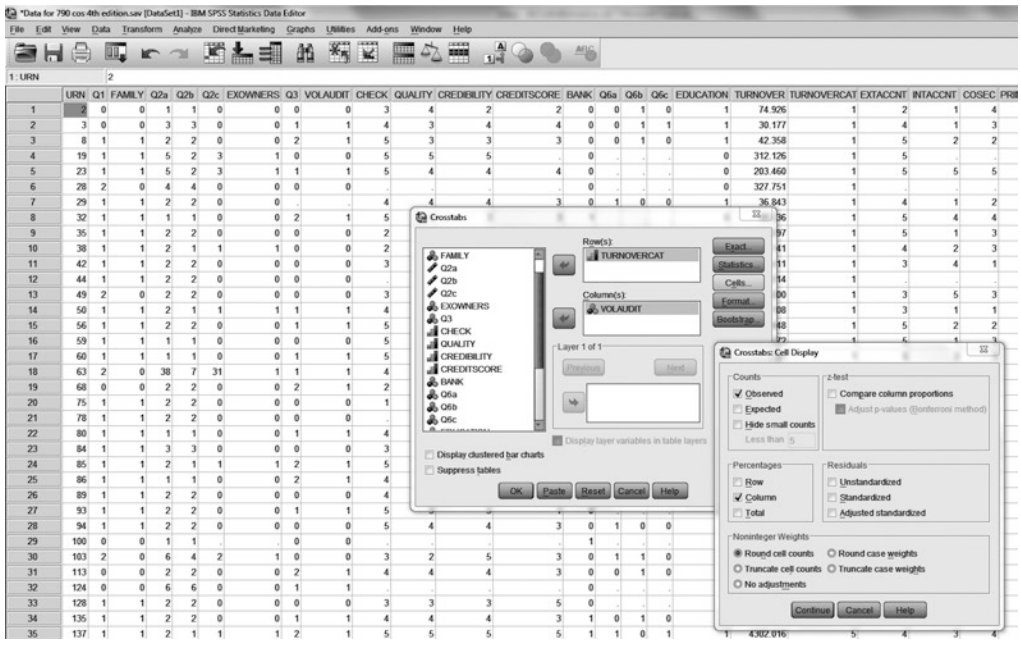


Figure 11.6 Generating a cross-tabulation

Reprint Courtesy of International Business Machines Corporation, © International Business Machines Corporation.

Once copied into a *Microsoft Word* document, a table can be edited in the usual way. In this example, both groups in the dependent variable VOLAUDIT follow more or less the same size order. If your data do not conveniently coincide in this way, base the order on the group that contains the larger frequencies and let the other group follow that order.

11.4.4 Generating charts

Charts (and other graphical forms) can also be used to present frequency information. Some people prefer to read summarised information in a chart and detailed information in a table. In both cases, there must also be a written explanation. You need to consider the level at which the variable is measured when choosing the type of chart. If you have entered your data into a spreadsheet or into a specialist statistical program, you will find it easy to produce a variety of different charts. Table 11.4 shows how your choice is constrained by the measurement level of the research data.

Table 11.3 Cross-tabulation for VOLAUDIT and TURNOVERCAT

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
TURNOVERCAT * VOLAUDIT	772	97.7%	18	2.3%	790	100.0%

TURNOVERCAT * VOLAUDIT Crosstabulation

			VOLAUDIT		
			0 Otherwise	1 Yes	Total
TURNOVERCAT	1 Under £1m	Count	406	214	620
		% within VOLAUDIT	92.7%	64.1%	80.3%
	2 £1m– £1.99m	Count	12	42	54
		% within VOLAUDIT	2.7%	12.6%	7.0%
	3 £2m– £2.99m	Count	10	26	36
		% within VOLAUDIT	2.3%	7.8%	4.7%
	4 £3m– £3.99m	Count	5	33	38
		% within VOLAUDIT	1.1%	9.9%	4.9%
	5 £4m– £4.9m	Count	5	19	24
		% within VOLAUDIT	1.1%	5.7%	3.1%
	Total	Count	438	334	772
		% within VOLAUDIT	100.0%	100.0%	100.0%

Table 11.4 Charts for different types of data

Measurement level	Bar chart	Pie chart	Histogram
Nominal	✓	✓	
Ordinal	✓		
Interval			✓
Ratio			✓

The advantages of using a chart are:

- it is a good way to communicate general points
- it is attractive to look at
- it appeals to a more general audience
- it makes it easier to compare data sets
- relationships can be seen more clearly.

The disadvantages of using a chart are:

- it is not a good way to communicate specific details
- it can be misinterpreted
- the design may detract from the message
- designing a non-standard chart can be time-consuming
- it can be designed to be deliberately misleading.

You can create a chart in *SPSS* at the same time as generating a frequency table.

- From the menu, select Analyze ⇒ Descriptive Statistics… ⇒ Frequencies.
- From the list of variables on the left, move TURNOVERCAT into the Variable(s) box on the right and click Charts.
- Under Chart Type, select Bar charts, and under Chart Values, select Percentages and click Continue (see Figure 11.7).
- Click OK to see the output (see Figure 11.8).

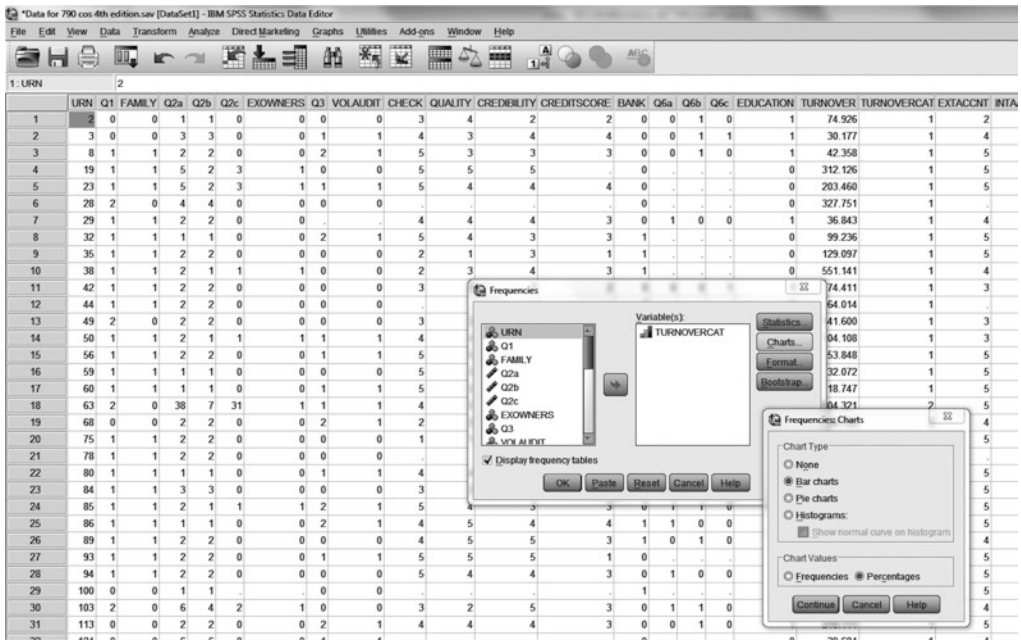


Figure 11.7 Generating a chart

Reprint Courtesy of International Business Machines Corporation, © International Business Machines Corporation.

Go through the same procedure again, to select a pie chart or a histogram (not surprisingly, *SPSS* does not anticipate that you might want all three, so you can only select one at a time).

In a bar chart, the frequency or percentage frequency for each ordinal or nominal category is displayed in a separate vertical (or horizontal) bar. The frequencies are indicated by the height (or length) of the bars, which permits a visual comparison. In a component bar chart, the bars are divided into segments. However, these are not recommended, as the segments lack a common axis or base line, which makes them difficult to interpret visually. The alternative is a multiple bar chart in which the segments are adjoined, and each starts at the base line. This allows the reader to compare several component parts, but the comparison of the total is lost.

In a pie chart, the percentage frequency for each value or category is displayed as a segment of a circular diagram. Each segment represents an area that is proportional to the whole 'pie'. Figure 11.9 shows a pie chart representing the percentage frequencies for each category in TURNOVERCAT.

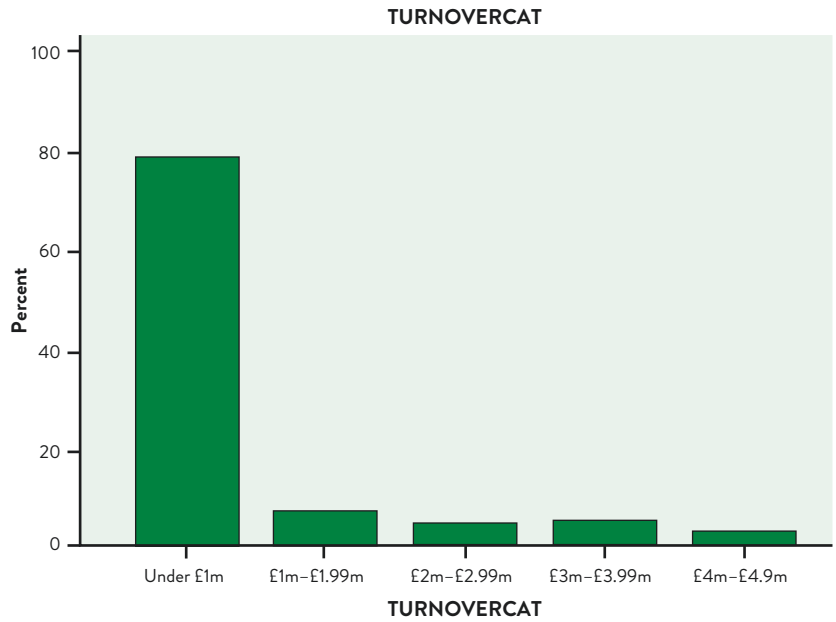


Figure 11.8 Bar chart for TURNOVERCAT

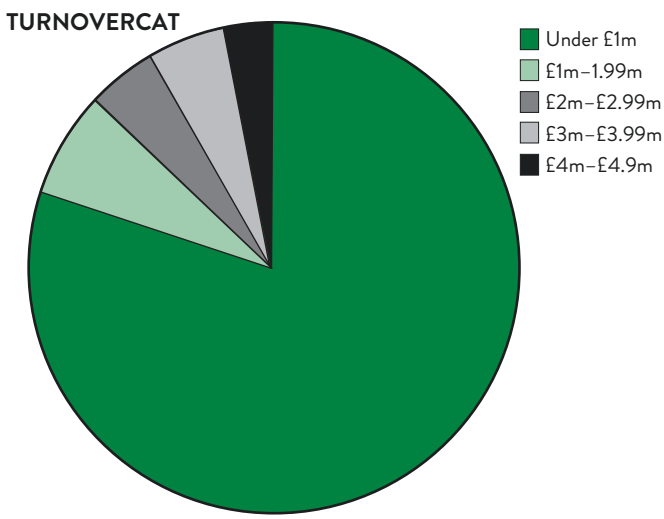


Figure 11.9 Pie chart for TURNOVERCAT

A histogram is a refinement of a bar chart, but the adjoining bars touch, indicating that the variable is measured on an interval or ratio scale. If you have data measured on an interval scale based on equal intervals, the width of the bars will be constant, and the height of each bar will represent the frequency because Area = Width × Height. Thus, a histogram shows the approximate shape of the distribution. We will illustrate this with the original variable TURNOVER, which is measured on a ratio scale and the chart is shown in Figure 11.10.

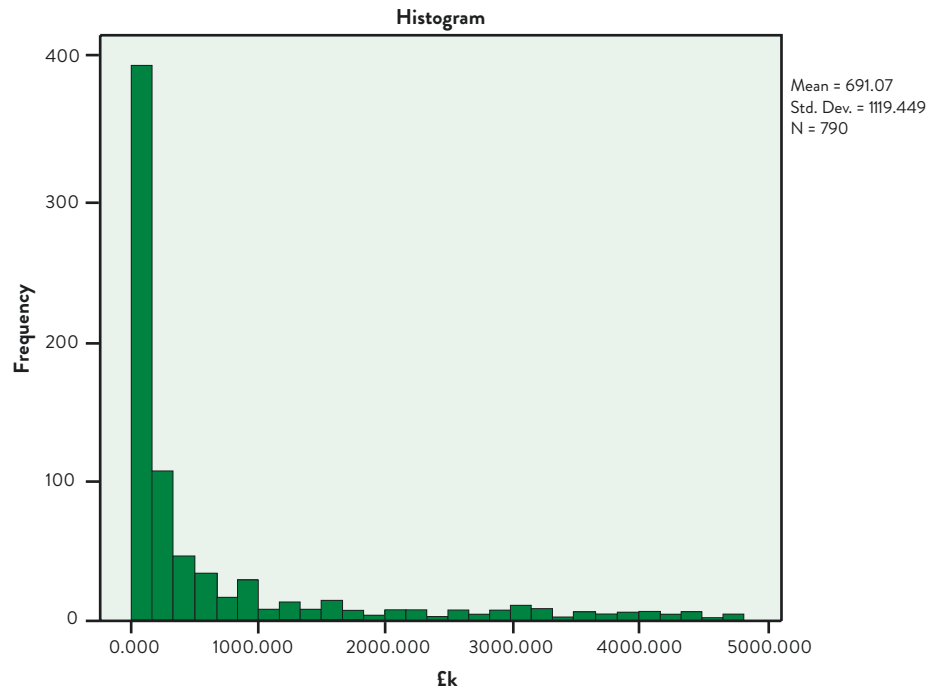


Figure 11.10 Histogram for TURNOVER

We suggest you run the tutorial on creating and editing charts. To amend the appearance of the chart, double click on the chart to open the Chart Editor. For example, in the bar chart and pie chart we have illustrated, it would be useful to add value labels to the segments, but specify 0 decimal places to reduce unwanted 'noise' in the communication. In the histogram for TURNOVER, you might want to use a scaling factor of 1,000, which would allow you to label the values in millions as shown in the bar and pie charts for TURNOVERCAT. For future reference, note that the histogram can also show the distribution curve, and the default is to show some descriptive statistics that summarise the data. We will examine these in the next section.

To copy a chart from the *SPSS* output file into a *Microsoft Word* document, left click with your mouse on the chart to select it, and from the menu at the top of the screen, select Edit then Copy and you will then be able to paste the table into your document. You need to remember that every chart should be accompanied by one or more paragraphs of explanation.

The Chart Editor allows you to generate a line graph to present continuous data (such as TURNOVER) across a number of categories. It is not appropriate to use a line graph to represent discrete data, such as number of employees. This is because you can represent turnover as a line by dividing it into fractional denominations (such as £1.01, £1.02, £1.03, and so on) but you cannot have 1.1, 1.2 or 1.3 employees. Line graphs are often used to present data collected at different points in time. For example, if you have turnover data for the past five years, you could use a line graph to illustrate any volatility, stability or trend over the period and compare companies with external shareholders with those that are owner-managed. The frequencies are always shown on the vertical axis (the Y axis) and data values for the categories on the horizontal axis (the X axis). In this example, TURNOVER would be shown on the Y axis (in £k or £m) and the years would be shown along the X axis. You might want to use EXOWNERS as the variable to distinguish the lines. If you did this, the two groups in EXOWNERS would be described as 'External owners' and 'Otherwise' in the legend.

You can see from this brief description that one advantage of line graphs over other charts is that, providing they share the same scale and unit of measurement, a number of variables can be represented on the same graph (a multiple line graph). This greatly facilitates visual comparison of the data.

11.4.5 Generating a stem-and-leaf plot

A stem-and-leaf plot is a diagram that uses the data values (observations) in a frequency distribution to create a display. Thus, it 'retains all the information in the data, while also giving an idea of the underlying distribution' (Upton and Cook, 2006, p. 409). The data are arranged in size order and each observation is divided into a leading digit to represent the stem, and trailing digits, which represent the leaf.

The diagram presents the data in a more compact and useable form, which highlights any gaps and outliers. An outlier is an extreme value that does not conform to the general pattern. In a small sample, outliers are important because they can distort the results of the statistical analysis. We will demonstrate how to generate a stem-and-leaf plot in *SPSS* using the data for TURNOVER.

- Select Analyze ⇒ Descriptive Statistics… ⇒ Explore and move TURNOVER into the Dependent List box on the right.
- From the buttons on the right-hand side, select Plots. Under Descriptive, the default is Stem-and-leaf, so click Continue (see Figure 11.11).

Then click OK for the results (see Box 11.4).

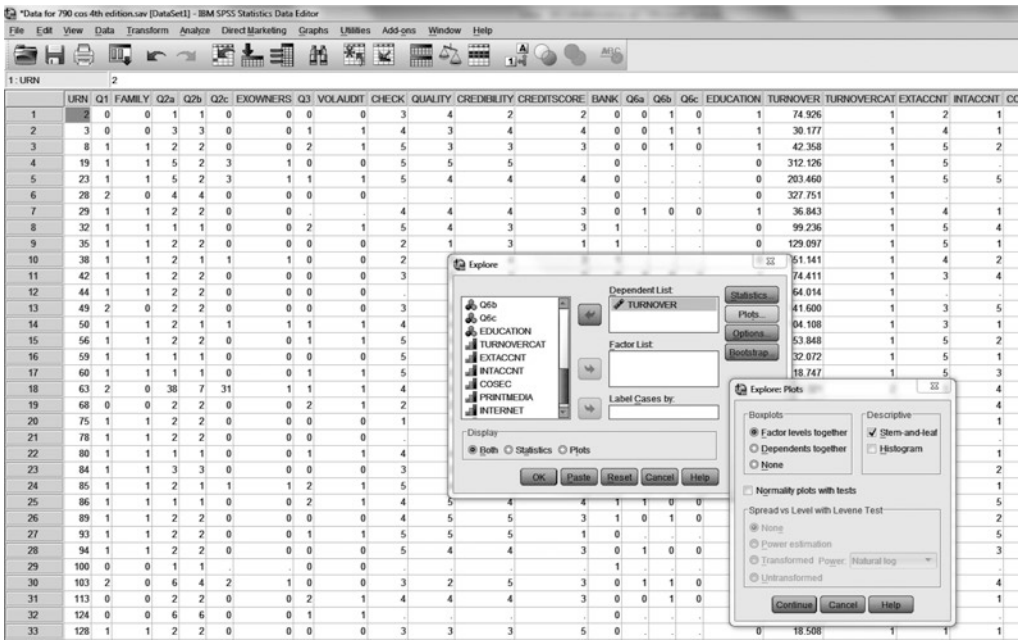


Figure 11.11 Generating a stem-and-leaf plot

Box 11.4 Stem-and-leaf plot for TURNOVER

```
£k Stem-and-Leaf Plot
 Frequency     Stem &  Leaf
   321.00        0 .  00000000000001111111111222222222233333344444444555555
5556666666777777788888999999
   104.00        1 .  000111112222333345556788 9
    65.00        2 .  001223344567899
    39.00        3 .  012345678&
    25.00        4 .  2578&&
    18.00        5 .  157&&
    18.00        6 .  02&&&
```

```
  6.00        7 .  &
 18.00        8 .  1245&
 19.00        9 .  1&&&&
  5.00       10 .  &
  5.00       11 .  &
  8.00       12 .  &&
  9.00       13 .  8&
  2.00       14 .  &
  6.00       15 .  &
 11.00       16 .  1&
  3.00       17 .  &
108.00 Extremes    (>=1795)

Stem width: 100.000
Each leaf: 4 case(s)

& denotes fractional leaves.
```

11.5 Measuring central tendency

We are now going to look at a group of statistical models that are concerned with measuring the central tendency of a frequency distribution. Measures of central tendency provide a convenient way of summarising a large frequency distribution by describing it with a single statistic. The three measures are the mean, the median and the mode.

11.5.1 The mean

The **mean** ($\bar{x}$) is the arithmetic average of a set of data in a sample and can only be calculated for ratio or interval variables. It is found by dividing the sum of the observations by the number of observations, as shown in the following formula:

The **mean** is a measure of central tendency based on the arithmetic average of a set of data values.

$$\text{Mean} = \frac{\sum x}{n}$$

where

x = each observation
n = the total number of observations
$\sum$ = the sum of

Example

A student's exam marks were as follows:

Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
82%	78%	80%	64%	70%	64%

Inserting the data into the formula:

$$\frac{82+78+80+64+70+64}{6} = \frac{438}{6} = 73\%$$

The advantages of the mean are:

- it can be calculated exactly
- it takes account of all the data
- it can be used as the basis of other statistical models.

The disadvantages of the mean are:

- it is greatly affected by outliers (extreme values that are very high or very low)
- it is a hypothetical value and may not be one of the actual values
- it can give an impossible figure for discrete data (for example, the average number of owners in the sample of small companies was 5.8)
- it cannot be calculated for ordinal or nominal data.

11.5.2 The median

The **median** (M) is the mid-value of a set of data that has been arranged in size order (in other words, it has been ranked). It can be calculated for variables measured on a ratio, interval or ordinal scale and is found by adding 1 to the number of observations and dividing by 2. The formula is:

The **median** is a measure of central tendency based on the mid-value of a set of data values arranged in size order.

$$\text{Median} = \frac{n+1}{2}$$

where

n = number of observations

This is very straightforward if you have an even number of observations because the formula will take you directly to the observation at the mid-point. The following example shows what you need to do if you have an uneven number of observations.

Example

The student's exam marks in chronological order were:

Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
82%	78%	80%	64%	70%	64%

The marks arranged in size order are:

64%	64%	70%	78%	80%	82%

Inserting the data into the formula:

$$\frac{6+1}{2} = 3.5$$

Therefore, the median is half-way between the third and the fourth of the ranked marks. A simple calculation will tell us the exact value:

$$\frac{70+78}{2} = 74\%$$

The advantages of the median are:

- it is not affected by outliers or open-ended values at the extremities
- it is not affected by unequal class intervals
- it can represent an actual value in the data.

The disadvantages of the median are:

- it cannot be measured precisely for distributions reflecting grouped data
- it cannot be used as the basis for other statistical models

- it may not be useful if the data set does not have normal distribution (we will be looking at this in section 11.7)
- it cannot be calculated for nominal data.

11.5.3 The mode

The **mode** is a measure of central tendency based on the most frequently occurring value in set of data (there may be multiple modes).

The **mode** (m) is the most frequently occurring value in a data set and can be used for all variables, irrespective of the measurement scale.

Example

The student's exam marks were:

Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
82%	78%	80%	64%	70%	64%

The mode is 64%.

The advantages of the mode are:

- it is not affected by outliers
- it is easy to identify in a small data set
- it can be calculated for any variable, irrespective of the measurement scale.

The disadvantages of the mode are:

- it is a dynamic measure that can change as other values are added
- it cannot be measured precisely for distributions reflecting grouped data
- there may be multiple modes
- it cannot be used as the basis for other statistical models.

One of the things you will have noticed from the analysis in this section is that the mean, the median and the mode each use a different definition of central tendency. Our analysis of the student's marks has produced a different result under each method. The reason for this will become apparent when we look at the importance of examining the spread of data values in section 11.6.

11.5.4 Generating measures of central tendency

With a large data set, you will need some help in calculating measures of central tendency, but *SPSS* allows you to do this at the same time as generating frequency distributions in tables and/or charts. The procedure is as follows:

- From the menu, select Analyze ⇒ Descriptive Statistics… ⇒ Frequencies.
- We will use the original ratio, so move TURNOVER into the Variable(s) box on the right. If you also wanted to generate descriptive statistics for other variables, you would simply move them into the box on the right at this point.
- Now click on Statistics and under Central Tendency, select Mean, Median, and Mode and click Continue (see Figure 11.12).
- Then click OK to see the results table (see Table 11.5).

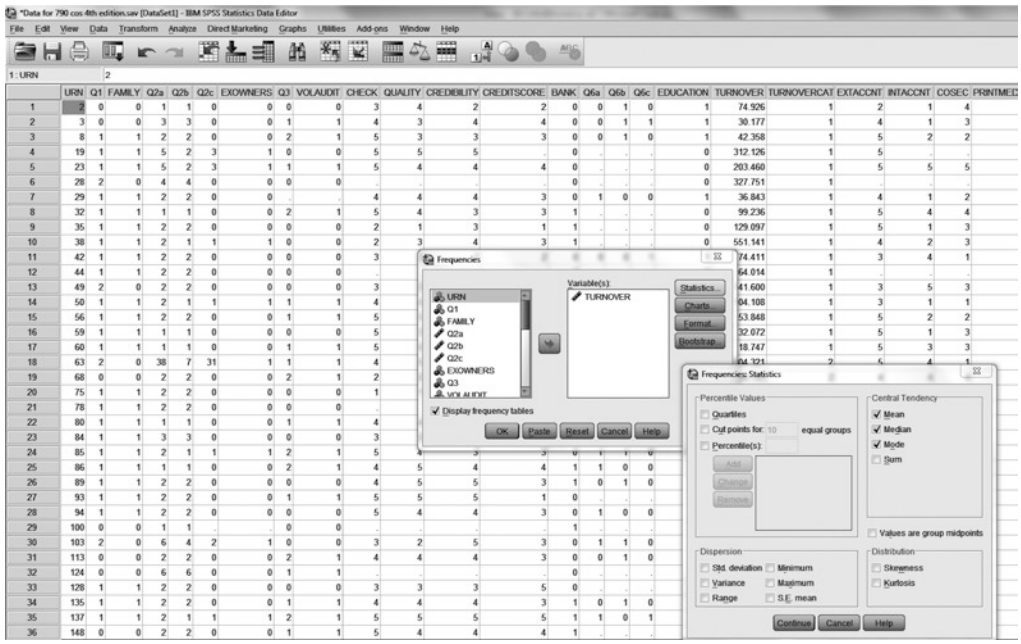


Figure 11.12 Generating measures of central tendency

Reprint Courtesy of International Business Machines Corporation, © International Business Machines Corporation.

Table 11.5 Measures of central tendency for TURNOVER

TURNOVER

N	Valid	790
	Missing	0
Mean		691.07062
Median		158.06450
Mode		8.000

Interpreting the results, you can see that despite being called measures of central tendency, the 'centre' differs for each statistic. The reasons for this will become apparent in the next section. For the time being, we can simply say that the different results arise from the different definitions we used for each measure.

Before moving on to the next subject, we are going to demonstrate the importance of retaining the detailed data in the original variable TURNOVER by comparing the precise mean we have obtained for that variable with the mean we can calculate for the five classes of grouped data in TURNOVERCAT. To determine the mean for grouped data, we need to take the mid-points of each class and multiply by the frequency, as shown in the following formula:

$$\text{Mean for grouped data} = \frac{\sum fx}{\sum f}$$

where
f = the frequency
x = each observation
$\sum$ = the sum of

Example

The calculations are as follows:

Turnover	*Frequency (f)*	*Mid-point (x)*	*(fx)*
Under £1m	633	0.5	316.5
£1m–£1.99m	55	1.5	82.5
£2m–£2.99m	37	2.5	92.5
£3m–£3.99m	40	3.5	140.0
£4m–£4.9m	25	4.5	112.5
Total	790		744.0

We can now substitute the figures we have calculated in the formula:

$$\frac{744}{790} = 0.94$$

The results show that the mean for the grouped data in the interval variable TURNOVERCAT is £0.94m compared to the mean of £0.69m that we calculated earlier using the precise data contained in the ratio variable TURNOVER. The grouped data can only give an approximation of this important statistic. Moreover, this approximation is larger than the actual mean because it is based on the median in each category rather than every data value (observation). This helps demonstrate the superiority of ratio data over interval or ordinal data when it comes to measuring the mean, which lies at the heart of the most powerful statistical models used in inferential statistics. We will discuss this further in Chapter 12.

11.6 Measuring dispersion

Measures of central tendency are useful for providing statistics that summarise the location of the 'middle' of the data, but they do not tell us anything about the spread of the data values. Therefore, we are now going to look at measures of dispersion, which should only be calculated for variables measured on a ratio or interval scale. The two measures are the range and the standard deviation.

The **range** is a measure of dispersion that represents the difference between the maximum value and the minimum value in a frequency distribution arranged in size order.

The **interquartile range** is a measure of dispersion that represents the difference between the upper quartile and the lower quartile (the middle 50%) of a frequency distribution arranged in size order.

11.6.1 Range

The **range** is a simple measure of dispersion that describes the difference between the maximum value (the upper extreme or E_U) and the minimum value (the lower extreme or E_L) in a frequency distribution arranged in size order. You will remember from the previous section that the median is the mid-point, but in a large set of data (say, 30 observations or more) it can be useful to divide the frequency distribution into quartiles, each containing 25% of the data values. This allows us to measure the **interquartile range**, which is the difference between the upper quartile (Q_3) and the lower quartile (Q_1), and the spread of the middle 50% of the data values. When comparing two distributions, the interquartile range is often preferred to the range, because the latter is more easily affected by outliers (extreme values). The formulae are:

$$\text{Range} = E_U - E_L$$
$$\text{Interquartile range} = Q_3 - Q_1$$

Example

Inserting the data for Turnover (£k) into the formulae:

Range = 4,738.271 – 0.054 = 4,738.217
Interquartile range = 742.76625 – 52.74525 = 690.021

Unfortunately, the drawback of using the range is that it only takes account of two items of data and the drawback of the interquartile range is that it only takes account of half the values. What we really want is a measure of dispersion that will take account of all the values and we discuss such an alternative next.

11.6.2 Standard deviation

The **standard deviation** (sd) should only be calculated for ratio or interval variables, but it overcomes the deficiencies of the range and the interquartile range discussed in the previous section by using all the data. The standard deviation is related to the normal distribution, which we explain in the next section. The term 'standard deviation' was introduced by Karl Pearson in 1893 (Upton and Cook, 2006). It is based on the **error** and the **variance**, which are two statistical models used to measure how well the mean represents the data (Field, 2017).

The **standard deviation** is the square root of the variance. A large standard deviation relative to the mean suggests the mean does not represent the data well.

The **error** is the difference between the mean and the data value (observation).

The **variance** is the mean of the squared errors.

In this context, the error is the difference between the mean and the data value (the observation). It is called an error because it measures the deviation of the observation from the mean (which is a hypothetical value that summarises the data). We then add up the errors and make some adjustments. These are necessary because the difference between the mean and each value below the mean produces a negative figure while the difference between the mean and each value above the mean produces a positive figure. Unfortunately, when these are added together, the answer is zero. To resolve this problem, the errors are squared (in mathematics, squaring a positive or a negative number always produces a positive figure).

This allows us to calculate the variance, which is the mean of the squared errors. However, this is very difficult to interpret because it is measured in squared units (for example, our turnover data would be in square £). To de-square the units, we calculate the square root of the variance. This gives us the standard deviation, which we can now define as the square root of the variance. A small standard deviation relative to the mean suggests that the mean represents the data well; conversely, a large standard deviation relative to the mean suggests that the mean does not represent the data well because the data values are widely dispersed.

In case you only have a small data set and want to calculate the standard deviation unaided, the formula for individual data is:

$$sd = \sqrt{\frac{\Sigma(x - \bar{x})^2}{n}}$$

where
x = an observation
$\bar{x}$ = the mean
n = the total number of observations
$\sqrt{}$ = the square root
Σ = the sum of

The formula for grouped data is:

$$sd = \sqrt{\frac{\Sigma x^2 f}{\Sigma f} - \frac{(\Sigma xf)^2}{\Sigma f}}$$

where
x = the mid-point of each data class
f = the frequency of each class
$\sqrt{}$ = the square root
Σ = the sum of

The advantages of the standard deviation are:

- it uses every value
- it is in the same units as the original data
- it is easy to interpret.

The disadvantages are:

- the calculations are complex without the aid of suitable software
- it can only be used for variables measured on a ratio or interval scale.

The **standard error** is the standard deviation between the means of different samples. A large standard error relative to the overall sample mean suggests the sample might not be representative of the population.

The final term we are going to introduce is the **standard error** (se), which is calculated by taking the difference between each sample mean and the overall mean, squaring the differences, adding them up and dividing by the number of samples. A small standard error relative to the overall sample mean suggests the sample is representative of the population, whereas a large standard error relative to the overall sample mean suggests the sample might not be representative of the population (Field, 2017).

11.6.3 Generating measures of dispersion

By now you will have realised that *SPSS* allows you to generate frequency tables, measures of central tendency and measures of dispersion for one or more variables in a single set of instructions under the Analyze ⇒ Descriptive Statistics menu. We will now show you how to add the measures of dispersion we have been discussing:

- From the menu, select Analyze ⇒ Descriptive Statistics… ⇒ Frequencies and move TURNOVER into the Variable(s) box on the right. If you also wanted to generate frequency tables for other variables, you would simply move them into the box on the right at this point.
- Deselect the default to display frequency tables, as you already have them.
- Now click on Statistics and deselect any options under Central Tendency, as you have them already. Under Percentile Values, select Quartiles and under Dispersion click all the options and then click Continue (see Figure 11.13).
- Click OK to see the output (see Table 11.6).

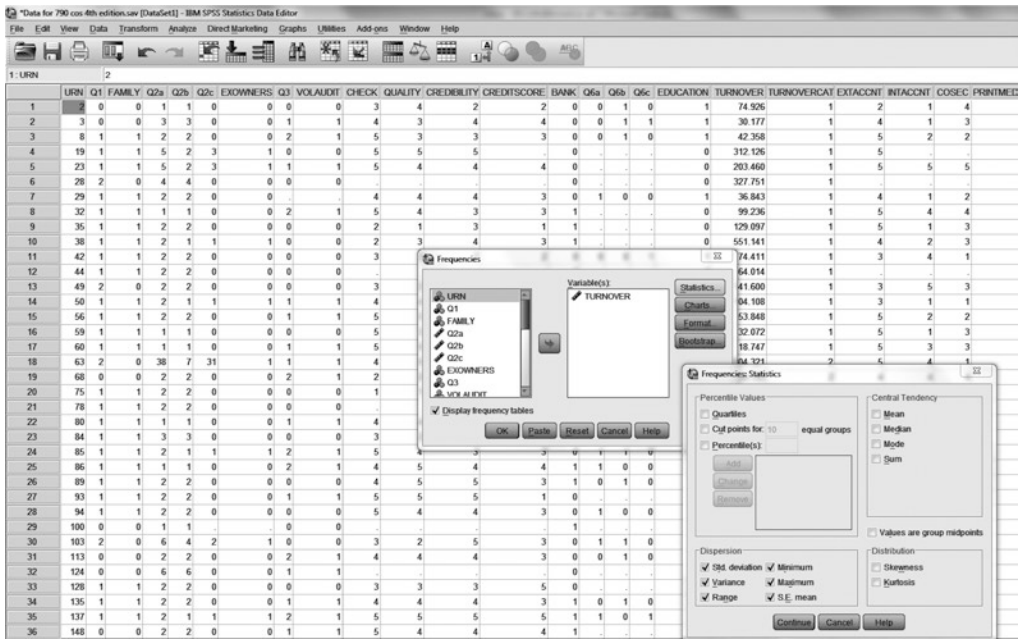


Figure 11.13 Generating measures of dispersion

Table 11.6 Measures of dispersion for TURNOVER

Statistics

TURNOVER

N	Valid	790
	Missing	0
Std. error of mean		39.828205
Std. deviation		1,119.448910
Variance		1,253,165.862
Range		4,738.217
Minimum		.054
Maximum		4,738.271
Percentiles	25	52.74525
	50	158.06450
	75	742.76625

11.7 Normal distribution

We mentioned in the previous section that the standard deviation is related to the **normal distribution**. This term was introduced in the late 19th century by Sir Francis Galton, cousin of Charles Darwin who published *The Origin of Species* in 1859 (Upton and Cook, 2006), and refers to a theoretical frequency distribution that is bell-shaped and symmetrical, with tails extending indefinitely either side of the centre. In a normal distribution, the mean, the median and the mode coincide at the centre (see Figure 11.14). It is described as a theoretical frequency distribution because it is a mathematical model representing perfect symmetry, against which empirical data can be compared.

A **normal distribution** is a theoretical frequency distribution that is bell-shaped and symmetrical, with tails extending indefinitely either side of the centre. The mean, median and mode coincide at the centre.

Skewness is a measure of the extent to which a frequency distribution is asymmetric (a normal distribution has a skewness of 0).

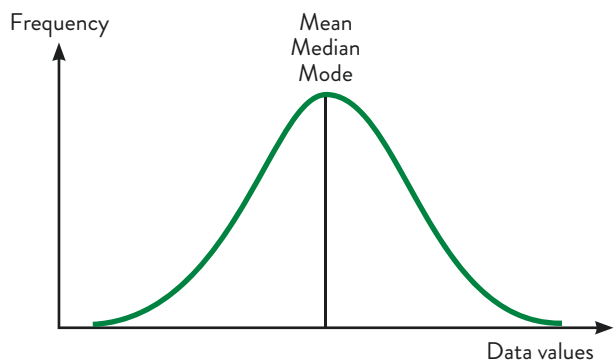


Figure 11.14 A normal frequency distribution

11.7.1 Skewness and kurtosis

When the frequency distribution does not have a symmetrical distribution, it is described as skewed. Thus, **skewness** is a measure of the extent to which a frequency distribution is asymmetric. In a skewed distribution, the mean, the median and the mode have different values. Indeed, we found that the mean turnover for the sample companies was £691,071, the median was £158,045 and the mode was £8,000. The skewness of a normal distribution is 0 (the distribution is symmetrical). When a distribution has a positive skewness value, the tail is

on the right (the positive side of the centre) and most of the observations are at the lower end of the range (see Figure 11.15). When the distribution has a negative skewness value, the tail is on the left (the negative side of the centre) and most of the observations are at the upper end of the range (see Figure 11.16). A skewness value that is more than twice the standard error of the skewness suggests the distribution is not symmetrical.

Kurtosis is a measure of the extent to which a frequency distribution is flatter or more peaked than a normal distribution (a normal distribution has a kurtosis of 0).

A second important measure is **kurtosis**, which measures the extent to which a frequency distribution is flatter or more peaked than a normal distribution (Upton and Cook, 2006). The kurtosis value of a normal distribution is 0, which indicates the bell-shaped distribution with most of the observations clustered in the centre. A distribution with positive kurtosis is more peaked than a normal distribution because it has more observations in the centre and longer tails on either side. A distribution with negative kurtosis is flatter than a normal distribution because there are fewer observations in the centre and the tails on either side are shorter.

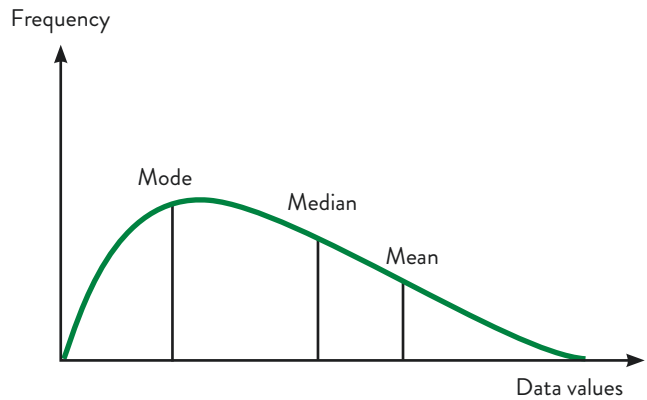


Figure 11.15 A positively skewed frequency distribution

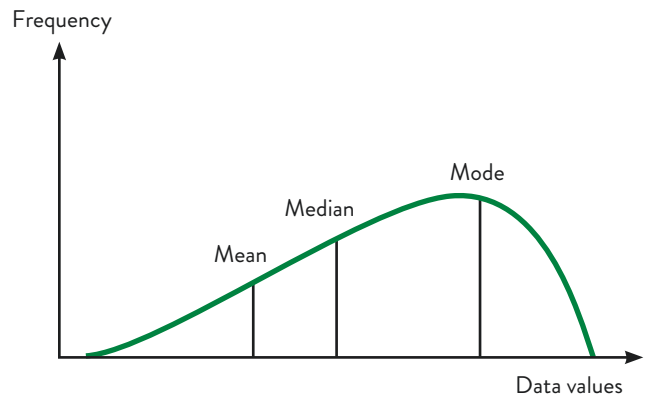


Figure 11.16 A negatively skewed frequency distribution

Both the mean and the standard deviation are related to the normal distribution. While the mean represents the centre of the frequency distribution, the standard deviation measures the spread or dispersion of the data values around the mean. If the data set has a normal distribution, 68% of the data values will be within 1 standard deviation of the mean, 95% will fall within 2 standard deviations of the mean and 99.7% will fall within 3 standard deviations of the mean. This is illustrated in Figure 11.17.

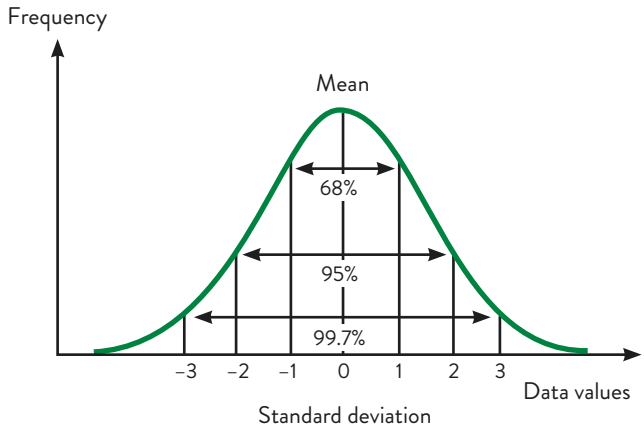


Figure 11.17 Proportion of a normal distribution under 1 standard deviation

11.7.2 Testing for normality

Although you can obtain measures of skewness and kurtosis under the Frequencies menu we have been using so far, if you want to run normality tests at the same time, you need to use the Explore menu. The procedure is as follows:

- Select Analyze ⇒ Descriptive Statistics… ⇒ Explore and move TURNOVER into the Variable(s) box on the right.
- The default is for both statistics and plots. Under Statistics, accept the default of Descriptives. However, under Plots, deselect the default Stem-and-leaf (you have this already), and select Normality plots with tests; then click Continue (see Figure 11.18).
- Click OK for the output (see Table 11.7).

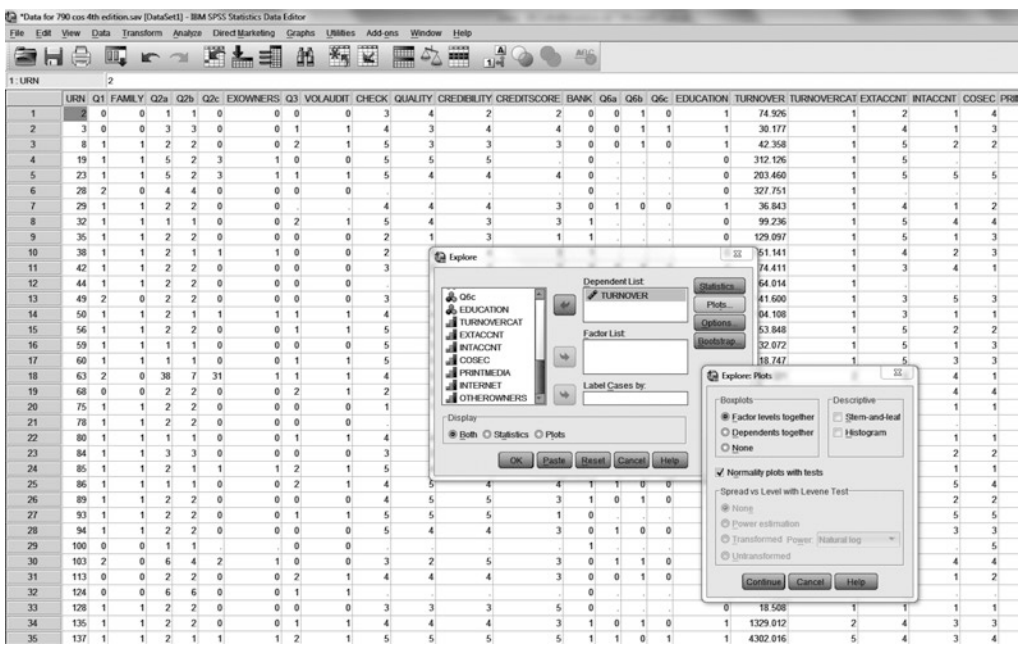


Figure 11.18 Generating descriptive statistics and testing for normality

Table 11.7 Descriptive statistics and normality tests for TURNOVER

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
TURNOVER	790	100.0%	0	.0%	790	100.0%

Descriptives

			Statistic	Std. Error
TURNOVER	Mean		691.07062	39.828205
	95% confidence interval for mean	Lower bound	612.88884	
		Upper bound	769.25240	
	5% trimmed mean		537.33076	
	Median		158.06450	
	Variance		12,531,65.862	
	Std. deviation		1,119.448910	
	Minimum		.054	
	Maximum		4,738.271	
	Range		47,38.217	
	Interquartile range		690.021	
	Skewness		2.042	.087
	Kurtosis		3.170	.174

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
TURNOVER	.276	790	.000	.643	790	.000

a. Lilliefors Significance Correction

The results confirm what we could see from the general shape of the data in the histogram and from the measures of central tendency: TURNOVER does not have a normal distribution. The positive value for skewness confirms the spread of the data is skewed with more observations on the right of the mean; the positive value for kurtosis indicates a more peaked distribution than expected in a normal distribution with a higher degree of clustering of observations around the mean and longer tail(s).

The normality tests compare the actual frequency distribution of the sample (the actual value) with a theoretical normal distribution (the expected value) with the same mean and standard deviation (Field, 2017). If the actual value is too far from the expected value, the test result is significant, and this evidence leads us to reject the null hypothesis. Conversely, if the actual value is close to the expected value, the test result is not significant, and we do not have evidence to reject the null hypothesis. There are two cases when a test result leads to a correct result (Upton and Cook, 2006):

- H_0 is true and the test leads to acceptance of the null hypothesis
- H_1 is true and the test leads to the rejection of the null hypothesis.

However, there are also two cases when a test leads to an incorrect result (an error):

- H_0 is true, but the test leads to rejection of the null hypothesis (referred to as a **Type 1 error**).
- H_1 is true, but the test leads to the acceptance of the null hypothesis (referred to as a **Type II error**).

Therefore, we need to specify the size of the critical region that determines whether the test result is significant by setting the **significance level**. If you are conducting research into issues relating to health or safety you would want this critical region to be less than 1%, but in most business and management research, a significance level of 0.05 is usually acceptable. This means that we would accept a 5% probability of a Type I or II error. This is reflected in *SPSS*, where the default significance level is 0.05. Therefore, you will interpret the result of a test as being significant if the significance statistic (Sig.) is ≤ 0.05. In some tests, the significance statistic is referred to as a probability statistic (p) you will interpret the result of a test as being significant if $p \leq 0.05$.

Looking at the tests of normality in the second part of Table 11.7, you can see the results are significant (the value under Sig. is ≤ 0.05). This means we can reject the null hypothesis and we accept that the frequency distribution for TURNOVER differs significantly from a normal distribution. If a result showed $p > 0.05$, it would indicate that the size of the deviation from normality in the sample was not large enough to be significant. In this case, a significant result is not surprising, since small and medium-sized businesses account for 99.9% of all enterprises in the UK (BEIS, 2019, p. 3), thus size is positively skewed in the population. When you have finished, save your files and exit from *SPSS*.

It may surprise you that the output files from *SPSS* often contain a large amount of information. This is because the program provides the entire analysis to allow you to make a full interpretation of the results. Your next task is to decide how to summarise all your results. You will have seen many examples of how researchers do this when reviewing previous studies for your literature review. Tables 11.8 and 11.9 show examples of tables that are suitable for summarising descriptive statistics for continuous and categorical variables, respectively. When writing up your research (see Chapter 13), you could use tables like this for summarising the descriptive statistics (and frequency distributions for categorical variables, if applicable) in your study.

The **significance level** is the level of confidence that the results of a statistical analysis are not due to chance. It is usually expressed as the probability that the results of the statistical analysis are due to chance (usually 5% or less).

A **Type I error** occurs when H_0 is true, but the test leads to its rejection.

A **Type II error** occurs when H_1 is true, but the test leads to the acceptance of H_0.

Table 11.8 Descriptive statistics for continuous variable

Variable	N	Min	Max	Median	Mode	Mean	Std dev	Skewness		Kurtosis	
								Statistic	Std error	Statistic	Std error
TURNOVER	790	0.054	4738.271	158.0645	8.000	691.07062	1119.44891	2.042	0.087	3.170	.174

Table 11.9 Frequency distributions for categorical variables

Variable	N	Number coded 5	Number coded 4	Number coded 3	Number coded 2	Number coded 1	Number coded 0
CHECK	697	348	166	103	40	40	-
QUALITY	687	197	142	158	95	95	-
CREDIBILITY	688	300	182	126	40	40	-
CREDITSCORE	681	206	158	183	63	71	-
FAMILY	790	-	-	-	-	537	253
EXOWNERS	785	-	-	-	-	127	658
BANK	722	-	-	-	-	400	322
EDUCATION	790	-	-	-	-	553	237

11.8 Conclusions

In this chapter, we have demonstrated how to conduct a typical exploratory analysis of research data and generate tables, charts and other graphical forms. If you are designing a study that includes the analysis of quantitative data, you will need this knowledge to explore your data and choose appropriate descriptive statistics to summarise your data. The descriptive statistics we have covered lie at the heart of a univariate analysis and allow you to examine frequency distributions and measure the central tendency and dispersion of your data. Your choice of statistics will depend on your level of study and your research questions. If you are an undergraduate student, you should check whether descriptive statistics alone are sufficient. If you are a postgraduate or doctoral student, you will need to run the normality test described in this chapter and go on to conduct a further analysis based on inferential statistics. We discuss inferential statistics in the next chapter.

Table 11.10 summarises the descriptive statistics we have examined in this chapter so that you can select those that are appropriate for the measurement level of your variables.

Table 11.10 Choosing appropriate descriptive statistics

Exploratory analysis	Measurement level of variable
Frequency distribution	
Percentage frequency	Ratio, interval, ordinal, nominal
Measures of central tendency	
Mean	Ratio, interval
Median	Ratio, interval, ordinal
Mode	Ratio, interval, ordinal, nominal
Measures of dispersion	
Range	Ratio, interval
Standard deviation	Ratio, interval
Measures of normality	
Skewness	Ratio, interval
Kurtosis	Ratio, interval

If inferential statistics are not required for your study, you may find the checklist in Box 11.5 helps ensure the successful completion of your analysis.

Box 11.5 Checklist for analysing data using descriptive statistics

1. Are you confident that your research design was sound?
2. Have you been systematic and rigorous in the collection of your data?
3. Is your identification of variables adequate?
4. Are your measurements of the variables reliable?
5. Is the analysis suitable for the measurement scale of your variables (nominal, ordinal, interval or ratio)?
6. If you are planning to use descriptive only, has your supervisor agreed that this is acceptable at your level of study?

It does not matter whether you use *SPSS* or another software program to which you have access. If you have a relatively small data set, you could enter it into a *Microsoft Excel* spreadsheet, which also has facilities for generating statistics and charts. Although it is possible to calculate percentage frequencies, measures of central tendency and dispersion using a calculator, when time and accuracy are at a premium you will find it invaluable to learn how to use the statistical package at your disposal. These are transferable skills that will enhance your employability.

References for further reading

BEIS (2019) *Statistical Release*, 10 October. [Online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/836550/Business_Population_Estimates_for_the_UK_and_regions_-_2019_Statistical_Release.pdf (Accessed 8 January 2020).

Collis, J. (2003) *Directors' Views on Exemption from Statutory Audit*, URN 03/1342, October, London: DTI. [Online]. Available at: http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file25971.pdf (Accessed 14 August 2020).

Field, A. (2017) *Discovering Statistics Using IBM SPSS Statistics*. London: SAGE.

Jensen, M. C. and Meckling, W. H. (1976) 'Theory of the firm: Managerial behavior, agency costs and the ownership structure', *Journal of Financial Economics*, 3, pp. 305–60.

Kervin, J. B. (1992) *Methods for Business Research*. New York: HarperCollins.

Moore, D., McCabe, G. P., Duckworth, W. M. and Alwan, L. C. (2009) *The Practice of Business Statistics*, 2nd edn. New York: W.H. Freeman and Company.

Upton, G. and Cook, I. (2006) *Oxford Dictionary of Statistics*, 2nd edn. Oxford: Oxford University Press.

Activities

This chapter is entirely activity-based. If you have access to *SPSS*, start at the beginning of this chapter and work your way through using the data file available at www.macmillanihe.com/Business-Research-5e. If *SPSS* is not available, do the same activities using an alternative software package following the on-screen tutorials and help facilities.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter and sections 15.2, 15.5, 15.7, 15.10, 15.12 and 15.13 in particular, which relate specifically to this chapter.

12

Analysing data using inferential statistics

Learning objectives

When you have studied this chapter, you should be able to:

- determine whether parametric or non-parametric methods are appropriate
- conduct tests of difference for independent and dependent samples
- conduct tests of association and correlation between variables
- predict an outcome from one or more variables
- use time series analysis to examine trends.

12.1 Introduction

We start this chapter by explaining the importance of planning your analysis. This involves examining your hypotheses and identifying the variables to be included in the analysis. You will also need to consider the underlying characteristics of your research data and decide whether parametric or non-parametric statistical tests are appropriate. We then go on to explain how to generate inferential statistics based on some of the main bivariate and multivariate methods of analysis. As in the last chapter, we will provide step-by-step instructions using *IBM® SPSS® Statistics v20* and use the data from Collis (2003) as our main example. For students conducting a longitudinal study, we devote a section to preparing longitudinal data for a time series analysis, which is used for forecasting trends.

Our intention is to provide a practical guide and provide sufficient theoretical content to help you gain a basic understanding of the most widely used methods. It is important to remember that we are only looking at a selection of the analytical techniques available and you may find it helpful to discuss other possibilities and further reading with your supervisor. You are strongly advised to do this at the proposal stage rather than waiting until you have collected your research data.

12.2 Planning the analysis

For many students (particularly postgraduate and doctoral students), the univariate analysis we discussed in the previous chapter merely forms an exploratory stage in the research and they also need to conduct bivariate and multivariate analyses using inferential statistics. When planning the analysis, you will be guided by your hypotheses and the nature of your data. This will help you determine the appropriate tests and techniques to use. The starting point is to examine your hypotheses and identify the variables to be included in the analysis.

Vox pop What has been the high point of your research so far?

Adel, recently completed PhD in management accounting

I had had difficulty in deciding which statistical technique was appropriate because I had a large number of constructs, a complicated model and a small sample. The high point came when the results of my analysis came out and I started to see light at the end of the tunnel.

12.2.1 Hypotheses and variables in the analysis

You will remember from previous chapters that a **hypothesis** is a proposition that can be tested for association or causality against **empirical evidence** (the research data you have collected about each **variable** of interest). It is important to remember that the methods used by positivists conducting business research have their roots in the experimental designs used by the natural scientists. This is reflected in the language associated with some tests, when the dependent variable (DV) in the hypothesis is identified, whose values are influenced by one or more independent variables (IVs). In Chapter 10, we gave the example of a study where the intensity of the lighting (the IV) in an office was manipulated to observe the effect on the productivity levels (the DV). You might want to predict that there will be an effect in a specific direction, such as better lighting is associated with higher productivity levels. This is known as a one-tailed hypothesis. A two-tailed hypothesis is where you predict the IV has an effect on the DV, but you cannot predict the direction.

The analysis we are going to explain in this part of the chapter is based on the Collis Report (2003) and the data file is available at macmillanihe.com/Business-Research-5e. As you can see from Box 12.1, the nine hypotheses tested in that study were one-tailed because in each hypothesis the direction of the effect was predicted.

A **hypothesis** is a proposition that can be tested for association or causality against empirical evidence.

Empirical evidence is data based on observation or experience.

A **variable** is a characteristic of a phenomenon that can be observed or measured.

Box 12.1 Hypotheses to be tested

H1 Voluntary audit is positively associated with turnover.

H2 Voluntary audit is positively associated with agreement that the audit provides a check on accounting records and systems.

H3 Voluntary audit is positively associated with agreement that it improves the quality of the financial information.

H4 Voluntary audit is positively associated with agreement that it improves the credibility of the financial information.

H5 Voluntary audit is positively associated with agreement that it has a positive effect on the credit rating score.

H6 Voluntary audit is negatively associated with the company being family-owned.

H7 Voluntary audit is positively associated with the company having shareholders without access to internal financial information.

H8 Voluntary audit is positively associated with demand from the bank and other lenders.

H9 Voluntary audit is positively associated with the directors having qualifications or training in business or management.

Table 12.1 summarises the variables in the analysis, where VOLAUDIT is the DV (or outcome variable) and the other variables are the IVs (or predictor variables). The table also shows how the variables are coded, some of which you created in the last chapter. When writing up your research (see Chapter 13), you could use a table like this to provide a description of the variables in your analysis.

Table 12.1 Variables in the analysis

Variable	Definition	Hypothesis	Expected sign
VOLAUDIT	Whether the company would have a voluntary audit (1, 0)		
TURNOVER	Size of company as measured by turnover (£k)	H1	+
CHECK	Extent of agreement that audit provides a check on accounting records and systems (5 = Agree, 1 = Disagree)	H2	+
QUALITY	Extent of agreement that audit improves the quality of the financial information (5 = Agree, 1 = Disagree)	H3	+
CREDIBILITY	Extent of agreement that audit improves the credibility of the financial information (5 = Agree, 1 = Disagree)	H4	+
CREDITSCORE	Extent of agreement that audit has a positive effect on the credit rating score (5 = Agree, 1 = Disagree)	H5	+
FAMILY	Whether the company is wholly family-owned (1, 0)	H6	-
EXOWNERS	Whether the company has external shareholders (1, 0)	H7	+
BANK	Whether the statutory accounts are normally given to the bank/lenders (1, 0)	H8	+
EDUCATION	Whether the respondent has qualifications/training in business or management (1, 0)	H9	+

12.2.2 Inferential statistics

Inferential statistics are a group of statistical methods and models used to draw conclusions about a population from quantitative data relating to a random sample.

The term **inferential statistics** stems from the fact that data are collected about a random sample with a view to making inferences about the population. You will remember that a population is a body of people or any collection of items under consideration, and a random sample is a representative subset of the population. Your reason for obtaining a random sample is to obtain estimates of theoretical population parameters. For example, you may want to use the sample mean ($\bar{x}$) and the sample standard deviation (s) to make inferences about the population mean (μ pronounced 'mu') and the population standard deviation (σ pronounced 'sigma'). Traditionally, sample statistics are represented by Roman letters and population parameters are represented by Greek letters.

Inferential statistics include parametric tests and non-parametric tests, and you will need to decide whether parametric or non-parametric tests are appropriate for your data. Parametric tests make certain assumptions about the distributional characteristics of the population under investigation. To determine whether parametric tests are appropriate, you need to establish whether your research data meet the following four basic assumptions. Drawing on Field (2017), these can be summarised as follows:

- The variable is measured on a ratio or interval scale (therefore, you cannot use a parametric test for ordinal or nominal data).
- The data are from a population with a normal distribution (therefore, you cannot use a parametric test for ratio or interval data with a skewed distribution).
- There is homogeneity of variance, which means the variances are stable in a test across groups of subjects, or the variance of one variable is stable at all levels in a test against another variable.
- The data values in the variable are independent (in other words, they come from different cases or the behaviour of one subject does not influence the behaviour of another).

A **normal distribution** is a theoretical frequency distribution that is bell-shaped and symmetrical, with tails extending indefinitely either side of the centre. The mean, median and mode coincide at the centre.

A **Type I error** occurs when H_0 is true, but the test leads to its rejection.

A **Type II error** occurs when H_1 is true, but the test leads to the acceptance of H_0.

The reason why these assumptions are so important is that the calculations that underpin parametric tests are based on the mean of the data values. However, non-parametric tests do not rely on the data meeting these assumptions because the statistical software first arranges the frequencies in size order and then performs the calculations on the ranks rather than the data values. You need to bear in mind that since the ranks are proxies for the information contained in the original data, there is a greater chance the test will lead to the type of incorrect result known as a **Type II error**. This refers to the situation where H_1 is true, but the test leads to the acceptance of H_0 (see Chapter 11). Therefore, in a non-parametric test, you might not be able to detect a significant effect in the ranked data, although one that exists in the original data (Field, 2017). This explains why non-parametric tests are less powerful and the results less reliable than for parametric tests.

If you look at the variables we are going to analyse in Table 12.1, you will see that TURNOVER is the only one that is measured on a ratio or interval scale. Therefore, the first assumption is met for this variable. However, the results of the normality tests we conducted as part of our exploratory analysis in Chapter 11 showed that TURNOVER does not have a normal distribution (it was positively skewed with the majority of companies having a turnover at the smaller end of the scale). Since all the other variables in the analysis are measured on an ordinal or nominal scale, it is clear that the next stage of the analysis must be based on non-parametric tests.

The tests you choose for your study will depend on your hypotheses and your research questions. A typical analysis might start with bivariate analysis to explore differences between two independent or related samples and to test for relationships between variables and measure the strength of those relationships. This might lead to multivariate analysis involving the analysis relating to three or more variables.

Table 12.2 summarises the parametric and non-parametric methods we are going to examine. We will demonstrate the non-parametric methods using the data from the Collis Report (2003) first and then explain the equivalent parametric method. If you have longitudinal data, you will also need to refer to the final sections of the chapter where we discuss indexation methods and time series analysis.

Table 12.2 Bivariate and multivariate analysis

Purpose	For parametric data	For non-parametric data
Tests of difference for independent or dependent samples	*t*-test	Mann-Whitney test
Tests of association between two nominal variables	Not applicable	Chi-square test
Tests of association between two quantitative variables	Pearson's correlation	Spearman's correlation
Predicting an outcome from one or more variables	Linear regression	Logistic regression

12.3 Tests of difference

12.3.1 Mann-Whitney test

If you have non-parametric data for an IV measured on a quantitative scale (a non-normal ratio or interval scale, or an ordinal scale) and a DV containing two independent samples, you can use the Mann-Whitney test to establish whether there is a difference between the two samples. In the Collis Report, VOLAUDIT is the DV. This is a dummy variable relating to whether the company would have a voluntary audit, and is coded 1 = Yes, 0 = No. This gives us our two independent samples or groups of subjects. We are going to use the Mann-Whitney test for each of the following IVs: TURNOVER, which is measured on a non-parametric ratio scale; CHECK, QUALITY, CREDIBILITY and CREDITSCORE, which are measured on an ordinal scale where 1 = Disagree and 5 = Agree. The null hypothesis (H_0) is that there is no difference between the two groups.

Start *SPSS* in the usual way and open the file named Data for 790 cos.sav. The data file is available at macmillanihe.com/Business-Research-5e. We found that the new version of *SPSS* we are illustrating (version 20) does not accept independent variables if you have designated them as ordinal variables. Therefore, before you start the analysis, you will need to switch the data editor to Variable View and categorise them as being measured on a scale.

Although we are going to run five tests, we can instruct *SPSS* to do this in one procedure as follows:

- From the menu, select Analyze ⇒ Nonparametric tests ⇒ Independent samples.
- The dialogue box opens by asking you about your objective. Accept the default, which is Automatically compare distributions across groups, as this leads to the Mann-Whitney test.
- Then click on the Fields tab at the top and move TURNOVER, CHECK, QUALITY, CREDIBILITY and CREDITSCORE to Test Fields box. The order does not matter, but our principle is to list them in the order of the hypotheses shown in Table 12.1 (which coincides with the level of measurement).
- Move VOLAUDIT to Grouping Variable (see Figure 12.1).
- Click ►Run see the output (see Table 12.3).

Although Table 12.3 does not show the test statistic (Mann-Whitney U), it shows the probability value (Sig.) for each of the five tests. Since our hypotheses were one-tailed (they predicted the direction of the relationship), we need to divide the probability values shown in the table for a two-tailed hypothesis by 2. The outcome is unchanged with a very high level of significance ($p \leq 0.01$) and we have evidence to reject the null hypothesis for this test in respect of TURNOVER, CHECK, QUALITY, CREDIBILITY and CREDITSCORE.

If you have two sets of scores from the same subjects, you would use the Wilcoxon W test and its associated z score instead of the Mann-Whitney test. For example, you may have conducted a longitudinal study where you have data from the same subjects that relate to the same variable collected on a previous occasion.

12.3.2 t-test

If you have parametric data for an IV measured on a ratio or interval scale and a DV containing two independent samples, you can use the independent *t*-test to establish whether there is a difference between the two samples or groups of subjects. The null hypothesis is that there is no difference between the two groups.

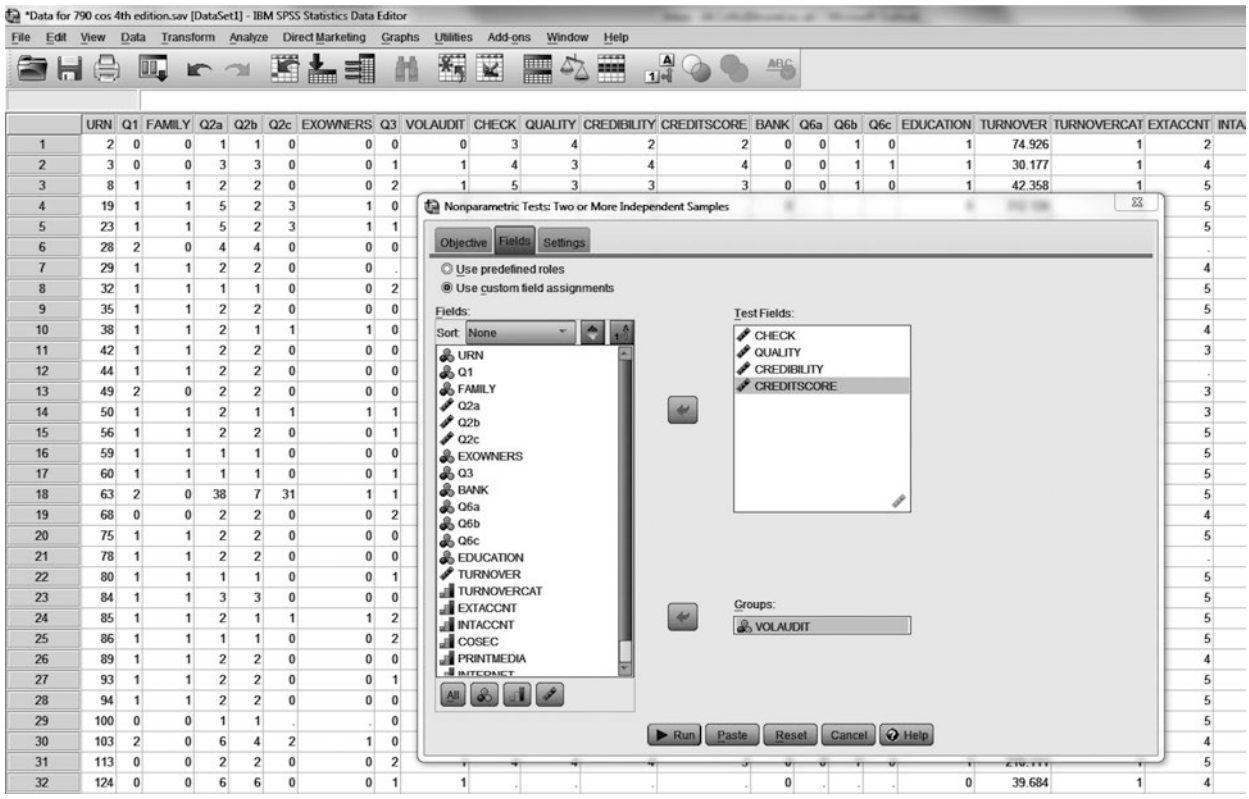


Figure 12.1 Running a Mann-Whitney test

Table 12.3 Mann-Whitney test for VOLAUDIT against TURNOVER, CHECK (Q4a), QUALITY (Q4b), CREDIBILITY (Q4c) and CREDITSCORE (Q4d)

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of Turnover £k is the same across categories of Q3.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
2	The distribution of Q4a is the same across categories of Q3.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
3	The distribution of Q4b is the same across categories of Q3.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
4	The distribution of Q4c is the same across categories of Q3.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.
5	The distribution of Q4d is the same across categories of Q3.	Independent-Samples Mann-Whitney U Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

In a research design where independent samples are used, you might take groups to participate in difference phases of an experiment. Perhaps you are interested in the fuel consumption of vehicles where some drivers have been on a safe driving course and others have not. The first group is the experimental group and the second group is the control group. One problem with this is that because the two groups are independent, any difference could be due to other factors; for example, some drivers may be more experienced or more cautious than others. One way round this problem is to adopt a paired-samples design. In this case, you would match a driver in the experimental group with a driver in the control group, who has similar characteristics that might affect his or her driving performance (for example, driving experience, accident rate and age). You will also need to use the paired-sample *t*-test for dependent samples if you have two sets of data for a single group of subjects.

The *t*-test was not used in the Collis Report, but if you want to find it on *SPSS*, the procedure is as follows:

- From the menu, select Analyze ⇒ Compare Means ⇒ Independent-Samples T Test… (or Paired-Samples T Test…).
- Move the appropriate variables into the Test variable(s) and Grouping variable boxes and then click the Define groups to identify the two groups.

The *SPSS* output for an independent *t*-test provides a table with descriptive statistics, which is followed by a second table, which requires a little explanation because you need to decide which of the two rows of results are relevant. You need to look first at the results of the Levene's Test for Equality of Variances. If the probability statistic (Sig.) is not significant ($p > 0.05$), you should refer to the *t*-test results in the row labelled Equal variances assumed. Conversely, if the probability statistic (Sig.) for the Levene's test is significant ($p \leq 0.05$), you should refer to the *t*-test results in the row labelled Equal variances not assumed.

As discussed in the previous section, if you have predicted the direction of the relationship in your hypothesis, you will need to divide the probability value for the *t*-test by 2. If the result is significant ($p \leq 0.05$), we have evidence to reject the null hypothesis that there is no difference between the two groups.

12.3.3 Generalisability test

Now you know how to conduct a test of difference between two samples or two groups, we can explain how you can use it to test whether you can generalise results you have obtained from a sample to the population. In Chapter 10, we drew your attention to the problem of questionnaire non-response. This occurs when you conduct a questionnaire survey, but do not receive responses from all the members of your random sample. Therefore, you will be concerned that the data may not be representative of the population. The seminal paper by Wallace and Mellor (1988) suggests three methods for testing for questionnaire non-response:

- Compare the characteristics of early respondents with those of late respondents, on the basis that late respondents are likely to be similar to non-respondents. One method of doing this is to send a follow-up request to non-respondents. If you intend to do this, you will need to keep a record of who replies and when. In a postal questionnaire survey, you are advised to send a fresh copy of the questionnaire (perhaps printed on different coloured paper or with an identifying symbol in addition to the unique reference number). You then use a Mann-Whitney test or *t*-test as appropriate (see above) to compare the characteristics of those responding to the follow-up request (late respondents) with those of the early respondents. If there is no significant difference, you may conclude that your sample does not suffer from non-response bias.
- Compare the characteristics of your respondents with those of the population (assuming you know them) using one of the tests of difference mentioned above. If there is no significant difference, you may conclude that your sample does not suffer from non-response bias.
- Compare the characteristics of your respondents with those of the non-respondents in the sample (assuming you know them) using one of the tests of difference mentioned above. If there is no significant difference, you may conclude that your sample does not suffer from non-response bias.

12.4 Tests of association and correlation

12.4.1 Chi-square test

If you have non-parametric data for two variables measured on a nominal scale, you will remember from the previous chapter that you can use a cross-tabulation as part of your bivariate analysis. If the two variables each contain two categories, a cross-tabulation produces a 2 × 2 table containing 2 columns and 2 rows, with 4 cells altogether. We are going to take this a step further by conducting a chi-square (χ^2) test to find out whether there is a statistically significant association between the column and row categories. For a 2 × 2 table, the test is based on the assumption that the expected counts in each cell will be 5 or more (Moore *et al.*, 2009) and compares the observed frequencies (actual counts) with the expected frequencies (theoretical counts).

We are going to measure the association between the two groups in our DV (VOLAUDIT) and the dummy variables that represent the remaining IVs in the analysis: FAMILY, EXOWNERS, BANK and EDUCATION. The null hypothesis (H_0) we are testing is that there is no association between the two categories in each variable. Although we are going to run four tests, we can instruct *SPSS* to do this in one procedure as follows:

- From the menu at the top, select Analyze ⇒ Descriptive Statistics… ⇒ Crosstabs.
- Move FAMILY, EXOWNERS, BANK and EDUCATION into Row(s).
- Move VOLAUDIT into Column(s).
- Select Statistics and click Chi-square and Continue.
- Select Cells. Under Counts, you will see that Observed is the default, but also click Expected. Under Percentages, click Column and Continue (see Figure 12.2).
- Then click OK to see the output (see Table 12.4).

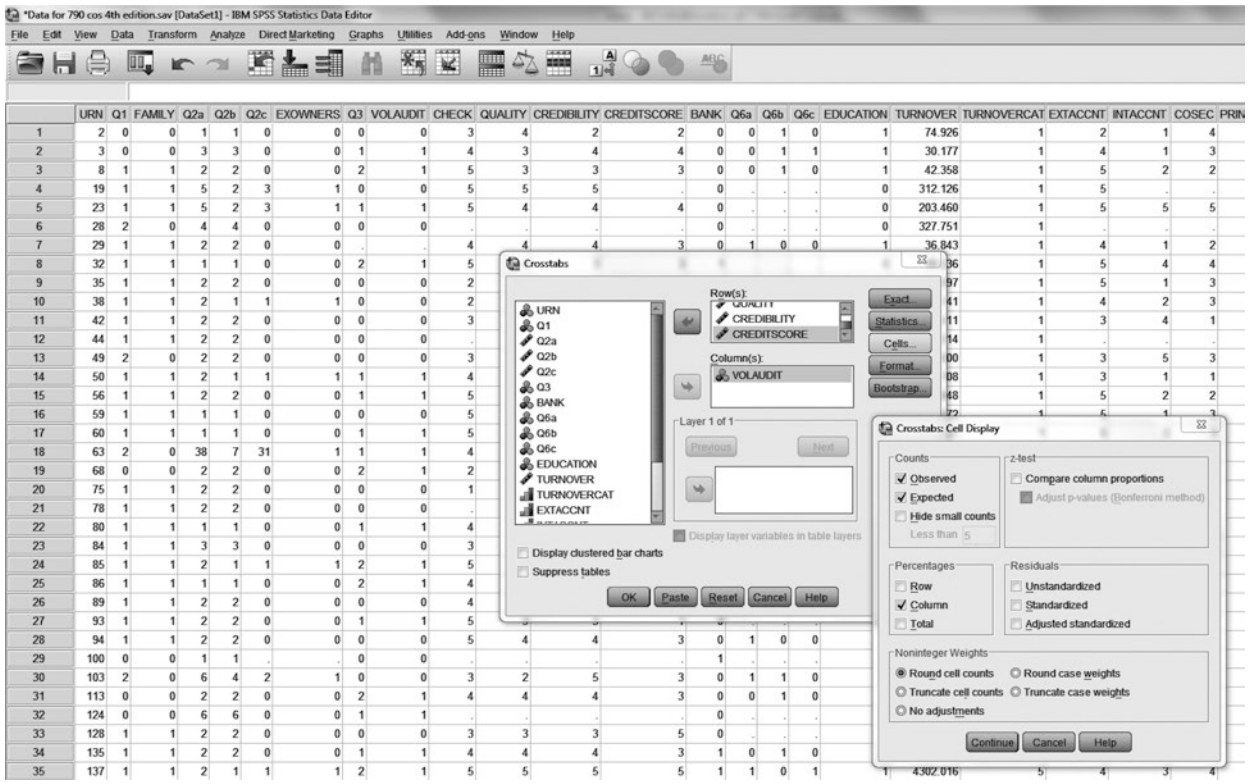


Figure 12.2 Running a chi-square test

Table 12.4 Chi-square tests for VOLAUDIT against FAMILY, EXOWNERS, BANK and EDUCATION

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
FAMILY * VOLAUDIT	767	97.1%	23	2.9%	790	100.0%
EXOWNERS * VOLAUDIT	690	87.3%	100	12.7%	790	100.0%
BANK * VOLAUDIT	772	97.7%	18	2.3%	790	100.0%
EDUCATION * VOLAUDIT	772	97.7%	18	2.3%	790	100.0%

FAMILY * VOLAUDIT

Crosstab

			VOLAUDIT		
			0 Otherwise	1 Yes	Total
FAMILY	0 Otherwise	Count	102	144	246
		Expected Count	138.9	107.1	246.0
		% within VOLAUDIT	23.6%	43.1%	32.1%
	1 Wholly family-owned	Count	331	190	521
		Expected Count	294.1	226.9	521.0
		% within VOLAUDIT	76.4%	56.9%	67.9%
	Total	Count	433	334	767
		Expected Count	433.0	334.0	767.0
		% within VOLAUDIT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	33.103[a]	1	.000		
Continuity Correction[b]	32.212	1	.000		
Likelihood Ratio	33.031	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	33.060	1	.000		
N of Valid Cases	767				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 107.12.

b. Computed only for a 2×2 table.

EXOWNERS * VOLAUDIT

Crosstab

			VOLAUDIT		
			0 Otherwise	1 Yes	Total
EXOWNERS	0 Otherwise	Count	338	232	570
		Expected Count	318.0	252.0	570.0
		% within VOLAUDIT	87.8%	76.1%	82.6%
	1 External owners	Count	47	73	120
		Expected Count	67.0	53.0	120.0
		% within VOLAUDIT	12.2%	23.9%	17.4%
	Total	Count	385	305	690
		Expected Count	385.0	305.0	690.0
		% within VOLAUDIT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	16.289[a]	1	.000		
Continuity Correction[b]	15.483	1	.000		
Likelihood Ratio	16.210	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	16.266	1	.000		
N of Valid Cases	690				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 53.04.

b. Computed only for a 2×2 table.

BANK * VOLAUDIT

Crosstab

			VOLAUDIT		
			0 Otherwise	1 Yes	Total
BANK	0 Otherwise	Count	264	116	380
		Expected Count	215.6	164.4	380.0
		% within VOLAUDIT	60.3%	34.7%	49.2%
	1 Yes	Count	174	218	392
		Expected Count	222.4	169.6	392.0
		% within VOLAUDIT	39.7%	65.3%	50.8%
	Total	Count	438	334	772
		Expected Count	438.0	334.0	772.0
		% within VOLAUDIT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	49.468[a]	1	.000		
Continuity Correction[b]	48.452	1	.000		
Likelihood Ratio	50.092	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	49.404	1	.000		
N of Valid Cases	772				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 164.40.

b. Computed only for a 2×2 table.

EDUCATION * VOLAUDIT

Crosstab

			VOLAUDIT		
			0 Otherwise	1 Yes	Total
EDUCATION	0 Otherwise	Count	124	105	229
		Expected Count	129.9	99.1	229.0
		% within VOLAUDIT	28.3%	31.4%	29.7%
	1 Yes	Count	314	229	543
		Expected Count	308.1	234.9	543.0
		% within VOLAUDIT	71.7%	68.6%	70.3%
	Total	Count	438	334	772
		Expected Count	438.0	334.0	772.0
		% within VOLAUDIT	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.888[a]	1	.346		
Continuity Correction[b]	.744	1	.388		
Likelihood Ratio	.886	1	.347		
Fisher's Exact Test				.382	.194
Linear-by-Linear Association	.887	1	.346		
N of Valid Cases	772				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 99.08.

b. Computed only for a 2×2 table.

Do not be alarmed by the quantity of tables produced! It is simply that after reporting on the number of cases in each test, *SPSS* generates a cross-tabulation and a table showing the results of the chi-square tests for each pair of variables tested. We will start by looking at the latter.

We are interested in the chi-square statistic in the first row, which bears the name of Karl Pearson, who proposed the chi-square test in 1900, following the publication of his work on correlation in 1895–8 (Upton and Cook, 2006; Moore *et al.*, 2009). Any deviation from the null hypothesis makes the chi-square value larger. We also need to look at the probability statistic for Pearson's chi-square, which is shown in the third column of the first row under Asymp. Sig. (2-sided). Since our hypotheses are all one-sided, we need to divide the probability statistic by 2. Apart from EDUCATION, the significance levels for the variables tested are very high ($p < 0.01$). However, we must check the notes beneath each table to confirm that none of the cells have an expected count of less than 5, which can be a problem with a small sample. However, the notes confirm that this assumption of the test is met. Therefore, we have evidence to reject the null hypothesis of no association in respect of FAMILY, EXOWNERS and BANK.

We need to look at the percentages in the cells of the cross-tabulations to interpret the association. These tell us that demand for voluntary audit is associated with companies that are not wholly family-owned, have external owners or give their accounts to the bank/lenders but not with the characteristics of the respondent captured by EDUCATION. This means we must accept the null hypothesis for H9.

12.4.2 Correlation

Correlation is a measure of the direction and strength of association between two quantitative variables. Correlation may be linear or non-linear, positive or negative.

We are now going to examine **correlation** in more detail. In statistics, correlation refers to an association between two quantitative variables (thus excluding those measured on a nominal scale) and it measures the direction and strength of any linear relationship between them. Most of the statistics used in the social sciences are based on linear (straight-line) models. In statistics, a correlation coefficient is 'a measure of the linear dependence of one numerical random variable on another' (Upton and Cook, 2006, p. 101). The two variables are not referred to as the DV and the IV because they are measured simultaneously, which means that no cause-and-effect relationship can be established (Field, 2017).

The correlation coefficient is measured within the range –1 to +1. The direction of the correlation is positive if both variables increase together, but it is negative if one variable increases as the other decreases. The strength of the correlation is measured by the size of the correlation coefficient:

1 represents a perfect positive linear association
0 represents no linear association
−1 represents a perfect negative linear association

Therefore, values in between can be graded roughly as:

0.90 to 0.99 (very high positive correlation)
0.70 to 0.89 (high positive correlation)
0.40 to 0.69 (medium positive correlation)
0 to 0.39 (low positive correlation)
0 to −0.39 (low negative correlation)
−0.40 to −0.69 (medium negative correlation)
−0.70 to −0.89 (high negative correlation)
−0.90 to −0.99 (very high negative correlation)

You need to take care when interpreting correlation coefficients, since correlation between two variables does not prove the existence of a causal link between them: two causally unrelated variables can be correlated because they both relate to a third variable. For example, the sales of ice cream and suntan lotion may be correlated because they both relate to higher temperatures.

Bivariate scatterplot

If you have parametric data, a preliminary step is to generate a display of the relationship between the two quantitative variables using a simple scatterplot. One variable is plotted against the other on a graph as a pattern of points, which indicates the direction and strength of any linear correlation. The more the points cluster around a straight line, the stronger the correlation.

- If the points tend to cluster around a line that runs from the lower left to the upper right of the graph, the correlation is positive, as shown in Figure 12.3. Positive correlation occurs when an increase in the value of one variable is associated with an increase in the

value of the other. For example, an increase in the volume of orders from customers may be associated with increased calls to customers by the sales representatives.

- If points tend to cluster around a line that runs from the upper left to the lower right of the graph, the correlation is negative, as shown in Figure 12.4. Negative correlation occurs when an increase in the value of one variable is associated with a decrease in the value of the other. For example, higher interest rates for borrowing may be associated with lower house sales.
- If the points are scattered randomly throughout the graph, there is no correlation between the two variables as shown in Figure 12.5. Alternatively, the pattern may show non-linear correlation as illustrated in Figure 12.6.

Using *SPSS*, the general procedure is as follows:

- From the menu at the top, select Graphs ⇒ Legacy Dialogs ⇒ Scatter/Dot.
- The default is a simple scatterplot, but you will see that you have other choices.
- Click on Define and move one variable into the Y Axis box and the other into the X Axis box.
- If you want different symbols or different coloured dots for different groups in the sample, move a third variable into the Set Markers by box. For example, if you used BANK, companies giving their accounts to the bank could be shown with a currency symbol and the default dot could be retained for the others.
- With a small data set, you can move a variable into the Label Cases by box to use the value labels to label the points on the plot. For example, if you used ID, the points would be labelled with the case numbers; alternatively, you could use the case numbers to label any outliers.
- Move one or more variables that contain groups into the Panel by boxes to generate a matrix of charts for each group. For example, if you used FAMILY, you could generate one chart for the companies that are wholly family-owned and another for the remainder.

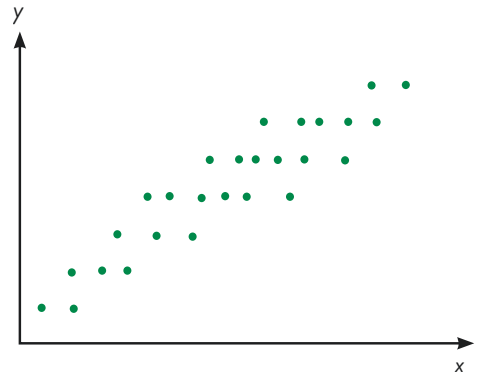


Figure 12.3 Scatterplot showing positive linear correlation

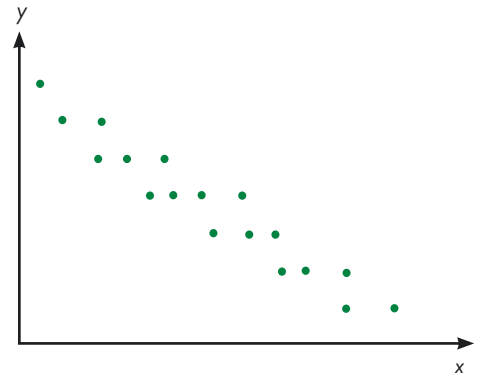


Figure 12.4 Scatterplot showing negative linear correlation

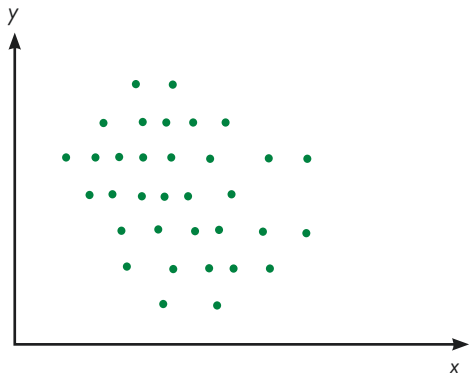


Figure 12.5 Scatterplot showing no correlation

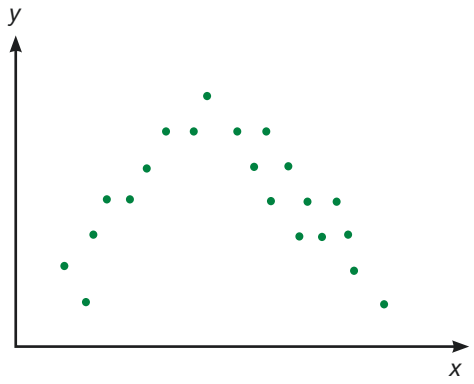


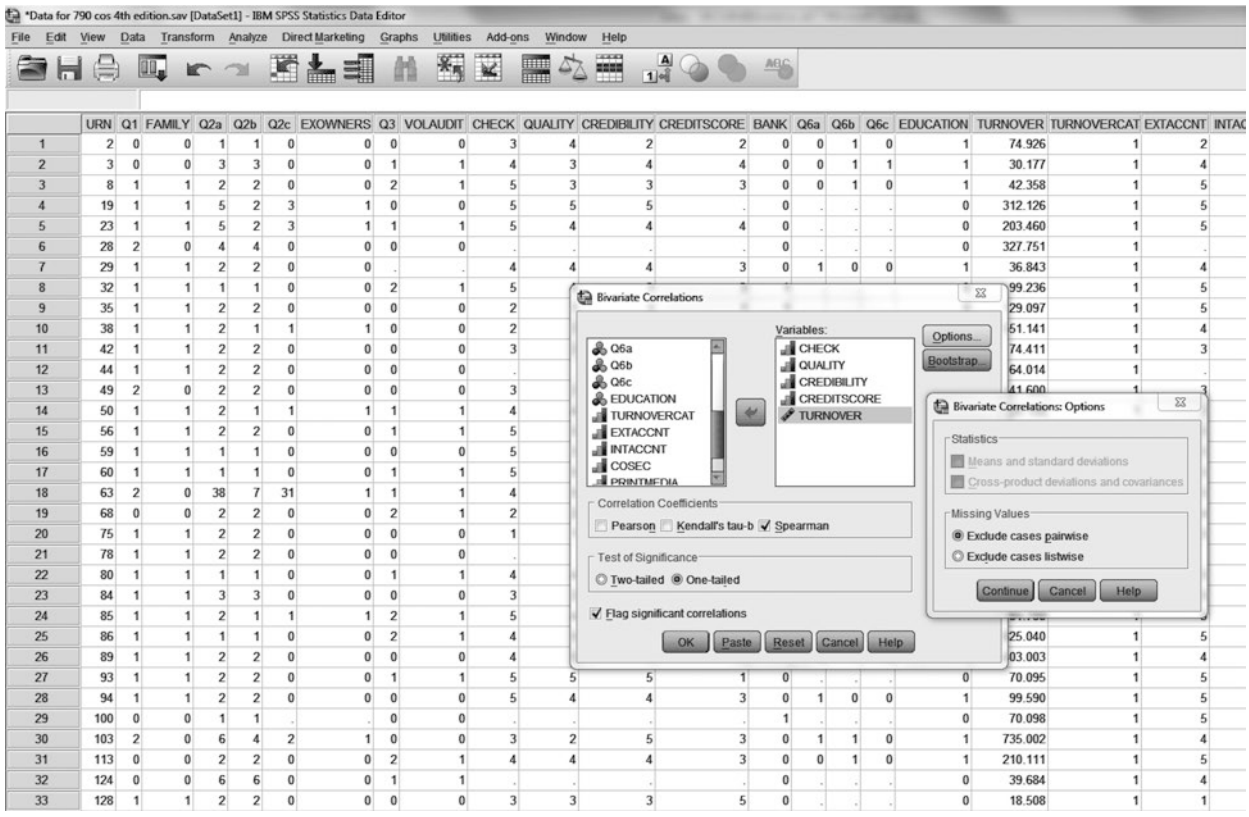
Figure 12.6 Scatterplot showing non-linear correlation

Spearman's correlation

If you have non-parametric data for two variables measured on a ratio, interval or ordinal scale (including dichotomous variables which it can be argued are measured on a ratio scale), you can use Spearman's rank correlation coefficient or Spearman's rho (r_S) to measure the linear association between the variables. This overcomes the problem that the data are non-parametric by placing the data values in order of size and then examining differences in the rankings of one variable compared to the other.

We are going to use Spearman's rank correlation coefficient to measure the correlation between CHECK, QUALITY, CREDIBILITY, CREDITSCORE and TURNOVER. The null hypothesis (H_0) we are testing is that there is no correlation between any two variables and we can instruct *SPSS* to do this in one procedure as follows:

- From the menu at the top, select Analyze ⇒ Correlate ⇒ Bivariate…
- Move TURNOVER, CHECK, QUALITY, CREDIBILITY and CREDITSCORE into Variables.
- Under Correlation Coefficients, deselect Pearson and then select Spearman.
- Under Test of Significance, click One-tailed and accept the default to Flag significant correlations.
- Under Options, you will see that the default for missing values is to Exclude cases pairwise, which we will accept, so you can now click Continue (see Figure 12.7).
- Then click OK to see the output (see Table 12.5).



	URN	Q1	FAMILY	Q2a	Q2b	Q2c	EXOWNERS	Q3	VOLAUDIT	CHECK	QUALITY	CREDIBILITY	CREDITSCORE	BANK	Q6a	Q6b	Q6c	EDUCATION	TURNOVER	TURNOVERCAT	EXTACCNT	INTAC
1	2	0	0	1	1	0	0	0	0	3	4	2	2	0	0	1	0	1	74.926	1	2	
2	3	0	0	3	3	0	0	1	1	4	3	4	4	0	0	1	1	1	30.177	1	4	
3	8	1	1	2	2	0	0	2	1	5	3	3	3	0	0	1	0	1	42.358	1	5	
4	19	1	1	5	2	3	1	0	0	5	5	5	.	0	.	.	.	0	312.126	1	5	
5	23	1	1	5	2	3	1	1	1	5	4	4	4	0	.	.	.	0	203.460	1	5	
6	28	2	0	4	4	0	0	0	0	.	.	.	.	0	.	.	.	0	327.751	1	.	
7	29	1	1	2	2	0	0	.	.	4	4	4	3	0	1	0	0	1	36.843	1	4	
8	32	1	1	1	1	0	0	2	1	5									99.236	1	5	
9	35	1	1	2	2	0	0	0	0	2									29.097	1	5	
10	38	1	1	2	1	1	1	0	0	2									51.141	1	4	
11	42	1	1	2	2	0	0	0	0	3									74.411	1	3	
12	44	1	1	2	2	0	0	0	0	.									64.014	1	.	
13	49	2	0	2	2	0	0	0	0	3									41.600	1	3	
14	50	1	1	2	1	1	1	1	1	4												
15	56	1	1	2	2	0	0	1	1	5												
16	59	1	1	1	1	0	0	0	0	5												
17	60	1	1	1	1	0	0	1	1	5												
18	63	2	0	38	7	31	1	1	1	4												
19	68	0	0	2	2	0	0	2	1	2												
20	75	1	1	2	2	0	0	0	0	1												
21	78	1	1	2	2	0	0	0	0	.												
22	80	1	1	1	1	0	0	1	1	4												
23	84	1	1	3	3	0	0	0	0	3												
24	85	1	1	2	1	1	1	2	1	5												
25	86	1	1	1	1	0	0	2	1	4									25.040	1	5	
26	89	1	1	2	2	0	0	0	0	4									03.003	1	4	
27	93	1	1	2	2	0	0	1	1	5	5	5	1	0	.	.	.	0	70.095	1	5	
28	94	1	1	2	2	0	0	0	0	5	4	4	3	0	1	0	0	1	99.590	1	5	
29	100	0	0	1	1	.	.	0	0	.	.	.	.	1	.	.	.	0	70.098	1	5	
30	103	2	0	6	4	2	1	0	0	3	2	5	3	0	1	1	0	1	735.002	1	4	
31	113	0	0	2	2	0	0	2	1	4	4	4	3	0	0	1	0	1	210.111	1	5	
32	124	0	0	6	6	0	0	1	1	.	.	.	.	0	.	.	.	0	39.684	1	4	
33	128	1	1	2	2	0	0	0	0	3	3	3	5	0	.	.	.	0	18.508	1	1	

Figure 12.7 Running Spearman's rank correlation

Table 12.5 Spearman's rank correlation for TURNOVER, CHECK, QUALITY, CREDIBILITY and CREDITSCORE

Correlations

			TURNOVER	CHECK	QUALITY	CREDIBILITY	CREDITSCORE
Spearman's rho	TURNOVER	Correlation Coefficient	1.000	.106**	.112**	.180**	.179**
		Sig. (1-tailed)	.	.003	.002	.000	.000
		N	790	697	687	688	681
	CHECK	Correlation Coefficient	.106**	1.000	.606**	.609**	.467**
		Sig. (1-tailed)	.003	.	.000	.000	.000
		N	697	697	681	682	674
	QUALITY	Correlation Coefficient	.112**	.606**	1.000	.651**	.529**
		Sig. (1-tailed)	.002	.000	.	.000	.000
		N	687	681	687	681	671
	CREDIBILITY	Correlation Coefficient	.180**	.609**	.651**	1.000	.532**
		Sig. (1-tailed)	.000	.000	.000	.	.000
		N	688	682	681	688	670
	CREDITSCORE	Correlation Coefficient	.179**	.467**	.529**	.532**	1.000
		Sig. (1-tailed)	.000	.000	.000	.000	.
		N	681	674	671	670	681

** Correlation is significant at the 0.01 level (1-tailed).

The results in Table 12.5 are somewhat confusing because the statistics are shown for every possible pairing and this means some information is repeated. For convenience, we have added a shaded background to the duplicated information. We will now examine the results in the cells without shading. A correlation coefficient of 1 (shown as 1.000) indicates perfect positive correlation. You can see this in the results where a variable is paired with itself. In all the other bivariate tests, you can see that the probability statistic (Sig. 1-tailed) tells us that the results are significant at the 1% level ($p = \leq 0.01$). Therefore, we can conclude that there is evidence to reject the null hypothesis of no correlation, but you need to remember that this does not mean we have established causality because there may be several explanatory variables.

One of the reasons for conducting this analysis is to check for potential **multicollinearity**. This occurs when the correlation between independent (predictor) variables in a multiple regression model is very high (≥ 0.90) (Kervin, 1992). This can make it hard to identify the separate effects of the independent variables and can give rise to wider confidence intervals and less reliable probability values for the independent variables. Therefore, it is essential to establish that there is no major 'overlap' in the predictive power of the variables. If two predictor variables are highly related, it means that either would be almost as effective as the other on its own. Therefore, the solution is to exclude the one with less theoretical importance to the research.

Multicollinearity refers to the existence of very high correlation (≥ 0.90) between independent variables in a multiple regression mode, which can give rise to less reliable statistical inferences.

If you look at the correlation coefficients in our results, none of them are higher than 0.7, which means that the strength of the correlation is not likely to be a problem at the next stage where we will be using multiple regression analysis.

Pearson's correlation

If you have parametric data for two continuous variables, you can use Pearson's product-moment correlation coefficient (r) to measure the linear association between the variables. You will remember that a continuous variable is a ratio or interval variable measured on a scale where the data can take any value within a given range (for example, turnover or assets but not number of employees). The null hypothesis (H_0) is that there is no correlation between the two variables and the procedure in *SPSS* is as follows:

- From the menu at the top, select Analyze ⇒ Correlate ⇒ Bivariate…
- Move the appropriate variables into the Variables box.
- Under Correlation Coefficients, accept the default, which is Pearson.
- Under Test of Significance, select One-tailed if your hypotheses specify the direction of the correlation and accept the default to Flag significant correlations.
- Under Options, accept the default for missing values, which is to Exclude cases pairwise, so you can click Continue and OK.

When writing up your research (see Chapter 13), you could use Table 12.8 (see section 12.4.4) as a model for presenting a Spearman's correlation matrix (if you have non-parametric data for two variables measured on a ratio, interval or ordinal scale) or a Pearson's correlation matrix (if you have parametric data for two continuous variables).

12.4.3 Reliability tests

In Chapter 10, we mentioned that if you decide to use a rating scale to measure an abstract concept such as an ability or trait that is not directly observable (in other words, your explanatory variable is a hypothetical construct), you will want to be sure that the scale will measure the respondents' views reliably. The **reliability** of a measure refers to its consistency. The measure is reliable if you or someone else repeats the research and obtains the same results.

Reliability refers to the accuracy and precision of the measurement and absence of differences in the results if the research were repeated.

There are a number of ways of estimating the reliability of a scale measure. For example, the external reliability of a job satisfaction survey can be tested by asking the same group of people who completed the questionnaire to answer it again a few days later. The test–retest reliability requires two sets of responses for each person, which you compare by checking the correlation (see previous section). If the responses are reliable, there will be high positive correlation between the two sets (preferably ≥ 0.8). The drawback of the test–retest method is that it is often difficult to persuade respondents to answer questions a second time. Moreover, if they do agree to do this, they may think more deeply about the questions on the second occasion and give different answers.

Internal reliability is particularly important if you are using multiple-item scales. As the name suggests, the split-half reliability is tested by dividing the items in the scale into two equal groups (for example, by placing odd numbered items in one group and even numbered items in another group). You then check the correlation coefficient of the two groups as above. This method offers the advantage that the questionnaire is only administered once.

Cronbach's alpha coefficient is one of the most widely used tests for checking the internal reliability of multiple-item scales. Each item is correlated with every other item that relates to the construct across the sample and the average inter-item correlation is taken as the index of reliability. Before you run the test, you need to reverse the rating scores relating to any negatively worded items. In the example shown in Box 12.2, the researcher is developing a multi-item scale to measure the concept of the professional organisation as a major reference. The dimensions in items (a), (b), (d), (e) and (g) are worded positively, but the wording in items (c) and (f) are negatively worded to avoid response bias. This means that unlike the other items, the highest number in the rating scale for items (c) and (f) indicates the lowest level of reference to the professional organisation. Therefore, you need to recode scores of 5, 4, 2 and 1 for items (c) and (d) as 1, 2, 4 and 5, respectively (see Chapter 11).

Box 12.2 Multi-item scale

1. Please indicate your level of agreement with the following statements regarding the professional body of which you are a member.
(Circle the number closest to your view)

	Agree				Disagree
(a) I attend the local meetings of my professional body	5	4	3	2	1
(b) I participate in professional development workshops for members	5	4	3	2	1
(c) I do not read the newsletters and reports sent by my professional body	5	4	3	2	1
(d) I do read about new issues on the website of my professional body	5	4	3	2	1
(e) I use the technical information on the website of my professional body	5	4	3	2	1
(f) I do not use the technical information on the websites of other professional bodies	5	4	3	2	1
(g) I contact my professional body if I need technical support	5	4	3	2	1

The procedure for calculating Cronbach's alpha coefficient in *SPSS* is as follows:

- From the menu at the top, select Analyze ⇒Scale ⇒ Reliability Analysis…
- Move the items that make up the scale the Items box.
- In the Model box accept the default, which is Alpha.
- Select Statistics and under Descriptives for select Item, Scale and Scale if item deleted. Under Inter-Item select Correlations.
- Click Continue and OK.

Look at the reliability statistics for the main result. If the scale is reliable, Cronbach's alpha should be ≥ 0.8. If the result is much lower than this, you may want to consider excluding any item with a low item-total correlation. If you look at the item-total statistics, you will see the alpha if the item is deleted. If your scale has fewer than ten items, this may also be a reason for a low alpha.

Factor analysis identifies which variables in a set of variables measured on a rating scale are interrelated, on the basis that each variable could be measuring a different aspect of an underlying concept.

12.4.4 Factor analysis

Factor analysis is used to identify which variables in a set of variables measured on a rating scale (for example, a Likert scale) are closely related to one another, on the basis that each variable in the set could be measuring a different aspect of an underlying concept (Field, 2017). The purpose of the analysis is to reduce the variables to a smaller set of composite variables (the components or factors). The factor scores represent the relative importance of the variables to each factor. The factors can be used to describe and explain patterns of

relationship among the original variables. They can also be used in a subsequent linear regression analysis, which overcomes any problems with multicollinearity.

Most factor analysis is exploratory. Confirmatory factor analysis is used to test hypotheses about the interrelationships of variables and is widely applied in business research. In confirmatory factor analysis, the factors are rotated to maximise their correlation with some variables and minimise them with others, which makes the factors easier to interpret. On the other hand, principal components analysis excludes the rotation stage and is usually more difficult to interpret (Kervin, 1992).

We are going to illustrate confirmatory factor analysis using data from Collis (2003), although the results were not included in the Collis Report. One of the survey questions asked the directors to rate the importance of various sources of information for keeping up to date with matters relating to the statutory annual accounts and the audit using a rating scale of 1 to 5, where 5 = important; 3 = neutral and 1 = not important. Table 12.6 shows their responses.

Table 12.6 Sources for keeping up to date on statutory accounting and auditing

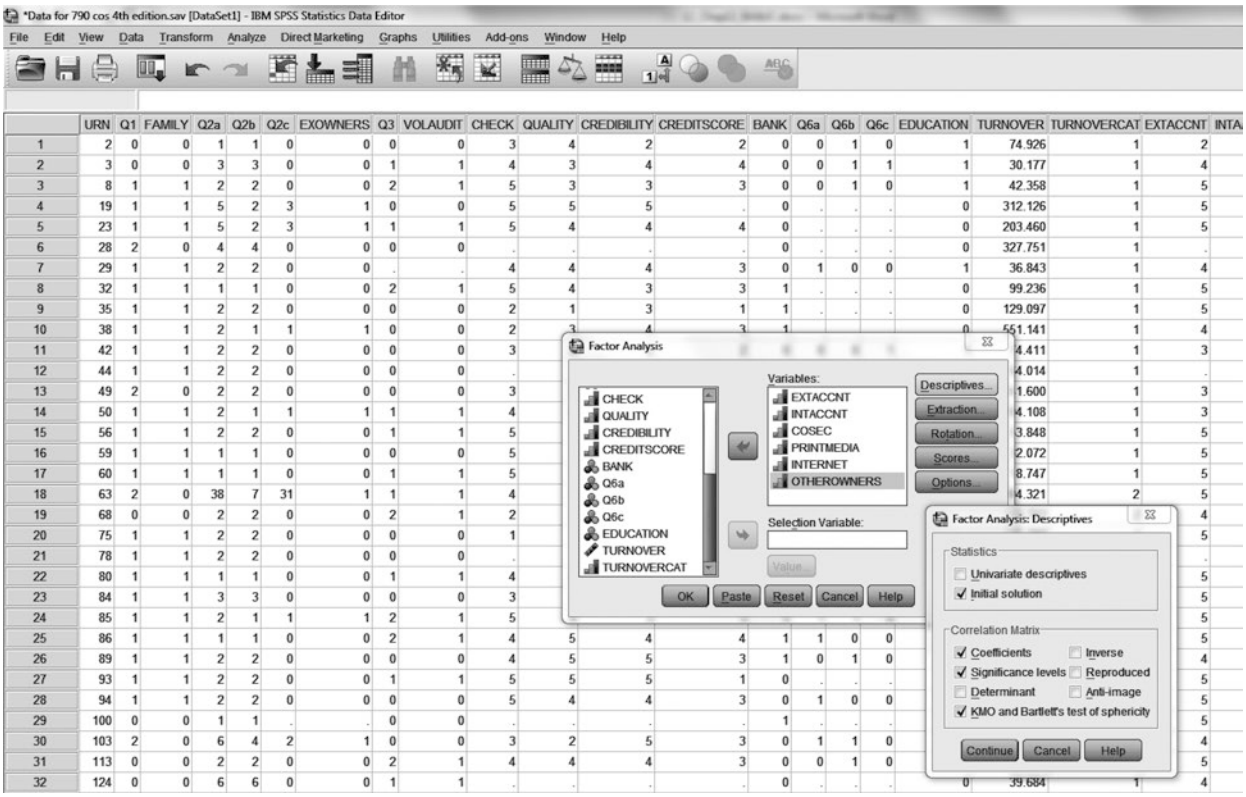
Source	Important			Not important		Total
	5	4	3	2	1	
External accountant	402	151	90	37	60	740
Internal accountant	132	98	125	75	225	655
Company secretary	88	94	164	104	225	675
Newspapers, journals and other publications	57	101	239	132	165	694
Internet	33	87	178	147	230	675
Other business owners	30	93	172	126	239	660

N = 790

The variables in the analysis are those from Table 12.6, which are labelled EXTACCNT, INTACCNT, COSEC, MEDIA, INTERNET and OTHEROWNERS, respectively. The procedure in *SPSS* is as follows:

From the menu at the top, select Analyze ⇒ Dimension Reduction ⇒ Factor…

- Move the appropriate variables into the Variables box (see Figure 12.8).
- Select Descriptives… and accept the default of initial solution under Statistics; under Correlation Matrix select Coefficients, Significance levels and KMO and Bartlett's test of sphericity. The KMO (Kaiser–Meyer–Olkin) value gives you a measure of sampling adequacy and the Bartlett's test checks the assumption of sphericity (a form of compound symmetry). Click Continue.
- Now select Extraction… and accept the default, Principal Components, as the method and under Analyze accept the default of a Correlation matrix; under Display accept the default which is the Unrotated factor solution; under Extract accept the default of Eigenvalues greater than 1. Click Continue.
- Now select Rotation… and select Varimax, which maximises the tendency of each variable to load highly on only one factor (select Direct Oblimin if you have theoretical reasons to presume that certain factors will interrelate). Under Display, accept the default which is for the Rotated solution.
- If you want to save the factor scores as variables (for example, if you plan to use them instead of the original variables in a regression analysis), now select Scores… and select the Anderson–Rubin method if you want to ensure that the factor scores are uncorrelated, and the Regression method if correlation between factor scores is acceptable.
- Finally, select Options… and under Missing Values select Exclude cases pairwise to exclude cases with missing data; under Coefficient Display Format select Sorted by size and Suppress small coefficients, selecting Absolute values less than .40 as the appropriate level, and click Continue (see Figure 12.8).
- Then click OK to see the output (see Table 12.7).



	URN	Q1	FAMILY	Q2a	Q2b	Q2c	EXOWNERS	Q3	VOLAUDIT	CHECK	QUALITY	CREDIBILITY	CREDITSCORE	BANK	Q6a	Q6b	Q6c	EDUCATION	TURNOVER	TURNOVERCAT	EXTACCNT	INTA
1	2	0	0	1	1	0	0	0	0	3	4	2	2	0	0	1	0	1	74.926	1	2	
2	3	0	0	3	3	0	0	1	1	4	3	4	4	0	0	1	1	1	30.177	1	4	
3	8	1	1	2	2	0	0	2	1	5	3	3	3	0	0	1	0	1	42.358	1	5	
4	19	1	1	5	2	3	1	0	0	5	5	5	.	0	.	.	.	0	312.126	1	5	
5	23	1	1	5	2	3	1	1	1	5	4	4	4	0	.	.	.	0	203.460	1	5	
6	28	2	0	4	4	0	0	0	0	.	.	.	.	0	.	.	.	0	327.751	1	.	
7	29	1	1	2	2	0	0	.	.	4	4	4	3	0	1	0	0	1	36.843	1	4	
8	32	1	1	1	1	0	0	2	1	5	4	3	3	1	.	.	.	0	99.236	1	5	
9	35	1	1	2	2	0	0	0	0	2	1	3	1	1	.	.	.	0	129.097	1	5	
10	38	1	1	2	1	1	1	0	0	2	3	4	3	1	.	.	.	0	551.141	1	4	
11	42	1	1	2	2	0	0	0	0	3	.	.	.	.	.	.	.	.	4.411	1	3	
12	44	1	1	2	2	0	0	0	0	.	.	.	.	.	.	.	.	.	4.014	1	.	
13	49	2	0	2	2	0	0	0	0	3	.	.	.	.	.	.	.	.	1.600	1	3	
14	50	1	1	2	1	1	1	1	1	4	.	.	.	.	.	.	.	.	4.108	1	3	
15	56	1	1	2	2	0	0	1	1	5	.	.	.	.	.	.	.	.	3.848	1	5	
16	59	1	1	1	1	0	0	0	0	5	.	.	.	.	.	.	.	.	2.072	1	5	
17	60	1	1	1	1	0	0	1	1	5	.	.	.	.	.	.	.	.	8.747	1	5	
18	63	2	0	38	7	31	1	1	1	4	.	.	.	.	.	.	.	.	4.321	2	5	
19	68	0	0	2	2	0	0	2	1	2	.	.	.	.	.	.	.	.	.	.	4	
20	75	1	1	2	2	0	0	0	0	1	.	.	.	.	.	.	.	.	.	.	5	
21	78	1	1	2	2	0	0	0	0	.	.	.	.	.	.	.	.	.	.	.	.	
22	80	1	1	1	1	0	0	1	1	4	.	.	.	.	.	.	.	.	.	.	5	
23	84	1	1	3	3	0	0	0	0	3	.	.	.	.	.	.	.	.	.	.	5	
24	85	1	1	2	1	1	1	2	1	5	.	.	.	.	.	.	.	.	.	.	5	
25	86	1	1	1	1	0	0	2	1	4	5	4	4	1	1	0	0	.	.	.	5	
26	89	1	1	2	2	0	0	0	0	4	5	5	3	1	0	1	0	.	.	.	4	
27	93	1	1	2	2	0	0	1	1	5	5	5	1	0	.	.	.	.	.	.	5	
28	94	1	1	2	2	0	0	0	0	5	4	4	3	0	1	0	0	.	.	.	5	
29	100	0	0	1	1	.	.	0	0	.	.	.	.	1	.	.	.	.	.	.	5	
30	103	2	0	6	4	2	1	0	0	3	2	5	3	0	1	1	0	.	.	.	4	
31	113	0	0	2	2	0	0	2	1	4	4	4	3	0	0	1	0	.	.	.	5	
32	124	0	0	6	6	0	0	1	1	.	.	.	.	0	.	.	.	0	39.684	1	4	

Figure 12.8 Running a factor analysis

Reprint Courtesy of International Business Machines Corporation, © International Business Machines Corporation.

Table 12.7 Results of the factor analysis

Correlation Matrix

		EXTACCNT	INTACCNT	COSEC	PRINT-MEDIA	INTERNET	OTHER-OWNERS
Correlation	EXTACCNT	1.000	–.042	.056	.009	–.015	.139
	INTACNT	–.042	1.000	.550	.264	.249	.240
	COSEC	.056	.550	1.000	.258	.247	.241
	PRINTMEDIA	.009	.264	.258	1.000	.573	.391
	INTERNET	–.015	.249	.247	.573	1.000	.473
	OTHEROWNERS	.139	.240	.241	.391	.473	1.000
Sig. (1-tailed)	EXTACCNT		.143	.073	.409	.351	.000
	INTACNT	.143		.000	.000	.000	.000
	COSEC	.073	.000		.000	.000	.000
	PRINTMEDIA	.409	.000	.000		.000	.000
	INTERNET	.351	.000	.000	.000		.000
	OTHEROWNERS	.000	.000	.000	.000	.000	

KMO and Bartlett's Test

Kaiser–Meyer–Olkin Measure of Sampling Adequacy		.680
Bartlett's Test of Sphericity	Approx. Chi-Square	747.866
	Df	15
	Sig.	.000

Communalities

	Initial	Extraction
EXTACCNT	1.000	.954
INTACCNT	1.000	.781
COSEC	1.000	.782
PRINTMEDIA	1.000	.677
INTERNET	1.000	.753
OTHEROWNERS	1.000	.608

Extraction Method: Principal Component Analysis

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.405	40.077	40.077	2.405	40.077	40.077	1.951	32.510	32.510
2	1.122	18.692	8.769	1.122	18.692	58.769	1.561	26.008	58.518
3	1.029	17.147	75.916	1.029	17.147	75.916	1.044	17.398	75.916
4	.595	9.923	85.839						
5	.442	7.363	93.202						
6	.408	6.798	100.000						

Extraction Method: Principal Component Analysis

Component Matrix[a]

	Component		
	1	2	3
INTERNET	.756	.344	–.251
PRINTMEDIA	.737	.291	–.223
OTHEROWNERS	.685	.357	.104
COSEC	.639	–.558	.250
INTACCNT	.638	–.605	.092
EXTACCNT	.071	.338	.913

Extraction Method: Principal Component Analysis

a. 3 components extracted

Rotated Component Matrix[a]

	Component		
	1	2	3
INTERNET	.856	.120	−.078
PRINTMEDIA	.805	.156	−.070
OTHEROWNERS	.720	.152	.257
COSEC	.154	.867	.086
INTACCNT	.166	.865	−.078
EXTACCNT	.019	−.003	.976

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 4 iterations.

Component Transformation Matrix

Component	1	2	3
1	.806	.588	.058
2	.540	−.773	.334
3	−.242	.238	.941

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

Component Transformation Matrix

Component	1	2	3
1	.806	.588	.058
2	.540	−.773	.334
3	−.242	.238	.941

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization

As you can see, the tables of results from *SPSS* are extensive. First of all, we need to check the KMO (Kaiser–Meyer–Olkin) test in the second table. The value is 0.680, which indicates that the sample size is sufficient to give reliable results (it needs to be 0.6 or above). You can also see that the result of the Bartlett's test of sphericity is significant at the 1% level, which satisfies the assumption of sphericity. Now we can turn to the first table, which is the correlation matrix and you can see that it supports the components identified in the sixth table, which shows that rotated components analysis. If you look at the sixth table, you can see that the Varimax rotation converged in 4 iterations and 3 components were extracted, which together account for 75.916% of the variance (this last statistic comes from the fourth table). A useful way to summarise the key information is shown in Tables 12.8 and 12.9.

In Table 12.8, you can see that we have only presented the correlation coefficients and used asterisks to indicate the significance levels. In addition, all duplicated data in the matrix have been omitted to avoid distraction.

Table 12.8 Correlation matrix of sources for keeping up to date

	EXTACCNT	INTACCNT	COSEC	PRINTMEDIA	INTERNET	OTHEROWNERS
EXTACCNT	1.000					
INTACNT	–.042	1.000				
COSEC	.056	.550*	1.000			
PRINTMEDIA	.009	.264*	.258*	1.000		
INTERNET	–.015	.249*	.247*	.573*	1.000	
OTHEROWNERS	.139*	.240*	.241*	.391*	.473*	1.000

*Correlation is significant at the 0.01 level (2-tailed).

Table 12.9 Factor analysis of sources for keeping up to date

Variable	Component 1 *General sources* (32.5% of variance)	Component 2 *Internal professionals* (26.0% of variance)	Component 3 *External professional* (17.3% of variance)
INTERNET	**.856**	.120	–.078
PRINTMEDIA	**.805**	.156	–.070
OTHEROWNERS	**.720**	.152	.257
COSEC	.154	**.867**	.086
INTACCNT	.166	**.865**	–.078
EXTACCNT	.019	–.003	**.976**

In Table 12.9 you can see that Component 1 is the most strongly correlated and accounts for 33% of the total variance in the original variables. It groups together three variables with loadings in excess of 0.7, which are highlighted in bold (INTERNET, PRINTMEDIA and OTHEROWNERS). This component has been labelled intuitively as 'general sources' to reflect the use of widely available information from websites, newspapers, journals and other publications, and other business owners. Component 2 accounts for 26% of the variance and groups two variables with loadings above 0.8 (COSEC and INTACCNT). This factor has been labelled 'internal professionals' to reflect the fact that the company secretary and internal accountant are professionals on the payroll who both have responsibilities that require them to keep up to date with changes in the accounting and auditing regulations. Component 3 accounts for 17% of the variance and contains one variable (EXTACCNT), which has a loading in excess of 0.9. This component has been labelled 'external professional' to reflect the role of the external accountant as a source of information on changes in the accounting and auditing regulations.

In an exploratory analysis, identifying and interpreting the factors may be the main purpose. However, you can also use the technique to reduce a large data set to a smaller set of factors, and then use the factor scores rather than the original data in a subsequent regression analysis. This has the added benefit of overcoming any problems with multicollinearity (see section 12.4.2).

12.5 Linear regression

We commented earlier that correlation offers additional information about an association between two variables because it measures the direction and strength of any linear relationship between them. **Linear regression** goes further by giving an indication of the ability of an

Linear regression is a measure of the ability of an independent variable to predict an outcome in a dependent variable where there is a linear relationship between them.

independent variable to predict an outcome in a dependent variable where there is a linear relationship between them. The term regression was introduced in the late 19th century by Sir Francis Galton and refers to statistical models where 'the expected value of one variable Y is presumed to be dependent on one or more other variables (x_1, x_2,…)' (Upton and Cook, 2006, p. 364). Linear regression is based on an algebraic equation that allows a straight line to be drawn on a graph from information about the slope (the gradient of the line in relation to the horizontal axis of the graph) and the intercept (the point at which the line crosses the vertical axis of a graph) (Field, 2017). The equation states the relationship between a dependent (outcome) variable Y and an independent (predictor) variable x (Upton and Cook, 2006, p. 243):

$$Y = \alpha + \beta x + \varepsilon$$

where
α (alpha) = the parameter corresponding to the intercept
β (beta) = the parameter corresponding to the slope
ε (epsilon) = a random error

In a linear regression model, a random error (ε) is the difference between the observed (actual) values and the expected (theoretical) values in the model and therefore can be described as a residual. Drawing on Field (2017), the assumptions underpinning the linear equation can be summarised as follows:

- The DV (outcome variable) is a continuous quantitative variable (measured on a ratio or interval scale), but an independent (predictor) variable can be continuous or a dummy variable (categorical variables can be used if they are first recoded as dummy variables).
- There is some variation in the data values of IVs (predictor variables); in other words, none have a variance of 0.
- There is no perfect multicollinearity between the independent variables.
- None of the independent variables correlates with another variable that is not included in the analysis.
- The errors are uncorrelated and have a normal distribution with a mean of 0 and constant variance.
- The data values in the dependent variable are independent (in other words, they come from different cases).
- The relationship between the dependent variable and each independent variable is linear.

12.5.1 Simple or multiple linear regression

In a simple regression model, the outcome in the dependent variable is predicted by a single independent variable, while in a multiple regression model, it is predicted by more than one independent variable. If your data meet the assumptions of the linear equation we have just described, you can use the following procedure in *SPSS*:

- From the menu at the top, select Analyze ⇒ Regression ⇒ Linear…
- Move your dependent (outcome) variable into Dependent and your independent (predictor) variable(s) into Independent.
- If you have theoretical reasons for choosing the predictor variables (in other words, your hypothesis is based on theory), accept the default method, Enter, which means the variables will be entered simultaneously as one block.

- Click on the Options button and under Statistics and Plots select any additional statistics you want to help you assess the fit of the model to the data and click Continue.
- Then click OK for the results.

It is useful at this point to summarise the results of the bivariate analysis of the data collected by Collis (2003) in which we have tested the variables that the theoretical framework suggested would influence the demand for the audit. This was represented by the dummy variable, VOLAUDIT. The bivariate analysis found a significant difference between the two groups in VOLAUDIT and TURNOVER, CHECK, QUALITY, CREDIBILITY and CREDITSCORE and significant association between VOLAUDIT when paired with FAMILY, EXOWNERS and BANK. The association with EDUCATION was not significant, and we had no evidence to reject the null hypothesis for H9.

The next step is to run a multiple regression analysis with VOLAUDIT as the dependent (outcome) variable and the remaining eight variables as the independent (predictor) variables. However, if the dependent variable is a dummy variable, the relationship with an independent variable is non-linear, which means the assumptions of the linear equation are not met. To overcome this problem, the dependent variable can be transformed into a logit, which allows a non-linear relationship to be expressed in a linear form (Field, 2017). If the dependent variable is a dummy variable and one or more of the independent variables are continuous quantitative variables, a logistic regression model can be used. If none of your independent variables is a continuous quantitative variable, a logit model is appropriate (Upton and Cook, 2006).

Since our dependent variable (VOLAUDIT) is a dummy variable and one of our independent variables (TURNOVER) is a continuous quantitative variable, we should choose a logistic regression model.

12.5.2 Logistic regression

As explained above, logistic regression is a form of multiple regression that is used where the dependent variable is a dummy variable and one or more of the independent variables are continuous quantitative variables. Any other independent variables can be ordinal or dummy variables. Nominal variables can be used if they are first recoded as dummy variables, as described in Chapter 11. There is also an opportunity to do this automatically under the logistic regression options in *SPSS*. The procedure for logistic regression is as follows:

- From the menu at the top, select Analyze ⇒ Regression ⇒ Binary logistic…
- Move VOLAUDIT into Dependent (the term used by *SPSS* for the outcome variable).
- Move TURNOVER, CHECK, QUALITY, CREDIBILITY, CREDITSCORE, FAMILY, EXOWNERS and BANK into Covariates (the term used by *SPSS* for the independent or predictor variables). As we have mentioned before, the order does not matter, but it seems logical to list them in the order of the hypotheses shown in Table 12.1.
- We have theoretical reasons for choosing the independent variables, so accept the default method, Enter, which means they will be entered simultaneously as one block.
- If you have any nominal predictor variables that are not dummy variables, you can click on the Categorical button and move them into the Categorical Covariates box. You would highlight each variable in turn and under Change Contrast select First or Last to indicate which of these categories represents the characteristic is present and click Change. For example, if you did this for FAMILY, the variable would then be shown as FAMILY (Indicator(first)). Click Cancel to leave that dialogue box.
- Now click on the Options button and under Statistics and Plots select Hosmer-Lemeshow goodness-of-fit to help you assess the fit of the model to the data and click Continue (see Figure 12.9).
- Then click OK for the results (see Table 12.10).

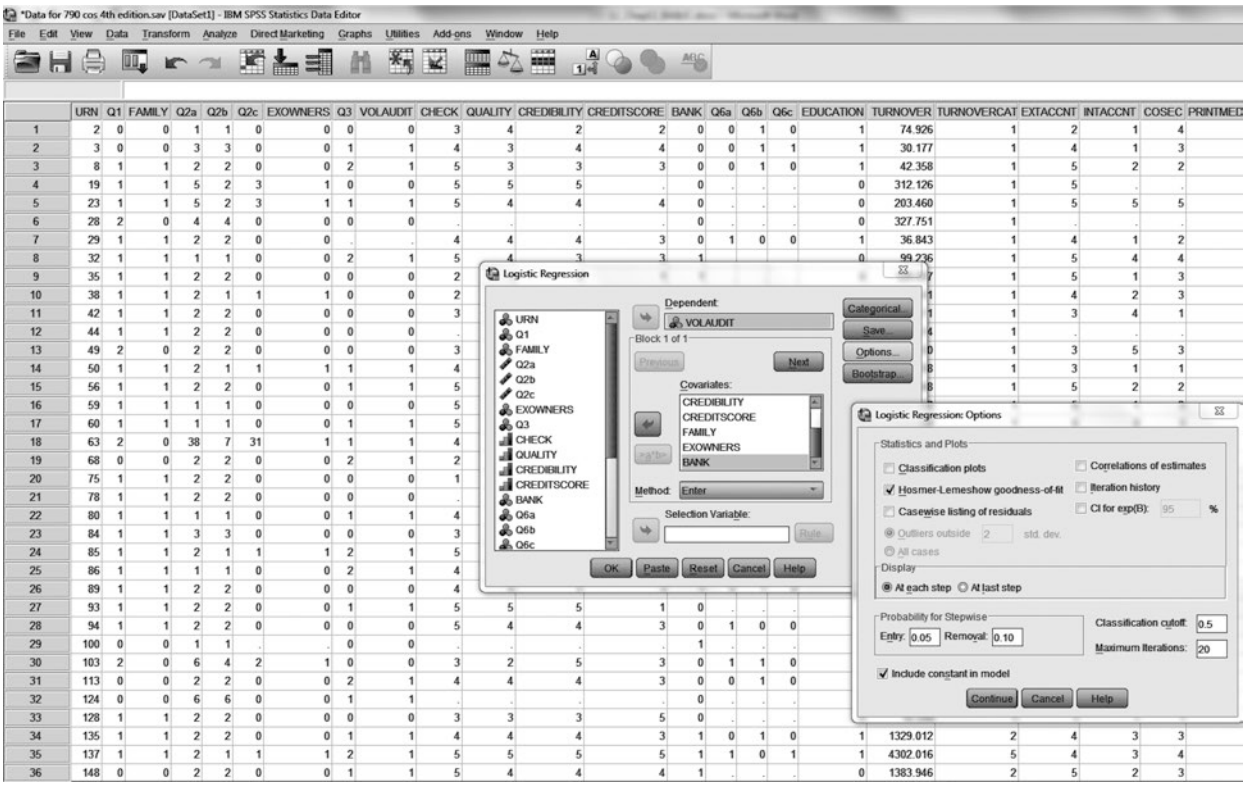


Figure 12.9 Running a logistic regression

Table 12.10 Logistic regression for VOLAUDIT

Case Processing Summary

Unweighted Cases[a]		N	Percent
Selected Cases	Included in Analysis	588	74.4
	Missing Cases	202	25.6
	Total	790	100.0
	Unselected Cases	0	.0
	Total	790	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
0 No	0
1 Yes	1

Block 0: Beginning Block

Classification Table[a,b]

Observed			Predicted		
			Q3		
			0 No	1 Yes	Percentage Correct
Step 0	Q3	0 No	306	0	100.0
		1 Yes	282	0	.0
		Overall Percentage			52.0

a. Constant is included in the model.

b. The cut value is .500.

Variables in the Equation

		B	S.E.	Wald	Df	Sig.	Exp(B)
Step 0	Constant	−.082	.083	.979	1	.322	.922

Variables not in the Equation

			Score	Df	Sig.
Step 0	Variables	TURNOVER	67.579	1	.000
		CHECK	58.876	1	.000
		QUALITY	82.641	1	.000
		CREDIBILITY	73.669	1	.000
		CREDITSCORE	65.224	1	.000
		FAMILY	25.419	1	.000
		EXOWNERS	14.612	1	.000
		BANK	39.666	1	.000
		Overall Statistics	173.140	8	.000

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	205.031	8	.000
	Block	205.031	8	.000
	Model	205.031	8	.000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	609.130[a]	.294	.393

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	8.306	8	.404

Contingency Table for Hosmer and Lemeshow Test

		VOLAUDIT = 0 No		VOLAUDIT = 1 Yes		
		Observed	Expected	Observed	Expected	Total
Step 1	1	55	55.356	4	3.644	59
	2	50	49.934	9	9.066	59
	3	43	45.181	16	13.819	59
	4	46	40.020	13	18.980	59
	5	31	33.309	28	25.691	59
	6	27	27.177	32	31.823	59
	7	21	23.189	38	35.811	59
	8	14	17.345	45	41.655	59
	9	16	10.681	43	48.319	59
	10	3	3.809	54	53.191	57

Classification Table[a]

			Predicted		
			Q3		
Observed			0 No	1 Yes	Percentage Correct
Step 1	Q3	0 No	225	81	73.5
		1 Yes	71	211	74.8
		Overall Percentage			74.1

a. The cut value is .500.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	TURNOVER	.001	.000	21.810	1	.000	1.001
	CHECK	.246	.124	3.932	1	.047	1.278
	QUALITY	.403	.104	15.086	1	.000	1.496
	CREDIBILITY	.124	.128	.939	1	.333	1.132
	CREDITSCORE	.256	.097	7.026	1	.008	1.292
	FAMILY	−.794	.214	13.767	1	.000	.452
	EXOWNERS	.644	.268	5.796	1	.016	1.905
	BANK	.448	.218	4.212	1	.040	1.565
	Constant	−4.116	.551	55.779	1	.000	.016

a. Variable(s) entered on step 1: TURNOVER, CHECK, QUALITY, CREDIBILITY, CREDITSCORE, FAMILY, EXOWNERS, BANK.

This is another situation where there is a large volume of output to help you interpret the analysis. The first table to check is the Case Processing Summary at the beginning, which shows that 588 cases in the sample of 790 were included in the analysis. In multivariate analysis, a case is omitted if there is missing data for any one of the variables and this can be a problem with small samples. However, it is not a matter of concern here.

We can skip the tables in Block 0 where no variables have been entered in the model and concentrate on Block 1, starting with the Model Summary. In this table, the Nagelkerke R Square indicates that the model including our predictor variables explains .393 or 39% of the variance in the two groups in the outcome variable (whether the directors would have a voluntary audit). The hypothesis for the Hosmer and Lemeshow goodness-of-fit test is that the observed frequencies (actual counts) are not associated with the expected frequencies (theoretical counts). The probability statistic (Sig.) is .404, which is not significant. This means we can reject the null hypothesis and conclude that there is a good fit between the actual data and the model. The Hosmer and Lemeshow test is considered to be more robust than the traditional goodness-of-fit statistic used in logistic regression and is used for models with continuous covariates (as in this study) and studies where the sample size is small (which does not apply to this study).

The final table shows the results for the Variables in the Equation which we entered in one block:

- The probability statistics (Sig.) show that the results for all the predictor variables are significant ($p \leq 0.05$), apart from CREDIBILITY.
- The factor coefficient (B) for FAMILY indicates the expected negative relationship with VOLAUDIT (demand for voluntary audit comes from companies that are <u>not</u> wholly family-owned).
- The higher values of the Wald statistic and the lower values of the probability statistics for TURNOVER, QUALITY, CREDITSCORE, FAMILY and EXOWNERS indicate that these are the most influential predictors of voluntary audit.

We now have evidence to reject the null hypotheses for TURNOVER, CHECK, QUALITY, FAMILY, EXOWNERS and BANK (H1–H3 and H5–H8), but not for CREDIBILITY (H4).

When writing up your research (see Chapter 13), it is the final table in the output (the Variables in the Equation) that you will use to present the results of your logistic regression model. This concludes our interpretation of the statistics. In a dissertation or thesis the analysis would lead on to a discussion of how these results confirm, contradict or contribute to the literature, as well as the limitations and theoretical and practical implications arising from the results. You will find further guidance in Chapter 13.

12.6 Time series analysis

Time series analysis is a statistical technique for forecasting future events from time series data.

A **time series** is a sequence of measurements of a variable taken at regular intervals over time.

A **trend** is a consistently upward or downward movement in time series data.

Seasonal variation is where a pattern in the movements of time series data repeats itself at regular intervals.

An **index number** is a statistical measure that shows the percentage change in a variable from a fixed point in the past.

If you have collected longitudinal data for a random variable, you can use **time series analysis** to forecast future values. A **time series** is a sequence of measurements of a variable taken at regular intervals over time. The purpose of a time series analysis is to examine the **trend** and any **seasonal variation**. Both can be further analysed using linear regression (Moore *et al.*, 2009). However, before the analysis can commence, it is usually necessary to remove the effects of inflation or seasonal fluctuations. You can do this in *Microsoft Excel* or *SPSS*. By now you should be fairly confident with using *SPSS*, so we will explain the methods in sufficient detail to allow you to calculate the statistics in *Microsoft Excel*.

12.6.1 Indexation

If you have collected longitudinal data about a variable whose value changes over time, such as costs or prices, you may want to convert each value to an index number. An **index number** is a statistical measure that shows the percentage change in a variable, from some fixed point in the past. The base period of an index is the period against which all other periods are compared. A simple index shows each item in a series relative to some chosen base period value.

For a clearer indication of the pattern of movement of the value of such a variable over time, it is customary to choose an appropriate point in time as a base; for example, a particular year for a variable that is observed annually. The base time-point should be chosen to reflect a time when values of the variable are relatively stable. The value of the variable at other points in time can then be expressed as a percentage of the value at the base time-point. The general formula is:

$$\text{Index number} = \frac{\text{Current value}}{\text{Value at base time–point}} \times 100$$

The resulting figure (known as the relative) is the simplest form of index number. The value of the index number at the base time-point is always 100. The following example shows how to construct a simple index.

Example

You have obtained the following historical data relating to the average price of a house in the UK over six years in the 1970s. You will use the first year in the series as the base year (thus, 1971 = 100) and then apply the following formula:

$$\text{Index} = \frac{\text{Current year price}}{\text{Base year price}} \times 100$$

This generates the index shown in the final column of Table 12.11.

Table 12.11 House price index 1971–6

Year	Price	Formula	Index (1971 = 100)
1971	£5,632	$\frac{£5,632}{£5,632} \times 100$	100.0
1972	£7,374	$\frac{£7,372}{£5,632} \times 100$	130.9
1973	£9,942	$\frac{£9,942}{£5,632} \times 100$	176.5
1974	£11,073	$\frac{£11,073}{£5,632} \times 100$	196.6
1975	£12,144	$\frac{£12,144}{£5,632} \times 100$	215.6
1976	£13,006	$\frac{£13,006}{£5,632} \times 100$	230.9

Index figures are very useful for transforming multiple sets of data so that they can be compared in a table or a graph. The following example illustrates how to do this.

Example

You want to analyse the following production data from a factory in your study.

Year	Production units (m)	Number of employees	Units per employee shift
2015	184	602	1.40
2016	180	571	1.45
2017	188	551	1.56
2018	188	524	1.65
2019	185	498	1.72
2020	179	466	1.80

You start by constructing a simple index for each variable, as previously demonstrated, where 2015 = 100. The results are shown in Table 12.12. When these are plotted on a multiple line graph (see Figure 12.10), you can see that the overall production has remained stable despite a steady reduction in the number of employees. This is because the number of units produced per employee shift has increased.

Table 12.12 Production indices 2015–20

Year	Production units index	Number of employees index	Units per employee shift index
2015	100.0	100.0	100.0
2016	97.8	94.9	103.6
2017	102.2	91.5	111.4
2018	102.2	87.0	117.9
2019	100.5	82.7	122.9
2020	97.3	77.4	128.6

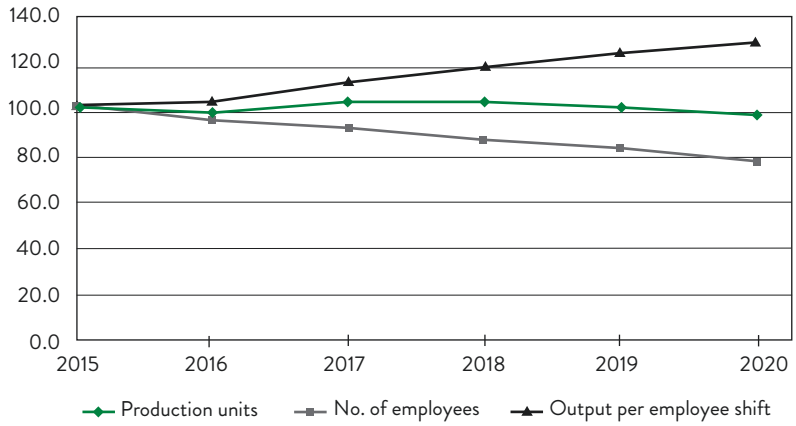


Figure 12.10 Production indices 2015–20

12.6.2 Deflating data

If you have collected financial data over a period when there has been inflation in the economy, this will obscure the underlying trend in the data. However, you can use indexation to deflate the data and thus remove the effect of inflation. The resulting data will then reflect the value of money as it was in the base year of the index you use. It is convenient to use an index such as the Retail Price Index (RPI) as it is known in the UK or the Consumer Price Index (CPI) in the USA and some other countries. A price index is the weighted mean of the prices paid by consumers for a set of standard household goods and services. The following example illustrates how to deflate your research data using such a price index.

Example

You have obtained the following historical data relating to a company's profit over a five-year period in the 1980s and the RPI for each year. You find out that the base year for the RPI at that time was 1974 (thus, 1974 = 100). You then apply the following formula:

$$\text{Deflated profit} = \frac{\text{Base year RPI}}{\text{Current year RPI}} \times \text{Profit}$$

This generates the deflated profit figures shown in the last column of Table 12.13.

Table 12.13 Deflated profit 1982–6

Year	Profit	RPI (1974 = 100)	Formula	Deflated profit
1982	£12.0m	320.4	$\frac{100}{320.4} \times 12.0$	£3.7m
1983	£13.5m	335.1	$\frac{100}{335.1} \times 13.5$	£4.0m
1984	£15.1m	351.8	$\frac{100}{351.8} \times 15.1$	£4.2m
1985	£17.0m	373.2	$\frac{100}{373.2} \times 17.0$	£4.6m
1986	£19.0m	385.9	$\frac{100}{385.9} \times 19.0$	£4.9m

The deflated profit figures are now based on the value they would have had in 1974. They can also be plotted on a line graph, as shown in Figure 12.11, which illustrates the distorting effects of inflation very clearly. Far from the dramatic increase shown in the original data, the deflated profit figures show only a modest increase over the period, which puts a different complexion on the financial performance of the company and demonstrates the impact of inflation during the 1980s.

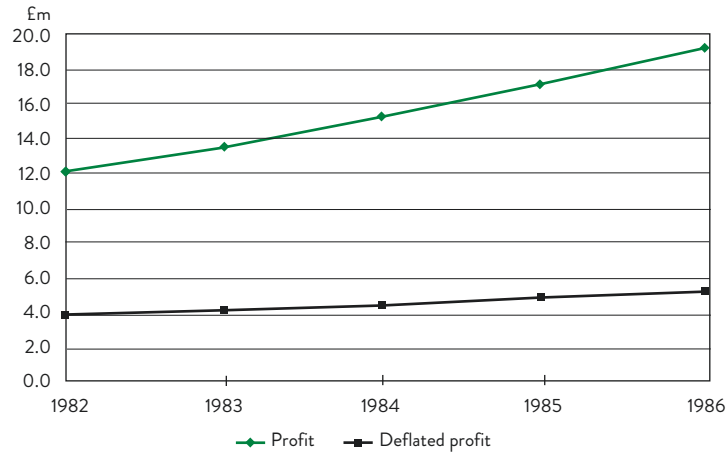


Figure 12.11 Deflated profit 1982–6

12.6.3 Weighted index numbers

A **weighted index number** is constructed by calculating a weighted average of a set of values. A weighted average is an average that can attach more importance to some values than others. For example, in a consumer price index, the prices are weighted to reflect the prices paid by consumers for different retail goods and services. Another example of a weighted index is the FTSE 100 Index, which represents the share prices of the largest 100 companies listed on the London Stock Exchange in any quarter and is calculated minute by minute. Unlike other indices, it has a base level of 1,000 which relates to prices on 3 January 1984 when it began.

A **weighted index number** is an index number constructed by calculating a weighted average of some set of values, where the weights show the relative importance of each item in the data set.

When calculating weighted index numbers, you should remember that the weights are held constant at their values for the base time-point. Since the weighting may change dramatically over a long period of time, it is only realistic to use weighted index numbers with fixed weights over short periods. An index can be calculated which is the average of a series of price relatives. To be realistic, it should take into account the amount of each commodity used and this is what a weighted index reflects. We will now explain two methods for calculating weight index numbers.

A Laspeyres index is a base period weighted index, where the weights relate to a chosen base period. The formula is:

$$\text{Laspeyres index} = \frac{\sum PcQb}{\sum PbQb} \times 100$$

where

Pc = Current price
Pb = Base price
Qb = Base quantity

The advantages of a Laspeyres index are:

- the index is easy to calculate for a series of years as it uses the same set of weights every time
- it allows a comparison of any one year with any other as all use the same weights
- it requires little data in terms of weights.

The disadvantages of a Laspeyres index are:

- the weights used will gradually become out of date and will no longer represent the contemporary situation
- it tends to overestimate price increase because it uses out-of-date weights.

A Paasche index is a current period weighted average where the weights are used to rebase to the current period. The formula is:

$$\frac{\sum PcQc}{\sum PbQc} \times 100$$

where

Pc = Current price
Pb = Base price
Qc = Current quantity

The advantage of a Paasche index is:

- the index always uses the current weights and thus reflects today's situation.

The disadvantages of a Paasche index are:

- the index involves more calculation for a series of years as the weights used are constantly changing

- it can only be compared against the base year as the weights for each year change
- it tends to underestimate price increases
- it requires new weights each period which can be both costly and time-consuming to collect.

12.6.4 Calculating the deseasonalised trend

We have already mentioned that the main use of time series analysis is to predict the trend. A trend is a consistently upward or downward movement in the data values over the time period. If your time series shows regular seasonal fluctuations, you will need to remove the seasonality to leave deseasonalised data before you can estimate the underlying trend. The two main statistical models used are the additive model and the multiplicative model. The formulae are as follows:

$$Y = T + S + C + I \ (\text{additive model})$$
$$Y = T \times S \times C \times I \ (\text{multiplicative model})$$

where
Y = the observation
T = trend
S = seasonal variation
C = cyclical component
I = irregular component

Although the additive model is simpler to analyse, the multiplicative model is generally considered to be more realistic. The adequacy of the multiplicative model may be tested by analysing the irregular component. If this is not random, the suitability of the model must be questioned. Any component may be absent from a particular time series (for example, annual data cannot include the seasonal variation component). We will use an example to explain this.

Example

Perhaps you have collected quarterly data relating to the number of ice creams sold (the sales volume) by a particular business over a five-year period.

- First calculate the 4-quarter moving total by adding the sales volume in groups of four.
- Then calculate the 8-quarter moving total by adding the 4-quarter moving totals in groups of two.
- Next, divide the 8-quarter moving totals by 8 to obtain the trend.
- Before you can eliminate any seasonal variations, you will need to calculate the de-trended series by dividing your original quarterly data (Y) by the trend (T).

These calculations are quickly computed on a ***Microsoft Excel*** worksheet and Table 12.14 illustrates this stage of the analysis. If you use a calculator, discrepancies may occur due to rounding.

The next step is to calculate the seasonal variation (S), which you do by averaging the de-trended series you calculated in Table 12.14. The detrended data have been transferred to Table 12.15 to demonstrate how the seasonal index is calculated. The averages should add up to 4 for quarterly data and 12 for monthly data.

The mean for each quarter represents the seasonal variation (S), which we need in order to calculate the deseasonalised data (Y÷S). Table 12.16 illustrates this and summarises the key statistics we have calculated.

If you have tried this for yourself on a spreadsheet, you can now plot the trend for ice-cream sales over the period on a graph and use the seasonal index to forecast the data for the next year in the series.

Table 12.14 De-trended series for ice-cream sales (m) 2015–19

Year	Quarter	Sales (m) (Y)	4 quarter moving total	8 quarter moving total	Trend (T)	De-trended series (Y ÷ T)
2015	Q1	106		–	–	–
			–			
	Q2	192		–	–	–
			726			
	Q3	278		1,463	183	1.52
			737			
	Q4	150		1,481	185	0.81
			744			
2016	Q1	117		1,488	186	0.63
			744			
	Q2	199		1,492	187	1.07
			748			
	Q3	278		1,518	190	1.47
			770			
	Q4	154		1,541	193	0.80
			771			
2017	Q1	139		1,575	197	0.71
			804			
	Q2	200		1,631	204	0.98
			827			
	Q3	311		1,652	207	1.51
			825			
	Q4	177		1,670	209	0.85
			845			
2018	Q1	137		1,692	212	0.65
			847			
	Q2	220		1,694	212	1.04
			847			
	Q3	313		1,701	213	1.47
			854			
	Q4	177		1,672	209	0.85
			818			
2019	Q1	144		1,591	199	0.72
			773			
	Q2	184		1,551	194	0.95
			778			
	Q3	268		1,412	177	1.52
			634		–	–
	Q4	182		–	–	–

Table 12.15 Seasonal index for ice-cream sales (m) 2015–19

	De-trended series			
Year	**Q1**	**Q2**	**Q3**	**Q4**
2015	–	–	1.52	0.81
2016	0.63	1.07	1.47	0.8
2017	0.71	0.98	1.51	0.85
2018	0.65	1.04	1.47	0.85
2019	0.72	0.95	–	–
Total	2.71	4.04	5.97	3.31
Mean (seasonal variation)	0.68	1.01	1.48	0.83
Seasonal index	68	101	148	83

Table 12.16 Deseasonalised data for ice-cream sales (m) 2015–19

Year	Quarter	Sales (m) (Y)	Trend (T)	De-trended series (Y ÷ T)	Seasonal variation (S)	Deseasonalised data (Y ÷ S)
2015	Q1	106	–	–	0.68	156
	Q2	192	–	–	1.01	190
	Q3	278	183	1.52	1.48	187
	Q4	150	185	0.81	0.83	180
2016	Q1	117	186	0.63	0.68	173
	Q2	199	187	1.07	1.01	197
	Q3	278	190	1.47	1.48	187
	Q4	154	193	0.80	0.83	185
2017	Q1	139	197	0.71	0.68	205
	Q2	200	204	0.98	1.01	198
	Q3	311	207	1.51	1.48	210
	Q4	177	209	0.85	0.83	212
2018	Q1	137	212	0.65	0.68	202
	Q2	220	212	1.04	1.01	218
	Q3	313	213	1.47	1.48	211
	Q4	177	209	0.85	0.83	212
2019	Q1	144	199	0.72	0.68	213
	Q2	184	194	0.95	1.01	182
	Q3	268	177	1.52	1.48	181
	Q4	182	–	–	0.83	218

12.6.5 Evaluating the cyclical and irregular variation

In order to evaluate the cyclical variation (C) you need to obtain the de-trended, deseasonalised series:

$$\frac{Y}{T \times S} = C \times I$$

Next, smooth out the irregular component (I) by means of a moving average performed on the $\frac{Y}{T \times S}$ series.

Since the aim is to smooth and not to remove the cycle, a three-point moving average could be used. The irregular component (I) is obtained from:

$$\frac{Y}{T \times S \times C}$$

The irregular component should be random in nature; otherwise, the adequacy of the proposed model must be questioned. Therefore, evaluation of the irregular component yields a measure of method suitability. For multiplicative models, the irregular component should be random about unity ($\pm$ 1). If the irregular component is evaluated and shown to be random, it can be removed from the series, producing an error-free series:

$$\frac{Y}{I} = T \times S \times C$$

In order to be reasonably certain that components exist in a time series, there should be sufficient data to establish the reality of these components or complementary information to suggest their presence. In a short span of data, random phenomena can appear to be systematic and, conversely, systematic effects can be masked by random variation.

12.7 Conclusions

Apart from the important matter of whether your data meet the four basic assumptions that determine whether you can use parametric tests, you need to consider time constraints and your skills. In this chapter, we have covered some of the main inferential statistics used by students. Although the example data required non-parametric tests, we have also explained the equivalent parametric models.

In the previous section, we have showed how comparison of longitudinal data can be aided through indexation and time series analysis can be used to examine the trend and any seasonal variation. If the latter is present, the deseasonalised trend can be calculated and any cyclical and irregular variation evaluated. The trend and the seasonal variation can be analysed using linear regression.

Your choice of analysis will depend on:

- summarise and/or display the data (descriptive statistics)
- test for significant differences between independent or related samples (inferential statistics)
- test for significant association between variables (inferential statistics)
- reduce data to composite variables (factor analysis)
- predict an outcome from one or more independent variables (inferential statistics)
- forecast trends from longitudinal data (time series analysis).

It is important to remember that you need to know how you are going to analyse your data before you collect them. We conclude this chapter with Box 12.3, which summarises the main steps in analysing quantitative data.

Box 12.3 Main steps in analysing quantitative data

1. Quantify answers to open questions.
2. Identify each case and enter the data into your software program.
3. Name the variables and the coding labels, and identify the level of measurement.
4. If recoding is required, recode into a different variable, thus keeping the original intact.
5. For most business research, accept the *SPSS* default significance level of 0.05.
6. Decide whether your hypotheses are one-tailed or two-tailed.
7. Identify the dependent variable and the independent variables (not applicable when testing for correlation).
8. Determine whether parametric or non-parametric tests are appropriate.
9. Decide whether you have independent or dependent samples.
10. Explore, describe and analyse the data using appropriate statistical methods to address your research questions.

References for further reading

Collis, J. (2003) *Directors' Views on Exemption from Statutory Audit*, URN 03/1342, October, London: DTI. [Online]. Available at: http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file25971.pdf (Accessed 14 August 2020).

Field, A. (2017) *Discovering Statistics Using IBM SPSS Statistics*. London: SAGE.

Kervin, J. B. (1992) *Methods for Business Research*. New York: HarperCollins.

Law, J. (ed.) (2010) *Dictionary of Accounting*, 4th edn. Oxford: Oxford University Press.

Moore, D., McCabe, G. P., Duckworth, W. M. and Alwan, L. C. (2009) *The Practice of Business Statistics*, 2nd edn. New York: W.H. Freeman and Company.

Upton, G. and Cook, I. (2006) *Oxford Dictionary of Statistics*, 2nd edn, Oxford: Oxford University Press.

Wallace, R. S. O. and Mellor, C. J. (1988) 'Non-response bias in mail accounting surveys: A pedagogical note', *The British Accounting Review*, 20, pp. 131–9.

Activities

This chapter is entirely activity-based. If you have access to *SPSS*, start at the beginning of this chapter and work your way through using the data file available at www.macmillanihe.com/Business-Research-5e. If *SPSS* is not available, do the same activities using an alternative software package following the on-screen tutorials and help facilities.

Ready for more? Visit the companion website to try the progress test for this chapter at **macmillanihe.com/Business-Research-5e**

Have a look at the **Troubleshooting** chapter and sections 15.2, 15.5, 15.7, 15.10, 15.12 and 15.13 in particular, which relate specifically to this chapter.

13

Writing your dissertation or thesis

Learning objectives

When you have studied this chapter, you should be able to:

- plan a strategy for writing up your research
- structure the chapters in your dissertation or thesis
- decide how to present qualitative and quantitative data
- understand the general standards for a dissertation or thesis
- prepare for your *viva voce* examination (if applicable).

13.1 Introduction

Writing your dissertation or thesis represents the final stage of the research process for students who are not intending to publish from their work. As the writing-up stage can be somewhat daunting, we start this chapter by focusing on how you can plan your writing-up strategy, and this leads to detailed advice on the structure and content of your dissertation or thesis. We also explain the standards you should be aiming for, which depend on whether you are an undergraduate, postgraduate or doctoral student. If you are an undergraduate or on a taught Master's programme, it is likely that your supervisor(s) will mark your work and the grade you receive will contribute to your programme award. If you are doing a Master's by research or a doctoral degree, you are more likely to have an oral examination on your thesis, known as a *viva voce*. Therefore, we also offer guidance on how to prepare for this important event and explain the potential outcomes.

13.2 Planning how to write up your research

By the time you reach the writing up stage you should have reviewed a substantial amount of literature and analysed a significant amount of research data. Planning how to write up the research often presents a considerable challenge to students. However, writing the first complete draft of your dissertation or thesis can be rewarding if you wrote early drafts of your chapters at each stage in the process of your research, discussed your drafts with your supervisor(s) and addressed any feedback you were given. In our experience, time management is essential for students on undergraduate or taught Master's programmes, as putting off the writing-up stage until the last minute greatly reduces your chances of passing. If you are doing a Master's by research or a doctoral degree and you put off writing draft chapters until your final year, you are likely to encounter major difficulties or even failure. Therefore, regardless of your level of study, we strongly advise you to start developing the sections you wrote for your research proposal into the chapters of your dissertation or thesis as you proceed with your study.

13.2.1 Writing strategies

There are a number of writing strategies you can adopt when it comes to planning how you will write up your dissertation or thesis. A survey of social science PhD and MPhil students at 10 UK universities (Torrance, Thomas and Robinson, 1992) found that 104 of the 110 respondents used one or more of the strategies shown in Table 13.1 when producing their last substantial piece of academic text.

Subsequent cluster analysis (Torrance, Thomas and Robinson, 1994) identified three distinct groups of students:

- planners, who planned extensively and then made few revisions
- revisers, who developed content and structure through extensive revision
- mixed strategy writers, who both planned before starting to write and revised extensively as part of their writing processes.

Planners reported higher productivity than the other two groups and found writing less difficult than those in the mixed strategy group. Planners and revisers did not differ significantly in the level of difficulty they experienced when writing. This suggests that planning can be an effective writing strategy for some, but it is not necessarily a requirement for writing success.

It is important to remember that you do not have to start the process of writing the chapters of your dissertation or thesis in any particular order. Some researchers prefer to write in the same order as the research report is structured. However, it is not advisable to finalise your introduction chapter, or even your title, until the end. Therefore, an appropriate chapter to work on at an early stage is your literature review, as in many cases it forms a significant part of your research proposal. This would lead you to draft your methodology chapter next, which can be finalised once you have enough information to describe the more detailed aspects of the data selection, collection and analysis you have used. Doctoral students may have written conference papers or articles on parts of their research (see Chapter 14), which can be used as the basis of different chapters in the final research report. It does not matter

Table 13.1 Writing strategies adopted by students

Strategy	% reporting
Brainstorming or writing down a checklist of ideas which might be included in the final document, but which does not specify the order in which they might be presented	80
Taking verbatim notes from the relevant literature	78
Putting notes into some kind of order	63
Constructing a 'mind map' which gives a spatial representation of the links between particular ideas	54
Constructing a plan that details not only the content of the finished piece, but also the order in which it will be presented	84
Writing out full drafts in continuous prose but not necessarily in polished English	94
Revising full drafts	94

Source: Torrance, Thomas and Robinson (1992, p. 159). Reprinted by permission of the publisher (Taylor & Francis Ltd, http://www.tandf.co.uk/journals).

what strategy you adopt; the important thing is to start developing your draft chapters at an early stage in your research and get timely feedback from your supervisor.

We advise you to write every day, preferably at the same time and place. If you think you have writer's block because you are running out of ideas, stop writing the problematic section and turn to a different section. Alternatively, you could start a totally different task, such as checking your citations and references, preparing tables and diagrams or running the spelling and grammar checker. Sometimes you can make progress by focusing on the problem section and try to get your thoughts written down in one way or another. For example, you could use a brainstorming approach, putting down all the main points that come to mind in a random order and then draw a mind map or hierarchical diagram to help you structure your thoughts (see Chapter 2). You might discover that you have created a diagram that you can include in your chapter or paste into a *Microsoft PowerPoint* slide if you are planning to make a presentation of your research at a future date (see Chapter 14). Another approach is to draw up a list of the strengths and weaknesses of what you have written in that section and discuss them with your supervisor.

Some students put off writing up because they are still updating their literature or collecting additional data to keep it current. You must be strong willed and impose a cut-off point for your research. Your dissertation or thesis will be an account of your research up to the chosen date and you need not worry about events after that time. Your supervisor(s) and examiners will appreciate that you are not writing a newspaper article which must contain the latest news!

13.2.2 Setting a timetable

When determining the structure of your dissertation or thesis, you will find it useful to draw up a timetable showing the critical dates when you will complete each chapter. You will have a deadline for submitting your dissertation or thesis, and it is easy to think of this as being the date when you will finish writing up your research. However, you must also allow time for editing, proofreading and binding the finished report, and anything else required by your university or college prior to submission.

It is difficult to estimate how long the writing up and final tasks will take, as there are so many factors to be considered. Even experienced researchers find it takes a good deal longer than they think. We recommend that you also allow for contingencies in your timetable, such as illness, domestic interruptions (both in your life and that of your supervisors), computer problems, lost documents, and so on. In Table 13.2, we give an indicative breakdown of the main tasks and approximately how long they take for a full-time PhD student. This schedule assumes that some preliminary work has been done. By this we mean that the literature review and methodology chapters are in draft form, the analysis has been completed, some of the figures

Table 13.2 Indicative time for writing a PhD thesis

Chapter or task	Weeks
Introduction	2
Literature review	4
Methodology	2
Findings/Results	5
Discussion	3
Conclusions	2
Tables, figures, references, appendices, and so on	1
Consultation with supervisor/others and revisions	4
Editing, proofreading and binding	3
Total	26

and/or tables have been prepared, and a list of references has been kept. Even so, you can see that six months is given to the final writing-up stage for a doctoral thesis of about 80,000 words.

Once you have finished revising your work to take account of your supervisor's feedback, you are ready to edit your chapters. Editing is a process that involves re-reading your work, identifying errors and omissions in the content and structure, and consequently amending it. There are no short cuts, but it will make your job easier if your supervisor(s), fellow students or friends will read and comment on your early drafts. Before you start editing, try to have a break of a week or two so that you can return with a fresh eye and a more open perspective. When you have received the final feedback from your supervisor(s) and finished making amendments to your research report, you are ready to check for errors in spelling, grammar, chapter and section numbering, table and figure numbering, page numbering, citations and references. We discuss how software can help you with these tasks in subsequent sections in this chapter.

13.2.3 Standards for a research report

When writing up your research you should bear in mind the standards your supervisors will be looking for. Table 13.3 summarises the general criteria that are typically used to assess a dissertation or thesis.

The extent to which your dissertation or thesis must achieve these attributes depends on the level of your degree. Table 13.4 gives details of the assessment criteria for a research report at different levels. However, this is merely indicative, and you will need to refer to the specific guidance you are given. You can see that the criterion separating a doctoral thesis from the research report at other levels is originality and the contribution to knowledge. We advise doctoral students to discuss these important criteria with their supervisors.

13.2.4 Academic writing

Academic writing requires the use of a much more formal style than you would use in conversation or emails. Your written communication skills are very important, and it is essential that the meaning of each sentence and paragraph is clear, even if the content is technically or conceptually complex. Some students adopt a long, complicated style of writing in the mistaken belief that it is more academic, but you should try to resist this temptation. Your aim should be to inform rather than to impress. Your dissertation or thesis is a unique piece of research and you want your supervisors and examiners to understand every aspect of it. This will give you the greatest chance of gaining a high grade (undergraduate and taught Master's students) or passing your *viva voce* (students doing a Master's by research or a doctoral degree). So, think about attracting and keeping the examiner's attention by using headings and subheadings, dividing the text up into digestible chunks, interspersing it with tables and diagrams if appropriate, and providing a clear layout with wide margins.

Table 13.3 Elements and general criteria used to assess a dissertation or thesis

Element	Criteria
Objectives	Clarity Relevance Achieved
Research design	Appropriate Rationale Assessment: Reliable (replicable) Valid (accurate)
Literature review	Relevant Sources
Data collection and analysis	Primary/secondary Relevant to objectives Quality of analysis
Conclusions and implications	Persuasive/supported by evidence Contribution not overstated Limitations acknowledged Any recommendations feasible/imaginative
Presentation	Style/use of language Clarity Use of tables/figures/summaries Word count
Internal consistency	Continuity Objectives/conclusions
Integration of academic knowledge	Originality/initiative 'A learning process'

Readability is the ease in which text can be read and understood. Chall (1958) identifies three key, interrelated elements of the readability which we advise you to consider:

- interest (the ability to hold the reader's attention)
- legibility (the impact of factors such as typography and layout on the reader)
- ease of understanding (reading comprehension).

If the text is intended for a specialised audience, as in the case with academic research, a certain level of difficulty may be unavoidable or appropriate. Although some weakness in the readability of the text might not be a significant factor if the topic is of particular interest to the reader, you need to meet the expectations of your supervisor(s) and/or examiner(s). Although improving the readability of the text does not necessarily make it significantly more interesting or informative, it could improve the effectiveness of the communication.

In Chapter 3, we explained that rhetorical assumption associated with your research paradigm should be reflected in the language you use to report your research. In a positivist study, the tradition has been to use the passive voice. For example, instead of writing, 'As part of my research, I observed a group of employees…' you will write, 'As part of the research, observations were made of a group of employees…' This is because you are trying to convey the impression that your research was objective, that you followed rigorous procedures and any personal opinions and values you possess were not allowed to distort the results. However, there has been a move away from the passive voice in recent years and increasing numbers of researchers in Europe and North America now favour the active voice. There is also some debate over whether

Table 13.4 Indicative assessment criteria for a dissertation or thesis

Level	Description	Criteria
First degrees and some Master's degrees which require the completion of a project	Dissertation	1. A well-structured and convincing account of a study, the resolution of a problem, or the outcome of an experiment
Master's degree by study and dissertation	Dissertation	1. An ordered, critical and reasoned exposition of knowledge gained through the student's efforts 2. Evidence of awareness of the literature
Master's degree by research	Thesis	1. Evidence of an original investigation or the testing of ideas 2. Competence in independent work or experimentation 3. An understanding of appropriate techniques 4. Ability to make critical use of published work and source materials 5. Appreciation of the relationship of the special theme to the wider field of knowledge 6. Worthy, in part, of publication
Doctoral degree	Thesis	1. to 6. as for Master's degree by research 7. Originality as shown by the topic researched or the methodology employed 8. Distinct contribution to knowledge

Source: Howard and Sharp (1994, p. 177). Reproduced with permission.

it is acceptable to use 'we' rather than 'I' when there is only one researcher. In our view, unless the work was done as a team, it is misleading to use 'we' and you run the risk that the examiner will think that more than one person was involved in what is intended to be an individual assignment. In an interpretive study, the preferred style is usually the active voice as this reflects the immediacy of the research and the researcher's involvement. Because there are choices, we advise you to examine the previous studies you have collected on your topic and identify the norms. You should then discuss the matter with your supervisor and find out what is acceptable.

Irrespective of your paradigm, remember that you need to use the present (or past) tense in your dissertation or thesis. In Box 13.1 we offer some general guidance on the presentation of text.

Box 13.1 Guide to the presentation of text

Writing style

- Text should be written as lucidly and clearly as possible.
- The language and style should be appropriate for your paradigm and your intended audience.
- Sentences should be kept short; preferably no longer than 20 words.
- A new paragraph should be started for each new idea.

Grammar and semantics

- The grammar, punctuation and spelling (especially of names) should be checked.
- Computerised spelling and grammar checkers should be used judiciously.

- Precise words, rather than general or abstract words, should be used.
- Only use accepted abbreviations and state the full term with the abbreviation in brackets next to it the first time it is used.
- The meaning of words and phrases should be checked for correct usage.
- Jargon should be avoided, and a glossary provided for any technical terms.
- The document should be carefully proofread for typographical mistakes, repetition, clichés, colloquialism, errors and omissions.

When making notes and rough drafts, students often develop a quick way of writing that involves making up their own abbreviations for terms they use frequently. However, you must not do this in your dissertation or thesis. Before using an accepted abbreviation, show the term in full the first time it is used with the abbreviation in brackets next to it; subsequently, simply use the abbreviation. An abbreviation is a shortened form of a word or phrase that is used to represent the whole (for example, etc. is short for etcetera). An acronym is an abbreviation of a phrase that is pronounced as if it were a word (for example, UNICEF is short for the United Nations International Children's Emergency Fund). An acronym differs from an initialism which is an abbreviation of a phrase that is pronounced one letter at a time (for example, SME is short for a small or medium-sized enterprise). The choice of indefinite article for any type of abbreviation is determined by the sound of the first letter in the abbreviation (Nordquist, 2019). Use 'a' before a consonant sound (for example, a UNICEF report) and use 'an' before a vowel sound (for example, an SME study).

We recommend you use up-to-date reference sources, such as an authoritative dictionary, thesaurus and grammar guide. If you are using *Microsoft Word,* you can use the spelling and grammar checker provided (Review\abc) but remember that it does not take account of the sense in which the words are used or whether they represent an interesting or dull form of expression. However, the dictionary used by the spelling and grammar checker can be set to take account of cultural differences between English-speaking nations which give rise to differences in spelling and punctuation, so make sure you have chosen your English language preference before you run the checker. The best time to choose your English language preference is when modifying the normal text and headings to suit your requirements (from the Styles menu). If you only have a small amount of text, you can click on Select all from the Editing menu and then go to Review\Language.

Although spelling, grammar and punctuation play an important role, writing is more than a matter of correct usage; it involves a careful choice of words to create a lucid, flowing style, which both attracts and maintains the interest of the reader. Remember to use transition words or phrases when moving from one idea to another, such as 'furthermore', 'in addition', 'moreover', consequently', 'however', 'finally', and so on. If you want to give a point-by-point explanation, do not say 'firstly', 'secondly', 'thirdly', and so on. Instead, say: 'There are a number of reasons for this. The first is… The second reason is… The final reason is…' This should allow a personal style of writing to develop without becoming too pedantic over rules.

If you already have a good writing style, the above principles will be relatively easy to apply. Unfortunately, most of us are not gifted in this way, but at least we should aim to be competent. One way to improve your writing style is to look at how the academic authors you admire express themselves or look at the examples in an academic phrasebank, such as the one developed by the University of Manchester University (http://www.phrasebank.manchester.ac.uk/). In this phrasebank, the phrases are grouped into categories that represent the main chapters/sections of a dissertation, thesis or other research output. There are also categories of phrases used when being cautious or critical, for comparing and contrasting, defining terms, giving examples, and so on. Most of the phrases are generic so they can be incorporated in your work without worrying about committing plagiarism, which is taking someone's words, ideas or other information and passing them off as your own because you fail to acknowledge the original source. An academic phrasebank is an extremely useful resource for students writing up their research, and they are also useful if you are planning to write conference papers or journal articles (see Chapter 14).

13.2.5 Designing the research report

In this section, we consider the overall report design. When planning your research report, it is useful to bear in mind the concept of synergy: your dissertation or thesis should be greater than the sum of its parts. To achieve this, you must remember that the chapters of your dissertation or thesis do not exist in isolation from one another; they are interrelated and need to be integrated to form a cohesive whole. In Box 13.2, we offer a logical and structured approach to report design.

Box 13.2 Guide to report design

Structure

- Present the information in a logical sequence. Each section should support a central message and each item should lead to the next.
- Adopt a standard hierarchy of headings and subheadings to structure the report.
- It is usual to divide the report into chapters which contain several main sections and these, in turn, are divided into subsections.
- Number the chapters, main sections and subsections sequentially. Thus, section 3.5.5 refers to the fifth subsection in section 5 of Chapter 3. Three is normally considered to be the maximum number of subdivisions.
- Choose wording of headings and titles of tables and figures for speedy signalling of the content to the reader.
- It is not usual to number the paragraphs in a dissertation or thesis. However, this might be required if you subsequently write a report for a non-academic sponsor, such as a government department or professional body.

Style and layout

- Throughout the document, be consistent in terms of page size, layout, headings, fonts, colour, justification, and so on.
- A reasonable sized font (say 10 or 12 point) should be used to ensure legibility.
- The layout should aid the communication.
- Colour or space should be used to attract the reader's attention to key information.
- Do not distract the reader by using more than four or five colours (except for illustrations and photographs). Avoid the combination of red and green for adjacent data, which is a problem for people who are colour deficient.

Presentational forms

- To maintain the interest of the reader, a variety of presentations should be used, as dictated by the type of data (qualitative or quantitative) and the purpose (for example, for comparison).
- Tables and figures (charts, diagrams and other illustrations) should relate to the text so that the information is supported by the different representations.
- Titles and headings used for tables and figures should be standardised and numbered sequentially. The first digit should refer to the chapter number and the second digit to the table/figure number. Thus, Table 3.5 refers to the fifth table in Chapter 3 and Figure 3.1 refers to the first figure in Chapter 3). It is helpful to the reader if the title is shown above the table or figure and the source of the data is shown below.

You will need to ascertain from your university or college what the requirements are with regard to style, length and structure of your research report. Even at the draft stage, it is valuable to use the format required by your institution. This will save you considerable time later on when you are trying to refine and improve the content of the document. In the absence of specific guidance, we recommend the following:

- Left-hand margin 3.5 cm (to allow for binding) and all other margins 2.5 cm
- Title: Cambria 18 centred
- Chapter headings: Cambria 14 aligned left
- Section headings in chapters: Cambria 13 aligned left
- Text: Calibri 12 justified
- Line spacing: 1.5
- Block paragraphs (no indents)
- Page numbers at the bottom of the page
- Print your work on one side of the page only.

You may be required to submit one or more bound copies as well as a digital copy. Many universities now submit students' work to an electronic plagiarism checker. Therefore, you must be scrupulous about citing the sources of all materials used in your dissertation/thesis that are not your own work. We advise you to keep all the materials you have used until you have received your award. These include samples, research data, preliminary analysis, notes and drafts, so that you can produce them on request.

The length of your dissertation or thesis is likely to be restricted. This is commonly measured by the standard word count available in *Microsoft Word*. The count usually starts at the beginning of the first chapter and ends on the last word of the last chapter (it automatically includes any footnotes or endnotes). It normally excludes the preliminary pages, references and any appendices, but you need to check the rules in your institution. Be very careful not to exceed the maximum number of words allowed as you might be penalised. You should bear in mind that supervisors and examiners are aware of students' ploys in placing information in an appendix rather than writing more succinctly to keep within the maximum length. A research report accompanied by a voluminous set of appendices is likely to give a poor impression. Table 13.5 gives a general indication of the typical word count for a dissertation or thesis.

Table 13.5 Typical length of a dissertation or thesis

Level	Research report	Typical word count
Undergraduate	Dissertation	10,000
Taught Master's	Dissertation	15,000
Master's by research	Thesis	40,000
Taught doctorate	Thesis	50,000
Doctorate by research	Thesis	80,000

13.3 Structure and content

13.3.1 Overall structure

The overall structure of your dissertation or thesis should be logical and clear to the reader, and you should bear this in mind when deciding on the wording of your headings for each section, table or figure. Table 13.6 shows a generic structure, with an indication of the approximate size of the chapters in relation to the whole report. It is important to note that this

Table 13.6 Indicative structure of a dissertation or thesis

	% of report
1. **Introduction** – The research problem or issue and the purpose of the study – Background to the study and why it is important or of interest – Structure of the remainder of the report	10
2. **Review of the literature** – Evaluation of the existing body of knowledge on the topic – Theoretical framework (if applicable) – Where your research fits in and the research question(s) and propositions or hypotheses (if applicable)	30
3. **Methodology** – Identification of paradigm (doctoral students will need to discuss) – Justification for choice of methodology and methods – Limitations of the research design	20
4. **Findings/results** – Presentation of the analysis of your research data	15
5. **Discussion** (include in findings/results chapter if preferred) – Discussion of how your findings/results relate to the literature	15
6. **Conclusions** – Summary of what you found out in relation to each research question – Your contribution to knowledge – Limitations of your research and suggestions for future research – Implications of your findings (for practice, policy, etc.)	10
	100
References *(do not number this section)* – A detailed, alphabetical (numerical, if appropriate) list of all the sources cited in the text	
Appendices *(if required)* – Detailed data referred to in the text, but not shown elsewhere	

structure is only a guide; you will need to modify it to reflect your study after discussion with your supervisor. In practice, the size of each chapter will vary according to the nature of the research problem, the methodology adopted and the use of tables and figures. In an undergraduate or taught Master's dissertation, there is often less scope for primary research and therefore the literature review forms a more substantial part of the report. On the other hand, in a thesis for a Master's by research or a doctoral degree, particularly if the study is designed under an interpretivist paradigm, the methodology chapter plays a significant role.

If you are a doctoral student working on a multiple-paper thesis, you should seek advice from your supervisor on the most appropriate structure. In a multiple-paper thesis, although the thesis stems from a single research project, it is built on a number of related but distinct papers (usually three) that have already been published or are considered to be of publishable quality by the student's thesis committee. A multiple-paper thesis differs from a traditional thesis in structure only. The example in Box 13.3 shows the structure chosen by Stephanie, a PhD student in Belgium researching the voluntary disclosure of sales by small companies.

Box 13.3 Example of the structure of a multiple-paper thesis

General Introduction

Paper 1. Empirical evidence from voluntary disclosure practices by small companies in Belgium

1. Introduction
2. Literature review and hypothesis development
3. Sample selection and research design
4. Results and discussion
5. Conclusions, limitations and further research

Paper 2. Determinants of voluntary disclosure of sales by small companies in Belgium

1. Introduction
2. Literature review and hypothesis development
3. Sample selection and research design
4. Results
5. Conclusions, limitations and further research

Paper 3. Accountants' perceptions regarding small companies' disclosure decisions

1. Introduction
2. Literature review
3. Research design and sample selection
4. Results
5. Discussion and conclusions

Paper 4. Voluntary disclosure of sales and the extent of trade credit in small companies

1. Introduction
2. Literature review and hypothesis development
3. Sample selection and research design
4. Results and discussion
5. Concluding remarks

Final discussion and conclusions

References

Appendices

It is useful if the chapter titles you use reflect the contents, but do not be over-imaginative; the examiner will have certain expectations about the content and the order in which it will appear. Therefore, it is best to follow a traditional structure, unless you have good reasons. There are no hard and fast rules about how individual chapters should be structured, but some form of numbering is common. We have already mentioned that you should number the chapters (for example, Chapter 3), the main sections within each chapter (for example, 3.2) and any subsections within the main sections (for example, 3.2.1). If you need to divide any of your subsections further, we suggest you use bold italics since further sequential numbering can lead to a fragmented appearance. Consider the wording of the headings and subheadings you use carefully since they give important signals to the reader about content and

sequence of different aspects of your discourse, not only in your chapters but also in the table of contents. The more logical you can make the structure of your dissertation or thesis, the easier it will be for you to write and for the examiner to read.

13.3.2 Preliminary pages

The preliminary pages precede the first chapter. Apart from the title page, the format for page numbers for the preliminary pages is normally small Roman numerals (i, ii, iii, and so on). This allows the pages of the chapters to be numbered in Arabic numerals (1, 2, 3, and so on). The preliminary pages are typically as follows, but you should check the regulations at your institution:

- Title page (no page number) – Your research project may have been registered with a particular title, but you now need to review it to ensure that it clearly indicates the focus of your study. Choose your words carefully and keep the title as short as possible by eliminating superfluous words. For example, do not include general phrases such as 'A study of…' or 'An investigation into…' Sometimes a colon is used in the title, as in 'Demand for voluntary audit: The UK and Denmark compared'.
- Acknowledgements (start numbering the pages from here) – The acknowledgements should comprise two or three sentences thanking those who have helped you with your research; for example, your participants (write in general terms to preserve their anonymity), supervisor(s), family and friends.
- Table of contents – This lists the chapters and the main sections within them, together with their associated page numbers. You can generate this in *Microsoft Word* if you designate styles to the hierarchy of headings for your chapter headings and main section headings (no need to include subheadings) in your work (References\Table of Contents).
- List of tables and list of figures (as appropriate) – This can also be generated in *Microsoft Word* if you designate styles to the titles of your tables and figures (References\Captions\Insert Table of Figures).
- List of abbreviations – A list of abbreviations in alphabetical order can be generated in *Microsoft Word*, but you will need to select and mark each abbreviation or acronym together with its meaning (References\Index\Mark Entry). When you have finished, insert the list (References\Index\Insert Index).
- Abstract (if required) – This is not an introduction, but a brief summary in a single paragraph (without any citations or bullet points). It should cover the purpose of the research, the methods, the key findings/results and the contribution. The maximum length of an abstract in a dissertation or thesis is usually 500 words. If you are required to write an abstract, you will need to check the maximum number of words allowed.

The example in Box 13.4 shows the abstract written by Esra'a, a PhD student researching digital financial reporting.

Box 13.4 Example of an abstract of a doctoral thesis

This thesis investigates the factors that affect the take-up of mandatory digital reporting of the statutory accounts and returns to the tax authority (HM Revenue and Customs) and voluntary digital reporting to the company registry (Companies House) by small private companies in the UK. In doing so, it identifies the costs and benefits of this innovation from the perspectives of the filers and those using the digital information reported. The first stage of the study comprised 16 semi-structured interviews with key stakeholders: HMRC, Companies House, the external iXBRL consultant at HMRC, filing software suppliers, and accountants in business and practice. The interview data was analysed thematically, aided by NVivo. The second stage involved an online survey of 343 ACCA members working in small companies or in practices with small company clients. The survey data were analysed using the partial least squares structural equation modelling

(PLS-SEM) method. As hypothesised, the results show a significant positive association between digital reporting and the company having the technological competence, and between digital reporting and support for this from top management. As predicted, there is evidence of a negative association between digital reporting and the complexity of the process, and between digital reporting and the cost of technology. However, the study finds no evidence of a significant association between digital reporting and compatibility of digital reporting with the company's accounting system, statutory requirements or network effects. The results provide demonstrate a positive association between digital reporting and benefits to filers, and between digital reporting and benefits to those using the digital corporate data. The latter association is mediated by the digital search and data services provided by Companies House. This is the first study to investigate digital reporting to HMRC after it became mandatory for small companies in the UK. It contributes to the emerging literature by extending our knowledge of the costs and benefits of digital reporting by small companies. In addition, it contributes to theory by developing and validating a theoretical model of the factors affecting the take-up of digital reporting. The results should be of interest to the directors of small companies and their accountants. They will also be of interest to policy makers seeking to reduce the administrative burdens on smaller entities in the UK and those in other jurisdictions planning digital reporting initiatives.

Having described the preliminary pages, we are now ready to look at the chapters, which form the main body of the research report. You will need to divide each chapter into several numbered sections. All your chapters should have an introductory section and a concluding section, which allows you to provide links between the chapters, but note that it will not always be appropriate to head them 'Introduction' and 'Conclusions'. We will comment on this in the next section.

13.3.3 Introduction chapter

It might surprise you to know that once your supervisor(s) and examiner(s) have glanced at your contents page, the first two chapters they are likely to read are your introduction and your conclusions chapters. This is because the first chapter gives an overview, rather than the detailed information contained in the subsequent chapters, and the last chapter gives a good indication of whether the findings/results represent an exciting development within the field. Therefore, do not neglect these smaller chapters. We suggest that you do not finalise your introduction chapter until after you have completed your conclusions chapter to ensure they are complementary.

The introduction chapter will probably have four or five sections. As in all chapters, your first section will be an introduction to the chapter. This could cause you a problem if you've decided to call your first chapter '1. Introduction to the study'. A simple way round this is to call the chapter '1. Background to the study' which allows you to call the first section of the chapter '1.1 Introduction'.

The first few sentences of the introduction are crucial, as their role is to attract the reader's attention and set the tone for the entire document. Winkler and McCuen-Metherell (2012) offer three alternative strategies:

- Use an appropriate quotation that is directly relevant to the research problem or issue and leads you on to develop an argument to support or refute the quotation.
- Pose a question that draws the reader into your discussion. This allows you to word the question to fit the arguments you wish to present.
- Use a carefully chosen illustration that is directly relevant to the research problem or issue that can capture the reader's interest immediately.

However you decide to start, the opening paragraphs of your introduction chapter should help the reader understand the title of the dissertation. Therefore, you should state the general purpose of the research and explain the research problem/issue, defining key terms as they arise in your narrative. You will also need to provide background to the study, which is a broad view of the topic in terms of the key literature and business context. This paves the way for you to identify the gaps and provide a rationale for your research by

explaining why your study is important and of interest. There is no need to go into great detail, as subsequent chapters will do this. Once you have done that, you can state your aims and objectives, which should be linked to your research questions. Do not mention any of your findings/results in this chapter. As it is too early to be drawing any conclusions from the first chapter, do not call the final section in this chapter 'Conclusions'. Instead, use 'Structure of the remainder of the dissertation/thesis' as appropriate. Your description should be a narrative, not a table or bullet point list. Its purpose is to allow the reader to see what lies ahead, in the same way as a map shows a driver the road ahead. Therefore, it needs to be interesting and entice the reader to read on.

Remember that you should be writing in the present (or past) tense. This means you will need to review and amend any material you wrote for your proposal which was written in the future tense.

13.3.4 Literature review chapter

Your literature review chapter plays a very important role in your dissertation or thesis. In Chapter 5, we defined a literature review as a critical evaluation of the existing body of knowledge on a topic, which guides the research and demonstrates that relevant literature has been located and analysed. Thus, the main task is to provide a critical analysis of the previous studies and other literature relating to the problem or issue you have chosen to investigate. If you are a positivist, you will refer to the main theories and other explanatory models in order to develop a theoretical framework for your study and develop associated hypotheses. If you are an interpretivist, your critical analysis of the literature is likely to focus on identifying the key themes that emerge from the literature and drawing conclusions that add value to the research problem or issue. This might include analysing arguments on controversial topics and providing insights into emerging issues and gaps. Some interpretivists use the literature review to develop a conceptual framework for their research.

Regardless of your paradigm, your literature review will build on the preliminary review of the literature in your research proposal. It will reflect the way in which you have analysed the literature. The more logical you can make this chapter, the easier it will be for you to write and for the examiner to read. We advise you to structure it thematically to avoid the trap of merely writing a descriptive list of who wrote what and when. How you order the themes is very much a matter of choice, influenced by the nature of the research and the arguments you are trying to make. There are several ways in which the themes can be ordered:

- chronologically, which is appropriate if you are trying to give a historical perspective or describe developments in the order in which they occurred
- categorically, which is used if you are discussing different perspectives or studies with different institutional, industrial or geographical settings
- by perceived importance, starting with the least important and finishing with the most important or vice versa, depending on the nature of the argument you are making.

The last section of the literature review (conclusions) will draw attention to the gaps and deficiencies in the literature and identify which of these your study addresses. This will lead to a statement of your research questions and hypotheses (if applicable). It could be useful to use software such as *Microsoft Visio* to help you summarise your theoretical or conceptual framework in diagrammatic form. Once you have finalised this chapter, you should check that there is consistency in the wording you use for your research questions in Chapter 1 and other places in your dissertation or thesis.

While perusing the literature, you will have read many literature reviews in journal articles related to your topic. These should provide you with examples of what is required. The main point to remember is that your literature review should show a competent exploration of the background to the work and a comprehensive review of the relevant literature, including the most recent publications. Many students are surprised at how long it takes before they (and their supervisors) are satisfied with this important part of their dissertation or thesis, so allow plenty of time for revising and improving this chapter.

By now you should be familiar with the methodologies and findings of the seminal studies in your topic area, and the names of key authors. These citations and others from the leading journals in your field will play a key role in your literature review. If you have already

presented a conference paper or have already published an article from your research, you should also cite that. This will demonstrate to your supervisors and examiners that your work has been exposed to a certain level of peer review.

On the subject of citations, we have a few tips to offer. If you are referring to an author whose work you think is important or whose argument you consider supports yours, you should start the sentence with his or her name. For example, 'Bloggs (2020) found evidence of a link with motivation that helps explain…' On the other hand, if you want to place more emphasis on the idea than the author, cite the name within the sentence. For example, 'Although a link with motivation has been suggested as an explanation (Bloggs, 2020)…'. Remember that it is your research and you are setting out to be the authority in this specialised area, so do not be afraid to criticise their work, regardless of their status. However, it is essential to justify your critique. If your supervisors or examiners have published on your topic, ensure that you fully understand their work when citing it and take note of any limitations they point out in their publications.

If you are concerned that your literature review is too long, you will have to go through it summarising where you have become too verbose. If you feel inclined to delete some of the less important items, pick out references to newspapers, commercial magazines and unpublished academic work, rather than articles in refereed academic journals. Only delete references to articles in the latter if they are not relevant. There is much more detailed guidance in Chapter 5, but we will conclude this section by looking at some of the common faults made by students when reviewing the literature (see Box 13.5).

Box 13.5 Common faults when reviewing the literature

- Making assertions without stating where the evidence is
  - You must support all assertions with references to the literature to avoid plagiarism
- Failing to state the country, time, objectives, respondents or methodology of previous studies
- Listing the literature rather than providing a synthesis and a critical evaluation
- Poor structure, writing style, spelling and grammar
  - Use section headings within the chapter to signal themes and link ideas
  - Adopt a style that reflects your rhetorical assumptions
  - Avoid colloquial phrases in your own writing
  - Use the spelling and grammar checker
- Failing to show relevance of the literature reviewed to the study
  - Identify the theoretical framework or context for your study
  - Conclude with the research question(s) addressed by your study

13.3.5 Methodology chapter

The methodology chapter is a critical part of your dissertation or thesis. All students should start with an introductory paragraph that briefly describes the main features of the methodology and how the chapter is the organised. Building on the methodology chapter you wrote for your proposal, you need to proceed to explaining and justifying your methodology, and your methods for selecting a sample or cases, collecting research data and analysing it. You should provide a rationale for your choices by weighing up the advantages and disadvantages against alternatives. If you have promised anonymity to your participants, you need to explain how the participants are labelled (for example, with a pseudonym or code). You also need to discuss matters relating to research ethics, the limitations of your research design, and any problems you encountered together with how you overcame them.

In an interpretive study, the methodology chapter should stress the rationale for the chosen methodology, before discussing the methods. You might consider that the philosophy and assumptions underpinning the methodology, and their appropriateness to the research problem, are so important that you devote a separate chapter to their discussion. Box 13.6 gives guidance on writing the methodology chapter(s) in an interpretive study.

Box 13.6 Main sections in the methodology chapter of an interpretive study

- Explanation of the appropriateness of the methodology in the context of your paradigm.
- As there are many variations within an interpretive approach, quote a number of definitions of your methodology, explain the main features and refer to studies that have used it.
- Description of methods used to locate and select the cases.
- Description of the methods used to collect data for the literature review and the research data. Discussion of their strengths and weaknesses in the context of alternatives to justify your choice. If the research data were collected over a long period of time, include a timetable showing when specific activities took place and any critical events.
- Description of the methods used to analyse the literature and the research data. Keep this general and do not start discussing your findings.
- Consideration of ethical issues and discussion of the limitations in the research design, making reference to generalisability, reliability and validity.

The philosophical assumptions of your paradigm must be woven into the way you write. Merriam (1988) identifies the following assumptions which provide a platform for interpretivists:

- You are primarily concerned with process, rather than outcomes.
- You are not interested in frequencies, but in meaning (how people make sense of their experiences and the world around them).
- You are the primary research instrument. It is by you and through you that data are collected, analysed and interpreted.
- Your research is placed in a natural, rather than an artificial, setting. It is conducted in the field by you visiting the location(s) where the activity takes place so that you can observe and record it.
- The research is descriptive and seeks to capture process, meaning and understanding.
- The process of research is mainly inductive because you are attempting to construct abstractions, concepts, propositions and theories from abstractions.

In a positivist study, the methodology section should describe the exact steps you have taken to address your hypotheses or research questions (Rudestam and Newton, 2007). If you are using well-known procedures and tests, there is no need to describe them in detail; you need only refer to them. You will also need to describe any little-known techniques, or those you have devised or modified, in detail. In a positivist study, the methodology chapter can usually be divided into the main sections as shown in Box 13.7.

Box 13.7 Main sections in the methodology chapter of a positivist study

- Explanation of the appropriateness of the methodology in the context of your paradigm.
- Description of the sampling method, sampling frame, size of the population, number of responses and response rate compared with previous studies.
- Description of the methods used to collect data for the literature review and the research data. Discussion of their strengths and weaknesses in the context of alternatives to justify your choice. If the research data were collected over a long period of time, include a timetable showing when specific activities took place and any critical events.

- Description of the methods used to analyse the literature and the research data. Discussion of their strengths and weaknesses in the context of alternatives to justify your choice.
- Description of the variables in the analysis, level of measurement, unit of measurement and codes used.
- Consideration of ethical issues and discussion of the limitations in the research design, making reference to generalisability, reliability and validity.

13.3.6 Findings/results chapter

Your findings/results chapter is where you will refer to your empirical findings for the first time. While interpretivists usually refer to their findings, positivists are more likely to refer to their results because their analysis is based on statistical testing of hypotheses. If you are an undergraduate or taught Master's student, you might decide to present your findings/results and discussion together in a single chapter. If you are doing a Master's by research or a doctoral degree, you are likely to have analysed a considerable amount of data and might need to spread your findings/results across more than one chapter and write a separate discussion chapter.

All students should start by restating the purpose of the research and the research questions from the introduction chapter in the dissertation or thesis. Interpretivists will then describe the main characteristics of their cases while positivists will provide descriptive statistics to describe their sample. This sets the scene for presenting the analysis of your research data, which you should structure in a logical order that allows the reader to relate your evidence to the research questions.

Interpretivists are likely to focus on the patterns and relationships they have found in their research data, and some go on to develop theory. If you have conducted an interpretive study, you will need to spend some time reflecting on how to intersperse your description of your findings with quotations and/or data displays to support your analysis. We offer guidance on how to present qualitative data in your findings chapter in section 13.4.1.

On the other hand, positivists will present the results of their hypothesis testing, using the statistical methods outlined in their methodology chapter. We advise you to give each hypothesis test its own subheading. For each hypothesis, remind the reader of what you predicted and present summaries of the results in tables, interpreting them in terms of the measurement methods you used. For example, if you used 'turnover' as a proxy for 'size', say 'The results show that turnover was the main predictor of voluntary audit…' rather than 'The results show that size was the main predictor of voluntary audit…' You need to comment on whether your evidence supports the hypothesis. Unless you are incorporating your discussion in this chapter, you should devote little space to theory or criticism. We offer guidance on how to present quantitative data in your results chapter in section 13.4.2.

13.3.7 Discussion chapter

The purpose of the discussion chapter is to connect your findings/results with the literature you covered in your literature review chapter. The discussion chapter should come after the findings/results chapter and before the conclusions chapter. When reading the literature, you will see examples of how authors write a separate discussion section in their work or incorporate the discussion when presenting their findings/results. All students should find the following guidance we offer in this section useful.

Interpretivists need to discuss how their findings relate to the literature, the development of theory, how transferrable the findings are to other settings, and what this means in practice. You will find it useful to discuss the findings of your study in order of importance, starting with the most important. You must avoid introducing new ideas, but it is valuable to consider alternative explanations for your findings. In an interpretive study, you should reflect on where you might have introduced bias by critically examining your influence on the research design, data collection and interpretation of the findings.

Positivists should discuss how their results relate to the literature, their hypotheses and existing theory. If you do not find evidence to support a particular hypothesis or your results are not consistent with previous studies, you should try to offer an explanation. You need to

reflect on what your results suggest about the phenomenon under study and what any exceptions to the theory tested might be. In a positivist study, you should comment on the generalisability of your results and what this means in practice. In this chapter, you can use conceptual language rather than referring to the exact measurement methods. Therefore, you can talk about 'size' rather than 'turnover'.

There is wide agreement in the literature that your discussion should include the following information:

- The major findings/results of the study
- The meaning of these findings/results
- How these findings/results relate to previous studies
- The limitations of your findings/results
- An explanation for any surprising, unexpected or inconclusive findings/results.

However, your discussion should not include any of the following:

- New findings/results or data not presented in your findings/results chapter
- Unwarranted speculation on the meaning of the findings/results
- Tangential issues
- Conclusions not supported by your research data.

13.3.8 Conclusions chapter

It is very important that the conclusions chapter in your dissertation or thesis complements your first chapter because your supervisor and examiners are likely to turn to the final chapter immediately after reading the first chapter. The sign of a well-written dissertation or thesis is that a cohesive approach has been taken and the discourse develops from chapter to chapter. The concluding section of each preceding chapter can greatly assist with this.

While the first chapter starts broadly and then became focused, your conclusions chapter should be the opposite. Start by restating the purpose of the research and then summarise what you found out in relation to each research question. Do not introduce any new information. This is a good time to check that you have used the same terms when describing the purpose of your research and your research questions throughout your dissertation or thesis.

You should then widen your discussion by explaining your contribution to knowledge (empirical, theoretical or methodological), without being too ambitious in your claims. This will include referring to the gaps and deficiencies in the literature that your study has addressed. Look at the aims of your research in the introduction chapter and ensure that your conclusions chapter shows that they have been achieved or explains why they have not. As well as summarising the specific strengths of the research, you must also summarise its limitations in terms of the reliability, validity and generalisability of the findings/results. Do not be reluctant to be self-critical and demonstrate what you have learned from your experience. This discussion should lead to suggestions for future research.

To end your dissertation or thesis on a strong, positive note, you might conclude by discussing the implications of your findings/results for practice, policy, and so on. If you are an MBA or DBA student, you will probably be expected to make practical recommendations based on your findings/results. Remember that the theme of the whole of this chapter is the conclusions that can be drawn from your study, so you will not need a conclusions section in this chapter. In the same way that you spent some time choosing the opening sentences for your introduction chapter, you should consider the wording of your last sentence carefully. Aim for a convincing ending!

If you are going to defend your dissertation or thesis at a *viva voce* examination (see section 13.6), your conclusions chapter is likely to receive considerable attention. Therefore, be careful not to make any sweeping statements or exaggerated claims. If you have found out something original, interesting and worthwhile, discuss it fully and with enthusiasm, but remember to acknowledge the contribution made by the previous studies that underpin your work.

Vox pop What has been the high point of your research so far?

Maysara, MBA student investigating healthcare systems management in occupied Palestinian territory

I feel that covering the gap in knowledge in an area where no research has ever been conducted was very significant. I hope it will open the doors for further studies and lead to better healthcare for the Palestinian people.

Ben, MBA student investigating access to finance for SMEs

Although there are a number of government incentives in the UK to help SMEs get access to finance, the findings from my interviews suggested that very few owner-managers knew about these schemes. This excited me as I hope to develop a consultancy helping businesses access this source of finance.

13.3.9 Appendices

Your dissertation or thesis must contain all information the reader needs to understand the research problem or issue, the research design and the findings/results. This includes all necessary tables and figures needed to communicate your findings/results. An appendix is an optional supplement at the end of a document that provides additional but non-essential information. The key point to remember is that your dissertation or thesis must be able to stand alone without any appendices.

Typically, an appendix to a research report contains detailed, lengthy supplementary information that supports your study, but including it in the main text would interrupt the flow of your discourse. Examples include:

- summary information on the industry of interest
- background information relating to your case studies
- a copy of your questionnaire or interview schedule
- examples of coded interview transcripts
- a copy of the coding frame you used for a content analysis
- tables showing results of additional statistical tests, such as normality, non-response bias, response bias and robustness tests.

Each group of items will have a separate appendix, which should be numbered sequentially and given a title. The numbering should relate to the order in which each appendix is first mentioned in your dissertation or thesis (it is essential that you refer the reader to the information in every appendix). Most examiners are unimpressed by large quantities of data in appendices and you should not use an appendix as a dustbin for all those bits and pieces you could not fit into the main part of the document or as a way of reducing your word count.

13.4 Presenting qualitative and quantitative data

Presenting qualitative and quantitative data in your findings/results chapter is greatly aided by the use of analytical software which generates a range of data diagrams and tables. You can also use the drawing facilities on *Microsoft Word*, *Microsoft Visio* or desktop publishing software to develop your own diagrams. We will start by looking at the presentation of qualitative data.

13.4.1 Qualitative data

Presenting qualitative data in your findings chapter can pose a number of challenges. If you have conducted an interpretive study, you will need to spend some time reflecting on how to

intersperse your narrative with quotations or other illustrations to support your findings. This gives your text authenticity and vibrancy and allows the reader to share the world you are analysing. The data displays you used for analysing your research data can be used to great effect or you could create your own diagrams.

If you are using quotations from interviews, focus groups, observations or other methods that involve human participants to illustrate your findings, you must make sure that each one is labelled with the pseudonym or code associated with the participant to identify them whilst preserving their anonymity at the same time. You need to ensure that all the quotations you use are relevant and drawn from a range of participants to avoid bias. Explain this in your methodology chapter as well as clarifying the criteria you used for selecting quotations. As your narrative is the main means by which you report your findings, avoid using long quotations and do not allow quotations or illustrations to dominate your findings chapter. If appropriate, you could report on how participants talked about the topic, their verbal and non-verbal communication, and so on. If you have used methodological triangulation, you will also need to discuss the findings from your analysis of other qualitative or quantitative research data you have collected.

Ensure that all the quotations you use closely tied in with your narrative and maintain a balance between quotations and your narrative. The main alternatives for presenting quotations include:

- short quotations embedded in a sentence you have written
- a single, longer, indented block quotation (typically 30 words or more)
- two or more longer, indented block quotations put together for comparison.

An indented block quotation is presented as a separate paragraph indented from the margin. You should use single spacing and a smaller font than your main text, but there is no need to use quotation marks. Some research use italics rather than a smaller font. Box 13.8 shows an example of narrative supported by block quotations provided by Esra'a, a PhD student researching digital financial reporting. The quotations in this example are taken from interviews with key stakeholders and were used to develop a deeper understanding of the research issues prior to conducting an online questionnaire survey.

Box 13.8 Example of narrative supported by block quotations

Most of the accountants interviewed hold the view that digital filing provides more accurate information by reducing filing errors. The following quotation is typical:

> *You get errors with paper filing as it relies on humans intervention, but electronic accounts are much more accurate than paper.* (Accountant A, Small company A)

Two potential explanations for improved accuracy arise from the interviews. First, unlike paper filing that involves manual entry chores and manual processing, digital filing eliminates manual errors and human intervention in filing the accounts. Second, as all the calculations are performed automatically using iXBRL technology, digital filing reduces the chance of the submission being rejected. As a result, the accounts are more likely to be accurate which benefits both filers and users:

> *By digital filing you can retrieve the information easily and do checks on the information before submitting them to Companies House. Digital filing definitely removes lots of errors.* (Accountant B, Accountancy firm B)

> *The benefits for filers are particularly huge. You can clearly see that electronic accounts are more precise as the filers can make lot of checks. Our statistics show that about 2% of electronic accounts are rejected whereas 10% of paper accounts are rejected.* (Head of iXBRL Accounts Transition, Companies House)

Evan, Tran-Nam and Zakowska (2012) find similar evidence in Australia, where government agencies interviewed noticed that standard business reporting offered better quality data by reducing filing errors. This is consistent with other previous studies which also found that the reports in XBRL format published to users are more accurate (Baldwin, Brown and Trinkle, 2006; Vasarhelyi *et al*., 2010).

13.4.2 Presenting quantitative data

If you have conducted a positivist study, presenting quantitative data should be relatively easy as your statistical software will generate the results of your analysis in tables and charts that you can edit to suit your purpose. We have already given examples of how to present some of the basic statistical tests in Chapter 11. In this section, we provide further general guidance.

The general rule for writing numbers in the text is to use words for the numbers one to nine, and numerals for 10 onwards. For example, 'Only five of the respondents answered this question' or 'There were 52 respondents in this category'. There are many exceptions to this rule, most commonly when numbers below 10 are grouped together for comparison with numbers 10 and above in the same paragraph. In such cases, they should all appear as numerals as in, 'Only 5 of the 52 respondents in this category answered this question'. Other exceptions are described by Rudestam and Newton (2007).

In the sections that follow, we have drawn together a number of principles to form guidelines for different forms of presentation. This is not intended to be a rigid set of rules and you might discover other principles.

Tables

The data in a table are tabulated or classified by arranging the data items in a framework of columns and rows. Research shows that some people prefer data presented in tabular form, but often need more time to get the main points from a table than they would need with a chart (Macdonald-Ross, 1977). However, tables offer the advantage of being compact and exact, and usually outperform graphics in reporting on small data sets of 20 numbers or less (Tufte, 2001).

Iselin (1972) suggests that the way in which a table is constructed can aid the reader's comprehension. Construction signalling allows items that are grouped together to be identified, as well as differentiating names of items from names of groups. Iselin uses three different methods of construction signalling:

- lower- and upper-case letters
- the indentation of items under a group heading
- spacing between groups of items.

Although Iselin's experiments were confined to students, and some of his findings require further research, he shows that effective construction signalling has a significant effect on the speed and accuracy of the extraction of information.

Drawing from the literature and our own experience, in Box 13.9 we offer guidance on the construction of tables in your research report.

Box 13.9 Guide to constructing tables

General advice

- Use a tabular presentation for an educated audience.
- Use columns rather than rows to compare figures. If comparison is the main purpose of the presentation, consider using a comparative bar chart.
- Restrict the size to no more than 20 numbers. This can be done by dividing a large table into two or more small tables. Consider a graph for large data sets.
- Minimise the number of words used, but spell words out rather than using abbreviations or codes.

Structure and layout

- Place the table number and title at the top to allow the reader to identify and understand the purpose of the presentation before proceeding to the body of the table.
- Use different fonts and styles to distinguish the table title, headings and subheadings.
- In pairs or sequences of tables, use identical labels for common headings and labels.
- Indent items under a group variable label.
- Set columns compactly so that the eye does not have to travel too far between labels and each column of figures.
- Add grid lines to facilitate the reading of columns and rows.

The quantitative data

- Round numbers to two significant digits, unless precision of data is important.
- Where possible, order columns/rows by size of numbers. Place any miscellaneous variable last, regardless of size.
- Provide column/row averages or totals where appropriate.
- Draw attention to key figures with colour, shading or bold typeface.

Charts and graphs

Your aim when using charts and graphs is to present the quantitative data in a clear, concise, simple, effective, uncluttered and understandable manner. Research shows that some people prefer data presented in graphics, such as charts and graphs. Playfair (1786), the 18th-century political economist, developed nearly all the basic graphical designs we use to communicate substantial amounts of quantitative data. He preferred graphics (pictures and charts) to tables because they show the shape of the data in a comparative perspective. According to a more recent expert (Tufte, 2001), graphics are often the most effective way to describe, explore and summarise a set of numbers, even if it is a very large set of numbers.

Graphics, especially when colour is used, can attract and hold the reader's attention and help identify trends in the data. Therefore, quantitative information displayed in a graph 'has the potential to be both read and understood. But effective communication does not follow automatically from graph use; the graph must comply with certain principles of graph design and construction' (Beattie and Jones, 1992, p. 30). Tufte (2001) suggests that both colour and monochrome presentations require careful handling to avoid detracting from the message or misleading the reader.

Although most commentators promote the graphical presentation of comparative data, there appears to be some conflict over acceptable levels of complexity. Ehrenberg (1976) advises that a graph should communicate a simple story, since many readers concentrate on the visual patterns, rather than reading the actual data. In Box 13.10, we offer general guidance on constructing charts and graphs.

Box 13.10 Guide to constructing charts and graphs

General advice

- Do not mix different types of data (for example, percentage and absolute figures) on the same chart but draw up separate charts.
- Items should only be compared on the same chart if they have the same basic data structure and a clear relationship.
- Label the axes.

- Label data elements directly and include the unit of measurement. If there is insufficient room to label the elements directly, provide a key.
- Minimise the number of words used. If possible, spell words out rather than using abbreviations or codes. The majority of ink used to produce the graph should present the quantitative data. Delete anything that does not present fresh information, since this represents a barrier to communication.

Structure and layout

- Place the chart number and title at the top to allow the reader to identify and understand the purpose of the presentation before proceeding to the body of the graph.
- Use different fonts and styles to distinguish the chart title, axes and data element labels.
- Select an unobtrusive background.

The quantitative data

- Select colours for the data elements with high contrast from adjacent items.
- Avoid the combination of red and green on adjacent elements, which is one of the most common problems for people who are colour deficient.

Bar charts

When using bar charts, Macdonald-Ross (1977) suggests that the elements of bars should be labelled directly; horizontal bars give room for labels and figures near the elements. However, for time sequences, he recommends vertical bar charts. Thibadoux, Cooper and Greenberg (1986) advise that bars should be of uniform width and evenly spaced; they are easier to read and interpret if a space of half the width of the bar is left as the distance between the bars. The scale should begin with zero and normally should remain unbroken. The number of intervals should assist with measuring distances and generally should be in round numbers, marked off with lines or ticks. They recommend that in general graphics which use horizontal and vertical scale, lines should be proportioned so that the horizontal scale is greater than the height. This view is shared by Tufte (2001) who proposes that if the nature of the data suggests the shape of the graphic, follow that suggestion; otherwise move towards a horizontal graphical presentation about 50% wider than tall.

With regard to shading, Thibadoux *et al.* (1986) suggest that black is appropriate if the bars are not extremely wide, when diagonal line shading or cross-hatching can be used. However, horizontal and vertical shadings should not be used in segmented bars because they can affect the perceived width and shape of the bar. If you need to use cross-hatching, take care not to create optical illusions. Box 13.11 shows additional principles that apply to bar charts.

Box 13.11 Additional principles for bar charts

General advice

- Use a bar chart for comparing data.
- In a bar chart, the bars represent different categories of data. The frequency should be shown by the length (horizontal bar chart) or height (vertical bar chart) of each bar. In a histogram, the frequency is indicated by the area of the bar.
- Use a vertical bar chart for time sequences with the scale on the left. The time elements should move from left to right on the horizontal axis.
- Use a multiple bar chart, rather than a segmented bar chart, since the former provides a common base for the segments.
- Use a histogram for continuous, ratio or interval data where the class widths are unequal.

The bars

- In a bar chart, the bars should be of uniform width and evenly spaced.
- The end of the bar should be straight, not rounded or any other shape.
- Horizontal bars give room for labels and figures near the elements. Values should only be given if the result is legible and does not look cluttered.
- When using three-dimensional bars, clearly label the dimension that indicates the measurement point.
- In multiple bar charts, do not use more than four elements.
- In histograms, the ordering of the bars should be sequential.
- If you are using pictograms, take care that the dimensions (length, area or volume) correctly reflect the changing value of the variable.
- Avoid pictograms with undefined measurement points, such as piles of coins.
- Black is appropriate if the bars are not extremely wide; alternatively use shades of grey.
- Horizontal, vertical and diagonal lines should be avoided, as they can create optical illusions.

The scale

- Commence the scale at zero.
- If a break in the scale is unavoidable, it must be clearly indicated.
- Proportion the horizontal scale so that it is about 50% greater than the vertical scale.

Pie charts

Pie charts are useful for presenting proportional data. The labels and figures should be placed nearby to facilitate comparison of the different segments. Thibadoux *et al.* (1986) suggest that the largest segment is placed at the central point of the upper right half of the circle, followed in a clockwise direction by the remaining segments in decreasing order, with any miscellaneous segment placed last. There is general agreement that a pie chart should contain no more than six categories and it should not be used to compare different sets of data. Box 13.12 shows the additional principles that apply to pie charts.

Box 13.12 Additional principles for pie charts

General advice

- Use a pie chart to present proportional data only.
- Use the angle at the centre to divide the circle into segments; the area of each segment should be proportional to the segment represented.
- Do not use pie charts to compare different sets of data; instead, consider a bar chart.

The segments

- Use no more than six segments.
- Place the largest segment at the central point of the upper right half of the circle (starting at 12 o'clock), followed in a clockwise direction by the remaining segments in decreasing order of size.
- Place any miscellaneous variable last, regardless of size.
- Each segment should be labelled, and its value given as a percentage of the whole.

Line graphs

When using line graphs, you should show the independent variable on the horizontal axis and the dependent variable on the vertical axis. Although it is usual to place the scale figures on the left-hand side of the graph, in wide graphs it is helpful if they appear on both sides. One advantage of line graphs over other forms is that a number of graphs can be superimposed on the same axes. This enables comparisons to be made very clearly. Thibadoux *et al.* (1986) recommend that if the curves are close together or cross, use colour coding to differentiate them or different patterns, such as solid, dash or dotted lines. Box 13.13 shows the additional principles that apply to line graphs.

Box 13.13 Additional principles for line graphs

- The component categories should be represented by a series of points joined by a line.
- The axes must represent continuous scales with the independent variable shown on the horizontal axis and the dependent variable on the vertical axis.
- Place the scale figures for the vertical axis on the left. In a wide graph, show the scale on both sides.
- Keep the number of elements to the minimum, preferably no more than two.

As with tabular presentations, it is important to remember that however clearly presented your graphs and charts are, it is still necessary to offer some interpretation and, if possible, further analysis of the data. This should be given immediately after the graphical presentation.

13.5 Preparing for your *viva voce*

If you are studying for a Master's by research or you are a doctoral student, instead of receiving a grade, you will defend your written thesis at an oral examination known as a *viva voce*.[1] The purpose of the *viva voce* is to:

- Give you an opportunity to demonstrate that the thesis is your own work, you understand what you have written, and you can defend your contribution to knowledge
- Give the examiners an opportunity to clarify and/or explore any issues in detail and establish whether the thesis is of a sufficiently high standard to merit the award of the degree for which it is submitted.

Vox pop What has been the biggest challenge in your research so far?

Sonila, PhD student investigating the adoption of the IFRS for SMEs in the UK and Albania

I have not yet had a date for the viva, but it is constantly on the back of my head. The feeling after submission is strange. On one hand I feel good that I managed to submit (although it took me sometime to realise it) and the work is good and on the other I am anxious and a little bit stressed for the viva. But I guess all the PhD students experience similar feelings during this stage.

There may be institutional and country differences in the way in which a *viva voce* is conducted, but essentially it involves the student responding to oral questions from the examiners. It is always a nerve-racking experience, but you can lessen your anxiety and improve your performance by practising answering questions, as you will need to argue a coherent case.

1. Some students on taught Master's and undergraduate programmes may also be asked to attend an oral examination after they have submitted their dissertations in order to clarify any issues and concerns arising from the work submitted.

First, find out how your *viva voce* will be conducted and the names of your examiners. Typically, there is an independent chairperson plus one internal examiner and one or more external examiners. You might only know the external examiner(s) by reputation. In all cases, it is useful to find out something about their research interests and paradigms from looking at their publications and talking to your supervisor. This can help you avoid getting into a heated discussion about matters where you know their opinions differ greatly from your own. If they are working in your field, make sure you cite any of their relevant research if you know in sufficient time.

You may be allowed to invite a member of your supervisory team to be present at the *viva voce*. However, the supervisor can speak during the *viva voce* only if he or she is invited to do so by the examiners. The atmosphere is likely to be formal but cordial. Everyone (including you) will take a copy of the thesis into the meeting for ease of reference. Many examinations start off with an open question inviting the student to explain the purpose of the research. It then moves on to the examiners asking questions and the student responding. The examiners are not trying to trip you up, but they will want to explore any omissions or weaknesses in your thesis. They will expect you to know your subject. This means you need to be very familiar with your research, even though it might have been several weeks since you submitted it. They might ask clarification questions, ask you to justify what you have written, probe your methodological choices, challenge your results and your contribution to knowledge. As the examination progresses, it is likely to become more of a discussion, with the student taking the lead in explaining the research.

Phillips and Pugh (2010) give detailed instructions on how to prepare for your *viva voce*. They suggest you summarise every page into a few words that capture the main idea and the page number. You can then use the summaries for revision before the examination and take them in with you. Prepare prompts and use colour-coded sticky tabs or notes on your thesis so you can refer the examiners to particular pages. It is essential to practise presenting your research, which is why giving papers at research seminars and conferences (see Chapter 14) is so valuable. We also suggest that you ask your supervisor to arrange a mock *viva voce* for you. If that is not possible, you could ask fellow students to select relevant questions from the list in Box 13.14 and help you practise answering them. These activities will alert you to potential weaknesses you can address before your *viva voce*.

Box 13.14 Practice questions for a *viva voce*

1. What motivated you to research this particular area?
2. What are the seminal academic studies in this field?
3. Have you identified the gaps in knowledge?
4. How did you go about formulating your research question?
5. What differentiates your approach from previous work?
6. What critique do you have on existing theories?
7. What is your philosophical view?
8. How was the sample/case(s) chosen?
9. How do you know the chosen sample/cases are adequate?
10. Why is this construct/model important?
11. How have the constructs emerged?
12. How can you justify the various concepts?
13. What is missing from this model? What have you left out?
14. Did you have any issues with your data collection or analysis methods?
15. Why did you use these particular methods?
16. How did you assess the validity and reliability of the data?
17. In hindsight, what would you do differently?
18. Which of the findings stand out? Which are the most important?
19. What is your contribution to the literature (theoretical, methodological, etc.)?

20. Can you emphasise your main contributions?
21. Can you demonstrate the advance in knowledge?
22. What are the applications of your research?
23. As an expert in this area, what are your recommendations for practice, etc.?
24. PhD is a learning process. What have you learned during the period?
25. Is there anything you would like to tell us that we have not asked you about?

When the day of your *viva voce* arrives, be careful not to argue with the examiners, but if you have strong opinions and evidence to support them, do not hesitate to voice them. Play to your strengths and not your weaknesses. Some of the questions your examiners ask you might appear to be on the edge of the scope of your study, so try to place them in a context where you are certain of the facts. You need to accept that there could be defects in your study and explain to the examiners how they arose, and how you would remedy them. If you do not understand a question, ask for clarification, as this is much better than giving an inept response. Do not rush into giving replies. Many of the questions will be complex and you should take time to reflect on the question and your answer. Your responses should be balanced, with a review of the pros and cons, and conclude with your own opinions. The major advantage you have is that you conducted the research, not the external examiners. Therefore, you will certainly know more about the details than they do. Try to keep the discussions in this area and explain any interesting factors or aspects. Even an amusing anecdote of an event while you were conducting the research would not go amiss, provided it is not too long.

Box 13.15 contains some wise advice from an experienced PhD examiner, which should help steady your nerves before your *viva voce*.

Box 13.15 Advice from an experienced PhD examiner

YOU are the person in the room who knows most about the topic. The external examiner might not have read all the thesis that carefully, and even so he or she might well have forgotten some of it. SO, don't be afraid to correct their misunderstandings.

BE CLEAR about

- What your contribution is
- Why it matters, how it helps.

ALL RESEARCH is imperfect, so don't worry about the weaknesses in the work. BUT do be clear about what the potential weaknesses are, and what assumptions/shortcuts you have made. Try to justify the assumptions and try to have some idea of how they might have affected your findings. (How would the PhD have been different if different assumptions had been made?)

The overall question about the PhD is 'CAN YOU DO RESEARCH?' That is:

- Can you choose a topic that matters?
- Can you carry out the research competently?
- Do you understand the potential weaknesses, their potential impact, and how they compare to the weaknesses in other similar work?
- Are you confident in your own ability?

The EXAMINERS want to pass you. They are not your enemies.

- Ask for clarification if you don't understand the question
- Accept criticism as constructive and not intended to humiliate you
- Ask for a break if you need it

- Enjoy the fact that this is could be the first and last time you have the full attention of everyone in the room.
- And finally, take them some cake!

At the end of the *viva voce*, you (and your supervisor, if in attendance) are likely to be asked to leave the room. The examiners will then have a discussion in private and agree the outcome of the examination and the oral feedback you will be given. You will then be invited to return to the examination room to be informed of the outcome of the *viva voce* and to receive the examiners' feedback. It is usual for the examiners to confirm this in a joint written report at the earliest opportunity after the examination.

For students doing a Master's by research or a doctoral degree, the following outcomes are possible:

- The award is made with no amendments immediately after the *viva voce*. In this case, you have nothing else to do except look forward to receiving hearty congratulations from your supervisor(s), friends and family.
- The award is made, subject to minor amendments that must be completed within a specified period. These are usually modest changes and should cause you no problems. You will not be subjected to another *viva voce* and your internal examiner will be responsible for checking that the final, bound thesis incorporates the amendments.
- The award is not made, and you are asked to make substantial revisions. You have not failed, and you have an opportunity to resubmit and be re-examined. In this case, the changes will be major and will take you several months to complete. However, you will have the benefit of having received guidance from the examiners on what is expected and, as long as you can meet those requirements, you will receive the award.
- In the case of a *viva voce* for a PhD, the examiners might decide that although the work is of some merit, it does not meet the standard required for a doctorate. If appropriate, they could recommend that an MPhil is awarded instead.
- An outright fail with no possibility of being able to resubmit.

13.6 Conclusions

In this chapter, we have looked at the planning and the practical side of writing, from designing the research report to developing a suitable writing style and presenting the data. Writing up your research can be a highly rewarding process once you get started. The secret to completing on time is to write notes and draft sections of your dissertation or thesis from the outset, rather than leave it until the last minute when it is too late for your supervisor to give you feedback. Farkas (2013) suggests that you aim for excellence rather than perfection. You will always be able to find small things you wish to improve, but your priority should be to check that your arguments are built up logically and that your data and references are correct. If you are a serious researcher or wish to have an academic career, you will be interested in presenting papers at research seminars and conferences and getting published in academic journals. We offer advice and guidance on this in Chapter 14.

References for further reading

Academic Phrasebank (2020) Manchester University. Available at http://www.phrasebank.manchester.ac.uk/ (Accessed 14 January 2020).

Beattie, V. and Jones, M. (1992) 'Graphic accounts', *Certified Accountant*, November, pp. 30–5.

Chall, J. S. (1958) *Readability – An Appraisal of Research and Application*. Columbus, OH: Ohio State University Press.

Ehrenberg, A. S. C. (1976) 'Annual reports don't have to be obscure', *The Journal of Accountancy*, August, pp. 88–91.

Farkas, D. (2013) *Top 5 Thesis Writing Strategies to Keep You Going*, 6 May. Available at http://thegradstudentway.com/blog/?p=1269 (Accessed 14 January 2020).

Howard, K. and Sharp, J. A. (1994) *The Management of a Student Research Project*. Aldershot: Gower.

Iselin, E. R. (1972) 'Accounting and communication theory', *The Singapore Accountant*, 7, pp. 31–7.

Macdonald-Ross, M. (1977) 'How numbers are shown – A review of research on the presentation of quantitative data in texts', *AV Communication Review*, 25(4), pp. 359–409.
Merriam, S. B. (1988) *Case Study Research in Education: A Qualitative Approach*. San Francisco: Jossey-Bass.
Nordquist, R. (2019) *10 Tips for Using Abbreviations Correctly*, ThoughtCo, 20 August. Available at thoughtco.com/tips-for-using-abbreviations-correctly-1691738 (Accessed 14 January 2020).
Phillips, E. M. and Pugh, D. S. (2010) *How to Get a Ph.D.* Buckingham: Open University Press.
Playfair, W. (1786) *The Commercial and Political Atlas*. London.
Rudestam, K. E. and Newton, R. R. (2007) *Surviving Your Dissertation*, 3rd edn. Thousand Oaks, CA: SAGE.
Thibadoux, G., Cooper, W. D. and Greenberg, I. S. (1986) 'Flowcharts and graphics: Part II', *CPA Journal*, March, pp. 17–23.
Torrance, M., Thomas, G. V. and Robinson, E. J. (1992) 'The writing strategies of graduate research students in the social sciences', *Higher Education*, 27, April, pp. 379–92.
Torrance, M., Thomas, G. V. and Robinson, E. J. (1994) 'The writing strategies of experiences of social science research students', *Studies in Higher Education*, 17(2), pp. 155–67.
Tufte, E. R. (2001) *The Visual Display of Quantitative Information*, 2nd edn. Cheshire: Graphic Press.
Winkler, A. C. and McCuen-Metherell, J. R. (2012) *Writing the Research Paper: A Handbook*, 8th edn. New York: Cengage Learning.

Activities

1 Take a piece of text that you have written recently (about 500 words) and highlight the key words you have used most frequently. Using the thesaurus tool in *Microsoft Word*, substitute synonyms as appropriate. Compare the two pieces of text and reflect on which is better and why.

2 Select a short section of text from a book (no more than one or two pages) and read it. Without referring to it again, write a summary explaining what the section is about. Put the original text and the summary aside for about two weeks and then try to reconstruct the text. Compare the two pieces identifying where there are significant differences in context and style.

3 Use a well-known proverb, phrase or verse and write a short narrative using the passive voice and the personal voice to reflect the two main paradigms. In addition, write it again in a colloquial style as if you were talking informally to a friend. This exercise will improve the flexibility of your style.

Example:

The mouse ran up the clock. The clock struck one, the mouse ran down.

Passive voice

It was observed that the mouse ascended the case of the grandfather clock in a rapid manner. When the chiming mechanism of the clock struck one o'clock, the rodent descended speedily. As this behaviour was only observed on one occasion, it is not possible to generalise from it. However, it is hypothesised that the rapid descent was associated with fright. This requires further investigation with a large sample of rodents in a controlled environment.

4 Take a large piece of text that you have written recently (about 2,000 words) and highlight the transition words or phrases you have used to signal to the reader that you are moving from one idea to another or from one section to another. Look at the examples of phrases in the 'Signalling Transition' section of the Manchester Academic Phrasebank (http://www.phrasebank.manchester.ac.uk/) and improve your work.

5 As an academic writer, you are expected to be critical of prior studies by identifying problems with the arguments or methods used and how the research might be improved. Look at the examples of phrases in the 'Being Critical' section of the Manchester Academic Phrasebank (http://www.phrasebank.manchester.ac.uk/) and improve your draft literature review.

Have a look at the **Troubleshooting** chapter and sections 15.9, 15.13, 15.14, 15.16 and 15.17 in particular, which relate specifically to this chapter.

14

Publishing your research

Learning objectives

When you have studied this chapter, you should be able to:

- develop a strategy for getting published
- write a conference paper
- present a conference paper or poster
- write a journal article
- respond to reviewers' comments.

14.1 Introduction

If you are an undergraduate or a student on a taught Master's programme, it is likely that your time is fully taken up with your studies and completing your research project or dissertation. However, if you are an MPhil or doctoral student and you are seeking an academic career, in addition to gaining teaching experience, publishing your research might be essential to securing a job and getting promoted. Although your university or college library may hold a copy of your final thesis, this is just one small step in disseminating your research. The next step is to plan your publications strategy and we start this chapter by explaining how you can do this. We then go on to give advice on writing and presenting conference papers, as this should be part of your strategy. However, the ultimate goal is likely to be publishing articles in academic journals. In some countries, students are required to obtain a certain number of publications from their research prior to their *viva voce*, and these publications form the main body of the thesis. As everyone wants their articles to be published in top quality journals, there is considerable competition. To help you face this challenge, we provide guidance on writing and submitting academic journal articles. In addition, we discuss the potential outcomes and provide detailed suggestions on how to respond to reviewers' comments.

14.2 Developing a publications strategy

Building a list of publications is essential for both early-career and experienced researchers. If you are seeking an academic career, getting published might be a prerequisite to securing your first academic job and developing a publications strategy will be high on your list of priorities. Most supervisors welcome the opportunity to co-author conference papers, academic journal articles and other publications with their MPhil or doctoral students. In some cases, supervisors want to take an active role in helping you, such as assisting with the choice of appropriate conferences and journals to target, co-writing conference papers and journal articles, and helping you respond to reviewers' comments. If one or more of your supervisors wants to be an active co-author, it is important to agree the roles everyone will take. In cases where the supervisors are unable to take an active role, the student might want to credit the supervisors with authorship of papers and articles drawn from their dissertation or thesis simply because they have made a substantial contribution to shaping the research.

Getting published is very exciting, but it can also be challenging. One reason for it being a challenge is that the quantity, impact and quality of your publications are used as key performance indicators in many universities. Another reason is that the widespread use of journal quality ranking guides has led to very large numbers of academics competing to get published in the same top journals. Indeed, the pressure to publish has ensured that the old maxim 'publish or perish' is still highly relevant today. Facing this challenge is a little less daunting if you have a plan. There are a number of templates and guides on the Internet that can help you create a publications plan. The following advice is based on the guidance given in the *Research Publications Planner* (https://www.bristol.ac.uk/media-library/sites/staffdevelopment/documents/rs-hub/research-publications-planner.pdf). This is an interactive planning tool that can be used online or downloaded as a *Microsoft Excel* file.

1. Long-term plan – Consider what major publications you would like to achieve over the next three to five years. If you are planning to publish from your thesis, you should have a clear idea of how many papers/articles you can anticipate. If you do not know exactly what research you will do in the longer term, simply write 'conference paper' or 'journal article' in the plan. Later on, you can add the details. Make sure you update your long-term plan every six months or so.

2. Conference plan – Use the conference plan for each of the major publications that fall within the first year of your long-term plan. You can adapt it for journal articles (or book chapters) as required. Make a separate chart for each publication showing the relevant steps and timescale for each step. Check your charts once a week or fortnightly to make sure you are on track.

3. Minor publications list – Given the time and effort involved in planning and producing major publications, use the minor publications list to make a note of additional outputs you could achieve without too much effort. Minor publications, such as newspaper, commercial or professional journal articles, are not as prestigious as major publications, but they can help you disseminate your findings to a wider audience and thus increase your research impact.

When making your plan, remember that even when drawing from your thesis, you will need to go through all the usual stages of drafting, editing, checking references, preparing tables, figures, and so on. If you are planning to submit a journal article and it is sent out for review, you will need to allow time to wait for the reviewers' comments, make subsequent revisions, respond to the reviewers' comments and re-submit the article (often more than once). If your article is accepted, you will need to allow time for checking the proofs. It is difficult to estimate exactly how long writing a conference paper or journal article will take, as there are so many factors to be considered. Suffice it to say that it can take a good deal longer than you think, even when you are an experienced researcher.

14.3 Writing a conference paper

Many supervisors encourage their students to present their work-in-progress at a research seminar or doctoral colloquium at least once a year to obtain supportive feedback and to get used to presenting their research to an audience. Your supervisor might also expect you to write conference papers and present them at conferences in your field.

Conferences can be divided into commercial and academic conferences. Commercial conferences are well advertised and the business people attending them often have to pay a sizeable fee. Usually there are a number of speakers who are regarded as experts in their field. If you are fortunate enough to be regarded as an expert later on in your career, you can expect a substantial fee, but you must be articulate and know your subject well. Regardless of whether you are an expert or not, the audience will not be interested in your research design, literature review or methodology, but in your research results and the implications for their businesses. Academic conferences range from small regional conferences with relatively few participants, to large international conferences with thousands of delegates. Despite differences of size and location, both audiences will be interested in your research and provide critical comments and other valuable feedback. Of course, you can submit papers to both types of conference, but if you are seeking an academic career, you will need to focus on academic conferences.

14.3.1 Choosing a target conference

There are several factors to consider when choosing a target conference. The most important is the match between the conference, the subject of your paper and the significance of your contribution to knowledge. The relative prestige of the conference might also be a key consideration. As all academic researchers want to give their papers at the best quality conferences, it will come as no surprise to learn that the top conferences have high standards. Other factors to consider include the conference registration fees and the cost of travel, accommodation and subsistence. Most conferences offer reduced fees to students and large conferences often hold a doctoral colloquium where students can attend workshops and present their papers.

You can search the Internet for academic conferences in your field and ask your supervisor(s) to suggest which conferences you might attend. Conference organisers usually announce a call for papers on the conference website, but once you have attended a conference you will be on the organisers' mailing list and receive personal notifications in subsequent years. Most calls for papers invite you to submit an abstract for consideration several months before the conference and a full paper later on. There are no hard and fast rules, so you should check the conference website for what is required and make a note of the submission deadline(s).

14.3.2 Structuring a conference paper

You should be able to draw several papers from your study, each focusing on different research questions. The structure of a conference paper is similar to that of a dissertation or thesis, but much shorter (typically 5,000 words). Due to its smaller size, a conference paper is divided into sections rather than chapters. A typical structure is shown in Box 14.1. This offers a general guide, but remember to check to see whether this conforms with the requirements or norms of your target conference. Note that the author details are omitted for the purpose of a blind review. We discuss this in the section 14.3.3.

Box 14.1 Typical structure of a conference paper

First page: Title of the paper, names and affiliations of the authors, abstract, contact details of the corresponding author and any acknowledgements

The main body of the paper then starts on the second page. Divide the paper into numbered sections such as:

1. Introduction
2. Literature review
3. Methods
4. Findings/results
5. Discussion and conclusions

References (do not number this section).

We will now look at the title page of the paper in more detail. Keep the title as short as possible. We recommend that you aim for no more than 12 words. Choose your words carefully and do not include general phrases such as 'A study of…' or 'An investigation into…' as they are superfluous. The **abstract** should be a brief summary of the research in a single paragraph, without citations or bullet points. It should cover the purpose of the research, the methodology, the key findings/results and the contribution. The abstract is normally formatted in single spacing. Do not exceed the word count given, but in the absence of any guidance on length, limit it to 500 words. If you are a doctoral student working on a multiple-paper thesis, you will need to base your abstract on the single paper you are presenting rather than the whole thesis.

An **abstract** is a brief summary of the research that covers the purpose of the research, the methodology, the key findings/results and the contribution in a single paragraph, without any citations or bullet points.

The example in Box 14.2 shows the abstract for a conference written by Esra'a, a PhD student researching digital financial reporting, who was then in her first year of three.

Box 14.2 Example of an abstract of a conference paper

Standard Business Reporting (SBR) is an example of a policy-driven initiative based on XBRL technology. As the technology has matured, so has understanding of how it can be used in government policy to reduce administrative burdens on business. In financial reporting, this is achieved by developing a national taxonomy that standardises information descriptions and formats within the technology. This allows companies to file information digitally. This only needs to be done once instead of preparing different financial reports and returns for different government agencies. The purpose of this paper is to investigate the development and implementation of digital reporting in the UK. The first step was taken when the tax authority (HMRC) required most companies to file their tax return and computations digitally via iXBRL (inline XBRL) in 2011. The next step was to provide a joint filing service where companies could satisfy the mandatory requirement to file information digitally to HMRC and simultaneously meet the requirement to file their statutory accounts and returns at Companies House on a voluntary basis. This paper investigates the factors influencing the adoption of digital reporting by key stakeholders in the UK. These include filers (companies using digital reporting), government agency users (such as HMRC, Companies House and the Office for National Statistics) as well as external users downloading the digital information filed (such investors, lenders, creditors and credit rating agencies). The initial analysis in this paper focuses on (a) the perceptions of key stakeholders on the benefits and costs of digital reporting, (b) the extent that digital reporting might enhance the quality of financial information and (c) the technological, organisational and environmental factors that influence the adoption of digital reporting. To the best of the author's knowledge, this is the first study to investigate these factors. The outcomes of the study are expected to be a contribution to theory and practical recommendations to regulators in other jurisdictions planning to initiate digital reporting projects.

A **keyword** is a word or phrase that captures the essence of a conference paper, article or other item. It is used by software to search databases and by search engines to search websites for items containing that keyword.

If required, **keywords** are given below the abstract. A keyword is a word or phrase that captures the essence of the research. To be effective, there should be a strong link between the title of the paper and your keywords, and you should use your keywords in the abstract. Keywords are used by software to search databases and by search engines to search websites for items that match the search query. Any acknowledgements should be shown next. Acknowledgements allow you to recognise individuals and/or institutions that have contributed to the research being reported (for example, intellectual and financial contributions). Whereas non-research contributions (such as support from family and friends) are commonly acknowledge in a dissertation or thesis, it is generally not appropriate to include them in a conference paper.

All the advice we gave you for academic writing in Chapter 13 applies to writing a conference paper. The body of the paper is normally formatted in 1.5 spacing. There are no hard and fast rules, so you should check the conference website for guidance on the format, length and other requirements. If you are drawing on your dissertation or thesis to write your conference paper, you will be doing a considerable amount of rewriting in order to focus on a particular aspect of your study. It continues to be essential that you reference everything meticulously so that those reviewing your papers can distinguish between the contribution to knowledge made by others and the contribution made by your study.

Plagiarism is the act of taking someone's words, ideas or other information and passing them off as your own because you fail to acknowledge the original source.

Self-plagiarism is the act of reusing your own published words, ideas or other information and passing them off as new because you fail to acknowledge the original source.

In Chapter 5, we defined **plagiarism** as the act of taking someone's words, ideas or other information and passing them off as your own because you fail to acknowledge the original source. We noted that it is easily avoided if you follow the rules of one of the standard referencing systems, such as the Harvard system. However, there is another form of plagiarism that can occur once you start getting your work published. **Self-plagiarism** is the act of reusing any part of a previous publication you have written in a new publication without acknowledging the source. Examples include verbatim copying of text and duplicate publication, where you publish identical papers in two places. However, it is not self-plagiarism to present the same or a very similar conference paper at different venues as long as the papers have not been published. Another example of self-plagiarism is where you develop a model in one publication and reproduce paragraphs from it in a subsequent publication that applies the same model to new data. The way to avoid this type of self-plagiarism is to summarise the development and description of the model in the subsequent publication and acknowledge the original source.

As you can see, the focus is on acknowledging your previous publication(s). This is important because when you publish in conference proceedings, academic journals and books, you might find that you retain the intellectual rights, but have agreed to pass the copyright of your publication to the publisher. Most academic journals (including open access journals) use software to identify plagiarism and self-plagiarism. This can lead to immediate rejection. Therefore, it is essential to avoid self-plagiarism by making sure you always acknowledge your previous publications.

14.3.3 Submitting a conference paper

Small conferences invite you to submit your abstract and/or paper via email, but large national and international conferences will require online submission via the conference website. If you are submitting your paper via email, the typical instructions ask for two document files:

1. A pdf file containing the first page of the paper: title with the authors' names and affiliations, followed by the abstract, contact details of the corresponding author and any acknowledgements.
2. A second pdf file containing a blind version of the paper showing the title and abstract on the first page (with no mention of the authors) with the body of the paper starting on the second page.

If you are submitting your paper online, the online form will probably provide separate dialogue boxes for entering the title of the paper, the names and affiliation of authors, the abstract, the contact details of the corresponding author and any acknowledgements. You will be asked to upload a pdf file containing a blind version of the full paper showing the title and abstract on the first page (with no mention of the authors) with the body of the paper starting on the second page.

The blind version of your conference paper is necessary because papers are usually subjected to a blind review, which means that the reviewer does not see the names of the authors. The purpose of this process is to avoid potential bias for or against the authors and ensure the quality of the research presented. The conference organisers will give a date by which authors will be notified of acceptance. Sometimes, acceptance can lead to a publication, as some conference organisers publish a selection of the papers presented as conference proceedings. Alternatively, it could lead to an invitation to publish your paper as a chapter in a book or a fast-track review in an academic journal associated with the conference. Any of these outcomes is good news for building up your list of publications.

We strongly advise you to draw up a timetable to ensure that you submit your conference paper on time like the example in Figure 14.1. Just as you did when writing up your dissertation or thesis, make sure you give your introduction a final check after writing your conclusions to ensure that your story is cohesive and consistent. You will need to check your progress against your timetable at least once a week.

Task	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov
Abstract								
Introduction								
Literature review								
Methods								
Findings/results								
Discussion and conclusions								
Peer review, revise and proofread								
Submit								

Figure 14.1 Example of a timetable for a conference paper

If your paper is accepted, this is the time to register for the conference, arrange your travel and book your accommodation. Make sure the person who controls the conference budget has approved the expenditure. Once your conference attendance has been approved, you might have to pay all the costs yourself and then submit an expense claim supported by receipts. In some institutions, the booking and payment must all be done by an administrator in your department.

14.4 Presenting a conference paper or poster

Conferences often start with a plenary session to which all delegates are invited to attend, and there might be other plenary sessions later on in the programme. A typical plenary session will have one or more keynote speakers who have been invited to address a particular theme and often include a panel discussion afterwards.

The majority of the programme will be devoted to a series of concurrent sessions known as parallel sessions. These are smaller sessions at which delegates whose conference papers have been accepted will present their research using slides. Most conferences also include poster presentations in their programme. If your conference paper has been accepted for a poster presentation, you will also give an oral presentation, but instead of using slides as your visual aids, you will use your poster. We will now look at these two forms of conference presentation in detail.

14.4.1 Preparing and presenting a conference paper

We will start by considering what to expect if you are presenting a conference paper in a parallel session. The conference programme will be organised so that the papers presented in each parallel session are on related topics. This helps ensure that the presenters have an interested audience and the delegates in the audience do not have to move from one session to another too often. The organisers normally provide a chairperson for each parallel session who introduces each presenter and explains the protocols regarding the amount of time for the presentation and when members of the audience can ask questions. The chairperson is not merely a timekeeper but also leads the questions and discussion at the end.

If you are giving your paper at a parallel session, you will need to prepare a *Microsoft PowerPoint* presentation. The number of slides depends on how much time you are given for your presentation (typically, 20 minutes for the presentation plus 10 minutes for answering questions). You will be given this information when your paper is accepted. You should allow approximately 2–3 minutes per slide. A typical presentation covers:

- the purpose of the research and the context
- overview of the conceptual/theoretical framework (if applicable)
- the methods (and hypotheses, if applicable)
- the findings/results
- the contribution, limitations and implications of the study.

Your concluding remarks might focus on areas where you would like advice, or on your plans for further research. Do not exceed the allocated time for your presentation. If you can, ask a friend or colleague to take notes of the questions and comments you receive (or do so yourself), as they provide valuable feedback that will help you develop your paper.

The key to an effective conference presentation lies in being well-prepared. Box 14.3 offers tips on how to prepare and present a conference paper.

Box 14.3 Tips on preparing and presenting a conference paper

Preparation

- Design your *PowerPoint* slide presentation with the audience in mind.
- Keep the wording simple and explain any abbreviations and technical terms.
- Do not include extracts from your paper as the language will be too formal.
- Ensure the font is large enough to read from a distance, especially if reproducing figures and tables from the paper.
- Prepare notes to remind you of key points, numbering the pages and stapling them together to keep them organised.
- Do not include too much detail or you could end up rushing through your presentation or failing to finish.
- Time yourself talking about your slides, but do not rehearse so much that you become bored with what you are saying.

The presentation

- Load your slide presentation before the session and take a clicker for moving between slides.
- When it is your turn, stand up and smile at the audience when you are introduced. Start with a line you have memorised, such as "Good morning everyone! I'm Jo Bloggs and I'm a PhD student from the University of [Name] in [Country]. Today I'm going present a paper entitled…".
- Look at the audience when you speak and not at the screen.
- Avoid distracting the audience by fidgeting or pacing around.
- Remember to breathe. Take advantage of pauses to give your audience time to react or to let what you say sink in, or simply to give you a chance to be more composed.
- Make sure your voice is audible. Speak clearly and not too fast. This is particularly important if English is not your first language or there are non-native English speakers in the audience.
- Use transition words or phrases to provide flow, such as "another key point is…"; "one of the advantages/disadvantages is…"; "a similar idea is…"; "another example is…"; "in addition…"; "in fact…"; "consequently…"; "finally…"

- When giving a point-by-point explanation, say something like: "There are a number of reasons for this. The first is…; the second reason is…".
- An effective way to introduce a new section, idea, or perspective is to say, "I'm now going to move on to…"

Timing

- Keep to your allotted time. The chairperson is unlikely to be able to give you extra time if you have not finished.
- Be prepared for any last-minute changes in session timings. If you are allocated 20 minutes, plan what you will omit if you are only given 15 minutes, or what extra you will include if you are given 30 minutes.
- If your concepts/theories are linked to others you are considering but do not have time to discuss, say "If you are interested, you can ask me about this at the end."
- Encourage the audience to ask questions and contribute to discussion at the end of the presentation (or during the presentation, if the session chair agrees).

Adapted from James and Mendlesohn (2015) and Majumder (2016).

Vox pop What has been the high point of your research so far?

Hany, final year PhD student investigating the ERP impact on the internal audit function

Getting constructive feedback on my findings from academics and practitioners at conferences was an amazing experience!

14.4.2 Designing and presenting a conference poster

If you are a student, it is quite likely that your conference paper has been accepted for a poster session. This means that you will need to think about designing and presenting a poster rather than slides. Poster sessions sometimes run at the same time as the plenary session(s) or during breaks in the programme. The organisers will allocate space that allows many or all posters to be displayed and presented at the same time. Each presenter will stand next to his or her poster board at the time specified in the programme and talk about it to the delegates who come and look at it. This means that you will probably present your poster several times during the session. Before you go to the conference, you should rehearse what you are going to say until you can comfortably explain your poster in no more than 5 minutes.

Your poster should summarise your research concisely and attractively, with a view to generating discussion. Your poster should be designed in accordance with the principles we discussed in Chapter 13 regarding readability and the presentation of text, tables, charts, graphs, and so on. Designing your poster is considerably easier if you download one of the many free poster templates from the Internet that can be used with *Microsoft PowerPoint*. Alternatively, you might have access to specialist graphics software. However, before you start working on your design, we advise you to check the requirements of the target conference.

A typical poster includes:

- an introduction that covers the purpose of the research and the context
- an overview of the conceptual/theoretical framework (if applicable)
- the methods (and hypotheses, if applicable)
- the findings/results
- the contribution, limitations and implications of the study.

Box 14.4 offers tips on how to prepare and present a poster at a conference.

Box 14.4 Tips on designing and presenting a conference poster

Preparation

- Choose a landscape orientation and a design with a cohesive layout and flow.
- Make use of colour, fonts and images such as photographs and illustrations.
- The title should be short and attract the reader's attention.
- Use a combination of text, diagrams, tables and charts as appropriate. Ensure that the font is large enough to read, especially if reproducing figures and tables from the paper.
- Important information should be legible from about 8–10 feet away.
- Use headlines, bullet points and numbering to make it easy to read.
- Keep the wording simple and succinct. Do not include extracts from your paper as the language will be too formal.
- Limit yourself to about 500–1,000 words.
- Include your name, affiliation and acknowledgements.
- Do not include an abstract as the poster is already a summary of your research.
- Practise talking through the key points on your poster until you can do it in an engaging way in about five minutes.

The presentation

- Smile at the delegates when they approach you. Memorise what you will say, such as "Good morning! I'm Jo Bloggs and I'm a PhD student from the University of [Name] in [Country] and this poster summarizes my paper entitled…".
- Explain any abbreviations and technical terms as they arise.
- Speak clearly and not too fast. This is particularly important if English is not your first language or if the delegates include non-native English speakers in the audience not at the screen.
- Tell a coherent story. Start by sharing a little about what motivated the study, the purpose of the research and/or research questions. Next, tell them how you investigated your research questions. Finally, tell them what you found out and why your results are important. You only have about five minutes to summarize your paper, so it is important to stay focused.
- Remember to breathe. Take advantage of pauses to give your audience time to react or to let what you say sink in, or simply to give you a chance to be more composed.
- Encourage your audience to ask questions.

Adapted from James and Mendlesohn (2015) and Majumder (2016).

Depending on maximum size of posters allowed at you conference, you might have to roll yours up and transport it in a poster tube. It is a good idea to take some drawing pins and sticky tape to attach your poster to the display board in the room allocated for the poster session. If you take a few extras you will be very popular with the other presenters if the conference organisers forget to supply them. During the conference, stand next to your poster at the time specified in the programme and wait for any interested delegates to come over and look at it. That is your cue to introduce yourself and present your poster. If you find some of the delegates at the conference want to ask questions or want you to go into more detail, you can talk to them individually. Remember that this is also an opportunity for networking.

14.4.3 Networking at conferences

Regardless of the size of the event, there are excellent opportunities for networking at conferences. Small conferences, workshops and research seminars tend to be less formal and provide more opportunities for asking questions and joining in discussions. Large conferences require planning, not only in terms of giving your paper but also in terms of where you are most likely to meet like-minded researchers. We advise you stay at the hotel where the

conference is being held or book your accommodation from the list of hotels suggested by the organisers to maximise the potential for making friends and useful contacts. You also need to plan which parallel sessions you will attend so that you learn what other research is going on in your field. There is a chance that the chairperson or discussant is a leading researcher in your field whose work you have been citing, or a high-level academic who is on the editorial board of your target journal.

In addition to the plenary and parallel sessions, there are often social events to attend that could lead to chance conversations with potentially useful contacts. Early-career researchers often find it difficult to know how to network. The general advice is to keep your mobile devices firmly in your bag or pocket so that people see you looking open and approachable. You will soon notice others looking for someone to talk to. If they make the first move, you will need to plan what you will say if they ask about your research and why it is important. If you find yourself talking to experienced researchers, you might ask them for tips on how to tackle any particular problems you are facing in connection with your research or getting published.

If you feel a little shy about approaching someone else, simply walk towards them, smile and introduce yourself. Have a few basic questions ready to help the conversation along such as:

- Which university are you from?
- How long have you been at the University of…?
- Are you giving a paper at this conference?
- What is your research about?
- What are you hoping for from this conference?
- What has been your favourite session so far?
- Have you attended any other conferences that you can recommend?

If you have been getting on well and have interests in common, be ready to exchange contact details (or business cards). If you find yourself in a situation where there is little likelihood of a useful connection, politely excuse yourself and continue circulating. Once the conference or event is over, send a quick email to any good connections you have made and invite them to connect with you on *LinkedIn*. This is a social networking site where professionals can link up with past and present colleagues, discuss business issues and search for jobs. It is also used by headhunters looking for potential candidates to fill job vacancies. Your email should suggest an appropriate follow-up, such as meeting at the next conference or other event. Once you have attended one or two conferences that are relevant to your field of research, your network will soon expand. Another way to extend your professional network is to join *ResearchGate*, which has more than 16 million members worldwide who use it to share and discuss their research as well as find collaborators.

14.5 Writing a journal article

Once you have presented your conference paper a few times and developed it using the feedback you have received, you may want to use it as the basis of an article. Before we look at writing a journal article in depth, we will briefly review some of the non-academic publications that might be interested in publishing articles about your research.

Popular non-academic publications include the local and national press, as well as commercially focused magazines. With these publications, it is likely that the editor will only commission an article if you have something to write from your research that is controversial and/or highly topical. Therefore, a study of the hardships suffered by textile workers in the 19th century is unlikely to be commissioned, but if you can use your research to illuminate and explain current events you could find an outlet for it. However, if your research is not topical, but focuses on local industry or events, you might find that your local newspaper is interested. At the local level, you might not receive any payment, but at the national level, you will normally receive a modest payment based on the length of the article.

The associations and societies of professional bodies, such as accountants, lawyers and engineers, produce their own professional journals, usually on a monthly basis. These

Table 14.1 Indicative length of articles

Type of article	Typical length
Newspaper and magazine article	800–1,500 words
Professional journal article	1,200–2,000 words
Academic journal article	6,000–8,000 words

publications concentrate on current issues and other matters that are relevant to their members, including those that are of historical importance. If your research fits into this category, you might be able to entice the editor to commission an article, but you could find that he or she wants you to put a certain slant on your story. You can expect payment, but it is likely to be modest.

Before you make a decision to submit an article to a non-academic publication, read past copies so that you are familiar with the style of writing and the topics they cover. As you can see from Table 14.1, non-academic articles are considerably shorter than those in academic journals.

14.5.1 Choosing a target journal

We will now focus on academic journals and the factors you need to consider when choosing a target journal. If you are planning an academic career, you will need to build up a list of publications. Although it is difficult for employers to assess the quality of your publications, you need to be aware of how they attempt to do this, as it can be critical if you are applying for an academic position or wanting to move up the career ladder. There are three main methods of measurement:

- Publication volume – the number of publications you have, regardless of the reputation of the journal
- Citation metrics – the impact of your publications, as measured by the number of citations they have received
- Journal ranking – the quality of the journal in which you have published in terms of its ranking.

Publication volume is by far the easiest to measure. In the early stages of your career, your university or college might not have high expectations of where you publish as long as it is a peer-reviewed journal. Credit is given for the number of articles published and you should ensure that you obtain the maximum output of articles from your thesis and any subsequent research you do.

The impact of your publications becomes more important as your career progresses. What you are hoping is that your research will have an impact on what others are doing and thinking. You will know that this is happening if other researchers start referring to your research in their articles. Citation counts also include self-citation, where an author cites his or her previous studies. There are several sources of information on citation impact, including the *Social Sciences Citation Index (SSCI)* and *Google Scholar*.

Journal quality, as measured by the journal's ranking or impact factors, could also be a key consideration. There are many ranking guides available and these include:

- *Association of Business Schools (ABS) Academic Quality Guide*
- *Excellence in Research for Australia (ERA)*
- *Maastricht Research Institute/School of Economics and Organizations (METEOR) Journal Classification*.

There seems to be general agreement on which journals have particular merit, but the use of publication metrics to assess an academic's performance is widely debated. At the heart of the debate lies the negative consequences of valuing academics 'for the quantity and placement of their articles, not for the benefit their research can have for the world' (Glick, Tsui and Davis, 2018, n.p.)

Quality is often synonymous with journals where it is most difficult to get an article accepted. Of course, all academics want to submit their articles to the best quality, peer-reviewed journals and you will not be surprised to learn that the top journals have high rejection rates, and some have long turn-around times. When targeting journals, you should be aware that despite the increasingly international nature of business, many journals are nationally orientated in the articles that they accept (Jones and Roberts, 2005).

Choosing a target journal is something you can discuss with your supervisor and others working in your field. In our view, the most important factors are the match between the journal and your research topic, and the match between the quality of the target journal and the significance of your contribution to knowledge. Other factors include submission fees, word limits and whether there are any special issues planned that focus on your research topic. If you want to examine the range of potential factors to consider in more depth, you will find it useful to look at the model of journal selection criteria developed by Knight and Steinbach (2008).

14.5.2 Structuring a journal article

The structure of a journal article is similar to that of a conference paper and all the tips we gave you for writing a conference paper also apply to writing a journal article. Once you have identified your target journal, look through some of the current issues of the journal and find some articles where the authors have adopted a similar methodology to yours. Use these articles as exemplars, but before you start drafting your article, read the general advice given in the guide to authors on the journal's website.

The next step is to check whether the editor of your target journal has published any articles or commentaries giving specific advice over and above that general advice. The editor of the *Academy of Management Review* (Ragins, 2012) emphasises the importance of clear writing and offers practical advice on how this can be achieved. As she points out, writing is the primary medium through which we develop and disseminate our research, so clarity is essential. The following additional advice comes from Ahlstrom (2010), the editor of the *Asia Pacific Journal of Management*:

- you must include a clearly stated research question with a question mark
- identify the contribution of the study
- do not claim that your study is exploratory research if there is an existing body of knowledge
- do not claim that you are filling a gap in the literature if the gap is of no interest or little importance.

We have already mentioned the importance of the match between the target journal and your research topic. Therefore, you should make sure that you cite relevant previous studies published in the target journal and demonstrate how your research advances the topic. In general, research that gets published has the following characteristics:

- It makes a significant theoretical contribution to the literature
- It analyses substantial data
- It is based on rigorous methods
- The narrative is engaging.

You are likely to be restricted in terms of the maximum length of your article. For example, the *British Journal of Management* states that the maximum length is 6,000 words, excluding the abstract, references, figures and tables. Nevertheless, there seems to be some room for flexibility since the editors suggest that a higher word count might be acceptable in exceptional cases (for example, where a qualitative analysis has been conducted). However, they warn that they will not consider potential articles if the word count exceeds 8,000 words.

14.5.3 Submitting a journal article

The procedure for submitting a journal article is similar to that for submitting an online conference paper except that you will make the submission via an online form on the journal's website. The form usually provides separate dialogue boxes where you can enter the title of the paper, the abstract, your keywords, any acknowledgements, the authors' names, their affiliations, and their academic email and postal addresses. You will be asked to identify the corresponding author and some journals ask you to upload a short biography for each author. Remember that the keywords for your article should be reflected in the words or phrases used in the title and the abstract. As with conference papers, it is generally not appropriate to

acknowledge non-research contributions (such as support from family and friends). You should check the author's guidelines to see whether you need to place any tables and figures at the end of the paper (or upload them as a separate file) and merely indicate where each should be inserted in the text. Some journals ask you to suggest the names of relevant and reliable reviewers for your article, and/or ask you to pay a submission fee. Unfortunately, any such fees are non-refundable, even if your article is rejected.

You will need to upload a pdf file containing a blind version of the full paper, with the title and abstract on the first page (with no mention of the authors) and the main body of the paper starting on the second page. You will also need to write a covering letter (about half a page) which typically includes the following information:

- how your article advances the ongoing debates in the target journal
- what the research contributes to knowledge
- the significance of that knowledge in terms of positive social impact (the implications of your findings/results for society or specific groups).

On receiving the submission, the editor will decide whether the subject and quality of the article is appropriate to the journal. If so, he or she will send it to selected members of the editorial board (usually two, but it could be more) for review. In most journals, this is a double-blind review because the reviewers will not be told the name(s) of the author(s) or the other reviewer(s). The reviewers are usually asked to provide their comments on the article within a defined timeframe. While you are waiting to receive a decision on your manuscript you will be able to have a break or carry on with other work, as it could take anything from two months to a year or more. We suggest that if you do not hear anything after 6 months, you send an email to the managing editor (not the editor-in-chief) and ask when you might expect a decision. Sometimes the reason for a long wait is because your research is interdisciplinary and requires multiple forms of expertise.

Once all the reviews have been received, the editor will consider them and contact the corresponding author with one of the following recommendations:

- publish without any amendments
- revise and resubmit
- reject.

Of course, it would be wonderful to receive an email telling you that your article has been accepted for publication without any further work, but it is more likely that you will be invited to address the reviewers' comment and resubmit the article. A revise and resubmit decision is a positive outcome and means that you have a chance of getting published by the target journal. The revisions required can take one of the following forms:

- minor revisions (the most common form)
- major revisions (fundamental revisions are required)
- major rewrite (the revisions are extensive and a lot more work is required).

It is common to go through several rounds of revisions, and each time there is a chance that the final decision will be rejection. From this, you can see that the whole process involves a considerable amount of work on your part and on the part of the reviewers, but if you address the criticisms of the referees successfully, there is a good chance that your article will be published. We look at how to deal with reviewers' comments in the next section.

It is very disappointing to receive an email telling you that your article has been rejected at any stage in the process. To reduce the risk of desk-rejection (your article being rejected without being sent out for review), you must ensure that:

- your research falls within the aims and scope of the journal
- your study is based on a rigorous review of the literature and a cohesive research design
- your article identifies a significant contribution to knowledge and advances the ongoing debates in the target journal

- you follow all the requirements regarding length, formatting, referencing, etc., in the guide for authors on the journal's website
- the article is written to a high standard (if necessary, pay an academic editing service to improve the English)
- you complete all sections of the online submission form and upload all the files required.

If, despite your best efforts, you receive a desk-rejection, do not despair. The editor-in-chief of the publisher, Wiley, offers the following advice: 'If you are convinced that your research is good, and certainly good enough to interest a substantial part of your community, then simply go for a somewhat "less heavyweight", or perhaps more field-specific, journal and see how you fare' (Moore, 2018, n.p.) If this does not apply to you, try to remain positive. According to Craig (2010), one of the main benefits of rejection is that the editor will probably explain in some detail why he or she has rejected your paper. This could include identifying major weaknesses and/or giving reasons why your manuscript is a poor fit for the journal. A second benefit is that you are likely to receive the editor's response more quickly than if the manuscript was sent out for review and then rejected. If you can rewrite your article and remedy the weaknesses, you can then submit it to another journal.

Getting published in a prestigious journal is a considerable achievement because the competition is extremely high due to so many academics trying to get their work published in the best journals. If you are at the start of your academic career, building up a list of publications that includes peer-reviewed journal articles enhances your chances of getting an academic position and advancing your career. There is a vast range of guidance in the literature to help you achieve success, and we have distilled these recommendations into the tips shown in Box 14.5.

Box 14.5 Tips on getting an article published

- Know what the journals publish – You need to identify journals that accept articles of the type you are trying to get published. Your own literature search should have identified those journals which might be interested in your offering. You might also find articles that have surveyed the types of articles published by specific journals or identified topics that are hot in certain business disciplines.
- Be realistic about your contribution – Your article must make a contribution to knowledge and the best way to do this is to demonstrate how it fits into the existing literature and the impact of your contribution. Examples of research impact include the findings/results of your study being used by international or national policy makers, professional bodies, practitioners, industries or a particular size or type of business, or a single large or influential organisation. Alternatively, your findings or results might bring benefits to society or particular groups of individuals within society.
- Read the journal's guide to authors – Follow the instructions exactly as they vary from one journal to another. Go through copies of the journal for the past five years or so and identify articles in the same general area and make sure that you cite them in your article.
- Try not to become disillusioned by the reviewers' comments and recommendations but discuss how to tackle them with your supervisor and/or other experienced researchers.

14.6 Responding to reviewers' comments

When early-career researchers start writing articles, they usually do so with their supervisors or other experienced researchers, who show them how to write such papers. Despite the fact that responding to reviewers' comments plays such an important part in getting published for most researchers, it is surprising how few doctoral students and early-career researchers receive any preparation for this stage.

It is hard not to feel emotional when receiving a revise and resubmit decision. It is disappointing to learn that more work is necessary when you have already spent many months

writing your article and waiting for the decision to arrive, as well as a natural desire to defend your work. This can make it difficult to assimilate the reviewers' comments. We strongly advise that you do not do anything for a day or so. It would be a grave mistake to write an angry email to the editor in the heat of the moment.

After a few days, read the editor's and reviewers' comments again several times and take time to digest them. Remind yourself that the editor and reviewers are your allies and they want to help you to improve your manuscript and get it published. The editor of the *Academy of Management Journal* (Shaw, 2012) points out that reviewers are selected for their interest in the topic as well as their expertise. Therefore, their intention is to help authors improve their manuscripts. Once that idea takes hold, you are ready to start planning how you will address their critique of your article. The editor's letter is a good starting point as it should highlight the main issues. If different reviewers have commented on different things, the editor may have drawn attention to the common themes in their views. If different reviewers have given contradictory advice or suggested different ways in which you might address a particular issue they raise, the editor might have recommended a way forward. If not, you (and your co-authors) will need to decide on the best solution, which includes emailing the editor for guidance.

When planning your amendments, remember you are striving to improve the appeal and integrity of the article by ensuring that other people do not find the same weaknesses or flaws pointed out by the reviewers. If you have co-authors, you need to agree who will do what and when, bearing in mind other commitments and the resubmission deadline. When making the amendments, we suggest that each author uses a track changes tool such as the one available in *Microsoft Word* (Review/Track Changes). This will allow everyone in the team to check the changes, as it is important that all the authors agree with the revised manuscript.

14.6.1 Writing a response memo

You will need to write a response memo that gives careful consideration to every point made by the editor and reviewers. If you disagree with a reviewer's comment and choose not to address the issue, your response needs to be polite and factual. Show that you understand the critique and explain your reasons. Explaining why you disagree will help the reviewer (and the editor) understand your point of view. It is easy to be angry and upset or to internalise criticism when reviewers use a negative or dismissive tone. Instead, try to focus on what underpins the reviewer's comment, which might reflect a lack of clarity on your part or a misunderstanding on their part. The examples in Box 14.6 illustrate how you might respond to negative comments.

Box 14.6 Examples of how to respond to negative feedback

Reviewer:	The paper does not make a theoretical/empirical contribution to knowledge.
Response:	Thank you for your comment. We have now made the contribution to knowledge explicit in the abstract and introduction.
Reviewer:	Reconsider the claim that impacts of regulation are invisible; reflect on the heterogeneity of small firms and the possibility of higher levels of awareness among some small companies, and the implications of this for the argument.
Response:	Thank you for this very useful observation. To avoid misunderstanding, the section starting on p. 25 has been retitled and rewritten in terms of the 'partial visibility' of regulatory effects (rather than invisibility). This ties in with how this issue has been conceptualised in the analytical framework and we hope it avoids interpretations that we are arguing that all effects of regulation go unperceived, which was never our intention. Our argument depends only on some effects being unperceived (i.e. that small company owners/directors do not have perfect knowledge of regulatory effects). So, even if small company owners/directors believe they have no general problems of limited disclosure, they often lack awareness of how specific stakeholders in specific situations might react, for example, potential clients they do not know might choose not to approach them because of their abbreviated accounts.

14.6.2 Structuring a response memo

Structuring a response memo is fairly straightforward as you simply deal with one comment at a time, in the same order as they were written by the editor or reviewer. You are aiming for a clear and concise explanation of how you addressed each comment in the new manuscript. There is no need to cut and paste the revised or new text, table, figure or other item into your revision memo, but it is important to cite the page number (and paragraph where appropriate) in the revised manuscript to help the reviewer to locate it. This emphasises the importance of making all your revisions before you write your response memo. If you have been using track changes whilst working on the manuscript, you will need to have accepted all changes to update the pagination of the revised article.

Box 14.7 shows a comprehensive example of a response memo using a grid format. In this example, the authors of the article were responding to the comments made by three anonymous reviewers. We are reproducing it in full so that you can see just how much thought the reviewers and the authors have put into the process.

Box 14.7 Example of a response memo in grid format

[Title of the paper and the manuscript ID number] *We thank the anonymous reviewers for their constructive criticism and helpful suggestions, which have helped us improve the paper we are resubmitting for review. We set out below the reviewers' comments in their entirety with our responses in italics, which include how and where we revised the manuscript. We confirm that our responses were developed in consultation with all co-authors, each of whom has given approval to the final form of the revised manuscript.*	
Comment	**Our response**
Reviewer 1	
Discuss the role of accountants as a more significant influence on filing decisions than respondents' limited awareness.	*These issues are often closely related rather than distinct. Small company owners often rely on advice from accountants because they lack awareness of the consequences of filing decisions. The data from accountants suggest that for most, the default position with small company clients is to recommend filing abbreviated accounts. All or most small company clients reportedly file abbreviated accounts, suggesting a high level of accountant influence – or at least small company agreement with them (see pp. 11–12).* *But, in addition to advice from accountants, small company owners report a major benefit of filing abbreviated accounts, confidentiality. Such a benefit is perceived as tangible, whereas the negative consequences of filing decisions are perceived as intangible or even non-existent. Persuading small company owners that there are negative consequences of filing abbreviated accounts, even potentially (e.g. risk of limiting access to finance and markets), might require considerable effort. Small company owners might turn out to be right or wrong with regard to their beliefs about the consequences of their filing choices.*
Page 1 Define 'small company performance'.	*Text amended on p. 2.*
Page 2 Refer to UK government decision to adopt an extreme position with regard to small company exemptions.	*Text amended on p. 4.*

Page 2 Cite reference for 'cost of capital' claim.	*The paragraph on p. 2 only provides an overview of the paper. To add references seems unnecessary, but we are willing to be guided by the editor. The issue is discussed in more detail on pp. 6–7.*
Page 3 Replace 'see the financial reports' with 'access'.	*Text replaced.*
Pages 3–4 Refer to EC impact assessment.	*Text amended on pp. 3–5 to clarify that the published Directive differs from the original draft, for which an impact assessment is available.*
Pages 6–9 Cite additional references to support the conceptual framework.	*Text amended. The framework is based principally on previous work of one of the authors (unaccredited in the text as yet). Additional references have been added to support particular parts of the conceptual framework. No one, to our knowledge, theorizes regulation explicitly in the overall way presented here, particularly emphasizing the indirect influence of regulation and its partial visibility to the agents involved.*
Page 9 Strengthen argument to support claim regarding 'strong qualitative component' and use of 12 interviews.	*Text amended. While interviews were conducted with only 12 small company preparers, we also interviewed 20 accountants and 18 other stakeholders – as well as conducting a postal survey of small company preparers and two online surveys of accountants. Our arguments are built on the data from small companies and stakeholders. Most work in accounting/financial reporting is quantitative, so even a small qualitative study potentially offers insights into agents' motivations and the processes surrounding filing and use of accounts.*
Table 1: Develop survey analysis; consider possibility of generalization.	*We have not amended the text on this point. Our principal focus is on the qualitative data to elaborate processes specified in the conceptual framework. We prefer to keep it this way. We are interested in understanding filing choices and actors' motivations for the decisions they make. Developing the survey analysis would make it a quite different paper.* *We seek to generalise on the basis of the causal powers of regulation rather than on empirical associations between survey variables. We identify the contradictory influences set in motion by financial reporting regulation, contingent upon the exercise of agency by small companies and stakeholders. Our argument is intended to challenge studies of regulation that claim it is solely a burden/cost/constraint on small businesses.*
Page 12 Clarify origin of claim regarding '…a further 15%'.	*Text amended on p. 14. The source of this claim is highlighted at the start of the sentence. We have added 'of these accountants' for further clarification after the 15% claim.*
The Directive on accounting regulation allows member states to opt for abbreviated accounts within certain guidelines; comment on the UK's extreme position adopted.	*We have made this point clear now on p. 4.*
Page 14 Elaborate explanation/interpretation of the three quotations.	*Text amended on p. 16. We have made the reasons clear for retaining all three quotations in the para preceding them, rather than adding supporting explanations for each. Each quotation makes a similar point, but in relation to three different types of stakeholder. Prior research has focused on competitors.*

Page 14 Clarify perceptions referred to.	*Text amended on p. 17, to clarify that we refer to data on the perceptions of clients of small companies.*
Table 3: Clarify '% responding'.	*Table 3 amended to show this refers to the small company survey. Table 2 amended similarly.*
Reviewer 2	
Abstract: Claim about indirect effects of regulation unsupported.	*Abstract revised.*
Page 15 Qualify claims about (a) abbreviated accounts option being highly valued by small company directors; and (b) value of maintaining privacy.	*Text amended on p. 17 to clarify that claims refer to the small company directors interviewed. We do, however, present our belief that such arguments are likely to be of wider import and are not peculiar to the 12 interviewed.*
Page 16 Present evidence to support claim that firms struggle to access credit.	*References added (BIS 2012c; Cowling et al., 2012; BDRC 2013) on p. 19.*
Page 16 Provide detail and argument to support the claim regarding the number of Companies House abbreviated accounts downloads.	*Text amended on p. 18. Reviewer 2 correctly states that we base our estimate of 935,000 downloads on a straightforward extrapolation based on data for all Companies House accounts for a part-year. While we cannot provide a cast-iron defence of our approach, we do not know that any other approach would be superior. We have amended the text to make it clearer that this is an estimate which might be contested.*
Page 16 Reconsider claim that Companies House abbreviated accounts downloads are underestimated.	*Text amended on pp. 18–19 to remove the claim about 935,000 being an underestimate.*
Page 17 Clarify that 'directors' means 'owners'.	*Text added on p. 18, to show we refer to owners, rather than non-owning directors.*
Page 17 Evidence to support claims that (a) published accounts are a starting point and (b) influence the decision to continue.	*Text added on p. 19. These claims have been made by us elsewhere. To avoid repeating what we have published elsewhere, and associated quotations, we cite the sources.*
Pages 19–20 Comment on possible partisanship of professional body quotation.	*The source for the quotation was a trade association representing providers of various forms of credit and other forms of finance.*
Page 25 Clarify who the small business agents are.	*The term is defined on p. 9 – small company directors, managers and employees. It does not refer to external accountants.*
Consider whether arguments about abbreviated accounts might also apply to unaudited accounts.	*We are unable to comment further on this issue. We agree with the reviewer's suggestion that unaudited accounts might produce a similar response from stakeholders. A number of stakeholders made this point in passing as indicated in footnote 9. Many of those in 71% category (unaudited accounts) are likely to have filed abbreviated accounts too.*

Reviewer 3	
Reorganize literature review and conceptual framework sections.	*We prefer not to do this in order to keep the review of prior research, which covers two distinct strands of literature, and our own analytical approach separate. Our framework (section 4) specifies how regulation produces business performance effects. It is not about information asymmetry/agency per se, or even specifically about financial reporting regulation. The framework is intended to be applicable to all regulation. We have expanded this section to make its intended wider scope more prominent.* *The purpose of section 3 is, partly, to discuss the literature on information asymmetry, showing how financial reporting regulation influences this asymmetry, and the small company and stakeholder decisions that flow from this.* *Merging the two sections would, we feel, not only make the section twice as long and unwieldy, but also obscure these more wide-ranging elements of the conceptual framework.*
Lack of systematic discussion of information/agency-related theories, starting with Stiglitz and Weiss, related to the dynamic…	*Our response to this issue overlaps with the one above. The paper is not fundamentally about information/agency-related theories; we are unsure, therefore, what value this would add. The point we make about information asymmetry and its potential impact on the cost of capital is well rehearsed in the literature. We are happy to be guided by the editor on this issue.*
No hypothesis is presented.	*Text amended on p. 2. Research aims, incorporating hypotheses, are now set out more clearly.*
Current results are preliminary and offer limited support for the conclusions; rewrite the results sections to make it more focused; provide further evidence for the conclusions.	*While no paper can claim to have the final word on anything, we believe that our conceptual framework and data provide strong support for the central conclusions, that: (1) regulation is a dynamic force generating contradictory influences on small firm behaviour and performance; (2) the contradictory consequences for small companies with regard to financial reporting regulation arise from the confidentiality/disclosure paradox; (3) that stakeholder risk assessments might be more sensitive to information disclosure during recessions than in more buoyant times; and (4) that regulation relaxing small company reporting obligations might inadvertently constrain small company performance by restricting access to finance and markets.* *We accept future research might say more on how these contradictory influences play out for particular small companies and stakeholders in particular circumstances – this depends on how small companies and stakeholders exercise their agency – but feel the conceptual model directs researchers to look for regulatory effects that narrower conceptions of regulation as solely constraining are unable to see.*
Results cannot be traced to particular tables.	*We rely predominantly on qualitative data presented as text, rather than quantitative data presented in tables. Our main data sources are the reported behaviours and motivations of small companies and stakeholders. We use quantitative data presented in tables sparingly.*
No control group of non-users.	*There is no specific control group of non-users of abbreviated accounts, but all stakeholders (banks, CRAs, insurers, clients, suppliers, etc.) reported use of both full and abbreviated statutory accounts. Stakeholders use whatever information they can lay their hands on.*

Nothing is said about what happened, or should happen, in a non-recessionary environment.	*Text amended. Our central arguments concerning the value of the conceptual framework are intended to apply in recession and non-recession environments, although – as we say above – how these dynamic forces play out in particular circumstances is likely to vary. We now make this point clearer in the conceptual framework and repeat it when presenting the empirical results.* *We stress that several stakeholders emphasized that comprehensive, timely information was particularly useful in a difficult economic climate in order to make business and credit decisions.*
Comment on sample selection issues or survivorship bias; comment on small company reports that few problems with access to credit.	*Text amended on p. 12. We cannot be certain our small company samples are representative of the relevant population. But our argument about the impact of financial reporting regulation derives principally from primary data from stakeholders and secondary data sources on SME access to finance to make our argument – rather than the sample small companies themselves. Our point about limited small company awareness of the indirect influences of financial reporting regulation suggests we should not treat small company owners' views of the impact of regulation as synonymous with the entirety of regulatory effects.* *As with most research on small businesses, we are only talking about survivors. We are unable to say whether surviving small companies differ from non-survivors in their motivations for, and the consequences of, filing abbreviated accounts. The text has been amended to reflect this point.*
No data descriptives on the sample firms.	*The study does not rely primarily on quantitative data where it is conventional to provide descriptives. We provide employment size data for both the small company survey and interview samples.*
Change title to reflect UK setting.	*Title amended.*
Page 1 Why a discussion of the different views regarding the regulation burden?	*The brief discussion on p. 1 is intended to provide context for the paper – whether UK regulation is supportive of business, or a hindrance. Text shortened and moved slightly earlier.*
Page 2 and other places 'UK Government' instead of 'government'.	*This, we feel, is a matter of stylistic choice. We retain the original approach, but we are happy to switch on the editor's advice.*
Page 5 Amend Bins *et al*., 1992.	*Citation amended.*
Page 7 Define 'stakeholders'.	*Stakeholders are defined in terms of agents who interact with small companies whose actions affect them; and several are identified on p. 9.*
Page 8, para 1 Sentences repeat.	*These two sentences make related, though slightly different, points. We have moved the second sentence to the previous para where it is more relevant to the argument.*
Page 9 Differentiate the survey and interview approaches.	*Text amended p. 11, to reflect that the term 'survey data' refers to the postal and online survey material collected from small company respondents and stakeholders.*
Page 10 How many of the 149 accounts preparers were also users?	*Text amended, to provide details and to demonstrate the interview sample of 12 were a subsample of this larger group.*
Page 12 Specify source for claim about survey data from accountants. Are the data presented in any tables?	*New footnote added to clarify the base for the percentages presented in this sentence. The text refers to 'the survey data for accountants in practice' (n=255, Table 1). Of these 255, 240 reported small company clients. The claims about 71% and 15% refer to this subset of 240.*

Table 3. What is the 'any prompted sources' category?	*Text amended, to clarify it refers to respondents reporting ANY of the sources in the Table.*
Page 18, lines 42–49 Specify data for 'other things being equal' claim.	*Text amended, to demonstrate that this was a widely held view among credit management professionals.*
Page 20 Refer to demand-side limits on credit and sources.	*Text amended; sources included.*
Page 24 Provide summary table of results.	*No text amendments made to p. 24, although we have extended the final para in the conceptual framework section to elaborate on the approach and links to the analysis. The results are presented in the form of our analysis of small company and especially stakeholder responses to questions about the pros and cons of filing and using abbreviated accounts. There were no specific questions about the invisibility of indirect regulatory influences.*
Page 27, line 44 Provide supporting evidence for the claim that indirect regulatory influences impact small companies more than direct influences.	*Text amended on p. 30 to remove claim.*

Source: Reproduced with kind permission of the authors of the article.

An alternatively way of presenting a response memo uses the same systematic approach, but a different format. As in the previous example, you copy and paste each comment by the editor and reviewers, but this time you write your response in italics below their comment. Box 14.8 illustrates this by reformatting the first few comments by Reviewer 1 in the previous example.

Box 14.8 Extract of the response memo in an alternative format

[Title of the paper and the manuscript ID number]

We thank the anonymous reviewers for their constructive criticism and helpful suggestions, which have helped us improve the paper we are resubmitting for review. We set out below the reviewers' comments in their entirety with our responses in italics, which include how and where we revised the manuscript. We confirm that our responses were developed in consultation with all co-authors, each of whom has given approval to the final form of the revised manuscript.

Reviewer 1

Comment 1

Discuss the role of accountants as a more significant influence on filing decisions than respondents' limited awareness.

Response

These issues are often closely related rather than distinct. Small company owners often rely on advice from accountants because they lack awareness of the consequences of filing decisions. The data from accountants suggest that for most, the default position with small company clients is to recommend filing abbreviated accounts. All or most small company clients reportedly file abbreviated accounts, suggesting a high level of accountant influence – or at least small company agreement with them (see pp. 11–12).

But, in addition to advice from accountants, small company owners report a major benefit of filing abbreviated accounts, confidentiality. Such a benefit is perceived as tangible whereas the negative consequences of filing decisions are perceived as intangible or even non-existent. Persuading small company owners that there are negative consequences of filing abbreviated accounts, even potentially (e.g. risk of limiting access to finance and markets), might require considerable effort. Small company owners might turn out to be right or wrong with regard to their beliefs about the consequences of their filing choices.

Comment 2

Discuss the role of accountants as a more significant influence on filing decisions than respondents' limited awareness.

Response

These issues are often closely related rather than distinct. Small company owners often rely on advice from accountants because they lack awareness of the consequences of filing decisions. The data from accountants suggest that for most, the default position with small company clients is to recommend filing abbreviated accounts. All or most small company clients reportedly file abbreviated accounts, suggesting a high level of accountant influence – or at least small company agreement with them (see pp. 11–12).

But, in addition to advice from accountants, small company owners report a major benefit of filing abbreviated accounts, confidentiality. Such a benefit is perceived as tangible whereas the negative consequences of filing decisions are perceived as intangible or even non-existent. Persuading small company owners that there are negative consequences of filing abbreviated accounts, even potentially (e.g. risk of limiting access to finance and markets), might require considerable effort. Small company owners might turn out to be right or wrong with regard to their beliefs about the consequences of their filing choices.

Comment 3

Discuss the role of accountants as a more significant influence on filing decisions than respondents' limited awareness.

Response

These issues are often closely related rather than distinct. Small company owners often rely on advice from accountants because they lack awareness of the consequences of filing decisions. The data from accountants suggest that for most, the default position with small company clients is to recommend filing abbreviated accounts. All or most small company clients reportedly file abbreviated accounts, suggesting a high level of accountant influence – or at least small company agreement with them (see pp. 11–12).

But, in addition to advice from accountants, small company owners report a major benefit of filing abbreviated accounts, confidentiality. Such a benefit is perceived as tangible whereas the negative consequences of filing decisions are perceived as intangible or even non-existent. Persuading small company owners that there are negative consequences of filing abbreviated accounts, even potentially (e.g. risk of limiting access to finance and markets), might require considerable effort. Small company owners might turn out to be right or wrong with regard to their beliefs about the consequences of their filing choices.

Comment 4

Page 1 Define 'small company performance'.

Response

Text amended on p. 2.

Comment 5

Page 2 Refer to UK government decision to adopt an extreme position with regard to small company exemptions.

Response

Text amended on p. 4.

Source: Reproduced with kind permission of the authors of the article.

It is essential that you resubmit your revised manuscript by the due date or earlier, so draw up a timetable like the one we illustrated for a conference paper in Figure 14.1. If you are the sole author, be sure to allow plenty of time for your supervisor or another experienced researcher to read your revision memo and the new version of your manuscript beforehand. It could take a number of iterations before you get the final decision on whether your article will be published or rejected. As with all aspects of research, perseverance and persistence are key personal qualities you need. If your spirits are flagging, remember that you are not alone in finding the review process frustrating, as the humorous letter published in *The Journal of Systems and Software* shows to great effect (Glass, 2000).

If your article is accepted for publication, the next stage will be to read the initial proofs and make any final corrections. Many journals then publish the article online with a DOI (Digital Object Identifier) within a matter of days. This means your work is both searchable and citable well before it appears in print, and greatly reduces the time it takes to disseminate your findings.

14.7 Conclusions

An important characteristic of high-quality research is that it makes a contribution to knowledge, and this implies the need to share that knowledge with others. You may be familiar with the adage: 'Writing abides; the spoken word takes wing and cannot be recalled' (Anonymous). Therefore, to share the contribution to knowledge made by your research, we have emphasised the importance of publishing your research and planning your publications strategy. Whether you are an early-career researcher or an experienced researcher, writing conference papers and publishing journal articles will improve your academic reputation and enhances your employability.

Presenting your research at conferences is a valuable way of obtaining feedback from experienced researchers and journal editors. Therefore, we have provided practical advice on writing and submitting a conference paper, preparing a slide presentation and designing a conference poster.

We have also offered guidance on getting published in academic journals, but we will not pretend that it is easy. For that reason, we have explained how to select a target journal, write and submit an article, and how to respond to the editor's and reviewers' comments. There is considerable competition to get articles published in high quality journals and the extent of competition depends on the number of journals in your discipline, the number of issues they produce each year and the number of academics writing papers on the same topic and using the same research design. Despite the challenges, you must persist if you are seeking an academic career. Somewhere there is an editor who will publish your article even if it takes several revisions!

References for further reading

Ahlstrom, D. (2010) 'Publishing in the Asia Pacific Journal of Management', *Asia Pacific Journal of Management*, 27(1), pp. 1–8.

Craig, J. B. (2010) 'Desk rejection: How to avoid being hit by a returning boomerang', *Family Business Review*, 23(4), pp. 306–9.

Glass, R. L. (2000) 'A letter from the frustrated author of a journal paper', *The Journal of Systems and Software*, 54(1), p. 1.

Glick, W., Tsui, A. and Davis, G. (2018) 'The moral dilemma of business research', *BizEd*, 2 May. Available at https://bized.aacsb.edu/articles/2018/05/the-moral-dilemma-of-business-research (Accessed 12 February 2020).

James, E. and Mendlesohn, F. (2015) *How to Give a Conference Paper*. Available at https://networks.h-net.org/how-give-conference-paper-1 (Accessed 12 February 2020).
Jones, M. J. and Roberts, R. A. (2005) 'International publishing patterns: An investigation of leading UK and US accounting and finance journals', *Journal of Business Finance and Accounting*, 32(5–6), pp. 1107–40.
Knight, L. V. and Steinbach, T. A. (2008) 'Selecting an appropriate publication outlet: A comprehensive model of journal selection criteria for researchers in a broad range of academic disciplines', *International Journal of Doctoral Studies*, 3, pp. 59–79.
Majumder, K. (2016) *8 Tips for Presenting a Paper at an Academic Conference*. Available at https://www.editage.com/insights/8-tips-for-presenting-a-paper-at-an-academic-conference (Accessed 12 February 2020).
Moore, A. (2018) *"Desk-rejected" from Your Chosen Journal? What Next?* Available at https://www.wiley.com/network/researchers/submission-and-navigating-peer-review/desk-rejected-from-your-chosen-journal-what-next (Accessed 12 February 2020).
NYU Libraries (2020) *How to Create a Research Poster: Poster Basics*. Available from https://guides.nyu.edu/posters (Accessed 12 February 2020).
Ragins, B. R. (2012) 'Editor's comments: Reflections on the craft of clear writing', *Academy of Management Review*, 37(4) Editorial, pp. 493–501.
Shaw, J. D. (2012) 'From the editors: Responding to reviewers', *Academy of Management Journal*, 55(6) Editorial, pp. 1261–3.

Activities

1 Conduct a literature search for articles that discuss the ranking of journals in your discipline. Compare the journal rankings across these articles and identify three target journals for your research.
2 Based on the three target journals you selected in the above activity, analyse the articles published over the last five years by topic, country, methodology and sample. Identify any patterns and determine how the article you are planning to write fits into this pattern.
3 Write a draft abstract for your conference paper or journal article. Start with the issue, the gap, the challenge and/or opportunity. Explain the purpose of the study and your methods. Summarise your findings/results and state your theoretical/empirical contribution. If appropriate, point out the implications of your study. Discuss with a friend or colleague.
4 Academic writers define key terms to avoid any misunderstanding on the part of the reader. This is important because without definitions, different readers may interpret a particular term differently. Look at the examples of phrases in the 'Defining Terms' section of the Manchester Academic Phrasebank (http://www.phrasebank.manchester.ac.uk/) and improve your introduction and literature review sections in your conference paper or journal article.
5 Based on the guidance given in section 14.4.2, compare and contrast the two conference posters, available for download by navigating to macmillanihe.com/Business-Research-5e and selecting 'Student Resources'. These posters were designed by two PhD students, Roslan Bakri Zakaria and Amit Rawal to present their research-in-progress.

Have a look at the **Troubleshooting** chapter and sections 15.18, 15.19 and 15.20 in particular, which relate specifically to this chapter.

15

Troubleshooting

15.1 Introduction

As we explained in Chapter 1, business research is not a simple linear process and even though you may have studied all the chapters in this book very carefully, you may encounter difficulties of one type or another. Regardless of how much support and guidance you receive from your supervisors, colleagues, friends and family, you are bound to make some mistakes, and this is true for researchers at all levels. In addition, things beyond your control may create problems. If the research you designed in your proposal does not come to fruition exactly as planned, you will need to explain what the problems were and, irrespective of whether you decide to take action to remedy the situation or decide to do nothing, you will need to justify your strategy by weighing up the alternatives.

In this chapter, we examine typical challenges associated with the main stages of the research process. The solutions to these problems refer you to different chapters in the book where you will be able to obtain the appropriate guidance. You can also use the index and look up terms in the glossary. The problems we cover are:

- getting started
- managing the process
- identifying a topic and/or a research problem or issue
- making a preliminary plan of action
- finding a theoretical framework
- writing the proposal
- deciding the methodology
- searching and reviewing the literature
- collecting research data
- organising qualitative research data
- analysing the research data
- structuring the dissertation or thesis
- writing the dissertation or thesis
- dealing with writer's block
- achieving the standards
- eleventh-hour strategies for finishing your dissertation or thesis
- developing a publications strategy
- writing a conference paper
- responding to reviewers' comments.

15.2 Getting started

Problem You are unable to start because you are totally confused over what research is all about and what you are expected to do.

Before you can start your research, you will find it useful to gain an understanding of what business research entails by implementing the following plan of action:

1. Start with the basics and read about the nature and purpose of research, focusing on the definitions of research and the different types of research (see Chapter 1).

2. The next steps are to:
   - identify a research topic (see Chapter 2)
   - identify a research problem or issue to investigate (see Chapter 5)
   - design the project (see Chapters 3, 4 and 6)
   - collect the data (see Chapters 7 and/or 9 and/or 10)
   - analyse the data (see Chapters 8 and/or 11 and/or 12)
   - write up the research (see Chapter 13).

15.3 Managing the process

Problem You are ready to get started, but you are worried about how you will manage your research project.

To manage your research efficiently and in the time available, you should try the following:

1. Find out when you will have to submit your dissertation or thesis.
2. Read about the research process, set yourself a timetable for each stage (some will overlap) and agree it with your supervisor (see Chapter 1).
3. To ensure that your time is spent efficiently, you must use your knowledge, skills and personal qualities to manage the process of the research (see Chapter 2).

15.4 Identifying a topic and a research problem or issue

Problem You are unable to find a suitable topic and a research problem or issue to investigate.

If you are unable to identify a suitable topic or a research problem/issue to investigate (or you have to abandon your choice because it was not feasible), you should take the following steps:

1. Try techniques such as brainstorming, analogy, mind mapping, morphological analysis and relevance trees to generate a research topic that is relevant to your degree (see Chapter 2).
2. Consider issues such as your skills, potential costs, access to data and ethics (see Chapter 2).
3. Arrange to meet your supervisor to discuss your ideas (see Chapter 1).
4. Once you have identified a research topic, conduct a literature search to identify gaps and deficiencies that suggest a specific research problem or issue to investigate (see Chapter 5).

15.5 Making a preliminary plan of action

Problem You know the research topic you want to investigate but you do not know how to plan the first stages of the research.

The research proposal is going to be your detailed research plan, but you have to carry out some preliminary investigations before you can write it. Your preliminary plan of action should be as follows:

1. Carry out a literature search using keywords related to your research topic to find the most important academic articles and other publications on this topic (see Chapter 5).
2. Identify a research problem or issue to investigate and conduct a focused search to find the key articles and other publications (see Chapter 5).
3. Write a preliminary review of this literature for your research proposal that leads the reader to the research question(s) your study will address (see Chapter 5).
4. Make a decision on the appropriate method(s) for collecting the data (see Chapters 7 and/or 9 and/or 10) and analysing them (see Chapters 8 and/or 11 and/or 12). Describe and justify your choices in the methodology section of your proposal (see Chapter 6).

15.6 Finding a theoretical framework

Problem You cannot write a research proposal because you have difficulty in finding a theoretical framework.

If a theoretical framework is appropriate under your research paradigm, you should take the following steps:

1. Ensure that you have clearly specified the purpose of the research (see Chapter 6) and that you have conducted a literature search (see Chapter 5).
2. You should then be able to identify the theories and models used by other researchers studying the same or similar issues, and develop a theoretical framework (see Chapter 6).
3. You can then define the unit of analysis and construct the hypotheses you will test, which are the propositions you will investigate to answer your research questions (see Chapter 6).

15.7 Writing the proposal

Problem You are uncertain about how to write a research proposal that will be acceptable to your supervisor(s).

If you are worried about how to write your research proposal, you should implement the following plan:

1. Start by looking at the indicative structure of a research proposal and read about what is usually contained in each section (see Chapter 6).
2. Your preliminary review of the literature forms a major part of your research proposal. It focuses on the most influential articles and other publications in the literature and should lead the reader to the research question(s) your study will address (see Chapter 5).
3. You must mention how you will solve any problems relating to covering costs, gaining access to data and issues concerning ethics (see Chapter 2).
4. Identify a research problem or issue to investigate and conduct a focused search to find the key articles and other publications (see Chapter 5).
5. Write a preliminary review of this literature (see Chapter 5) for your research proposal that leads to your research question(s).

6. Make a decision on the appropriate method(s) for collecting the data (see Chapters 7 and/or 9 and/or 10) and analysing them (see Chapters 8 and/or 11 and/or 12). In the methodology section of your proposal, describe and justify your methodology and methods, commenting on ethical issues and the limitations of your research design.
7. Conclude with remarks about the expected outcomes of the study (related to the purpose) and include a timetable for completing the various stages of the research (see Chapter 6).

15.8 Choosing a methodology

Problem You are unable to decide which methodology to use.

Deciding which methodology to use is made easier when you realise that your choice is limited by a number of factors. Your action plan should be as follows:

1. Start by considering the constraints placed by the research problem or issue your study will address (see Chapter 6) and your research paradigm (see Chapter 3).
2. Identify which methodologies are usually associated with your research paradigm (see Chapter 4).
3. Consider whether triangulation or mixed methods are appropriate and/or feasible (see Chapter 4).

15.9 Searching and reviewing the literature

Problem You are unable to find articles and other publications on your research topic or you are unable to write the literature review.

Planning is the key to an efficient and successful literature search and a critical review of the relevant literature. We advise you adopt the following strategy:

1. Before you begin your search, you need to define your terms and determine the scope of your research (see Chapter 5).
2. Then you should start a systematic search (see Chapter 5).
3. You must be certain to record the references (see Chapter 5) and avoid plagiarism when writing your literature review (see Chapters 5 and 13).
4. You should take an analytical approach to reviewing the literature rather than writing a descriptive list of items you have read (see Chapter 5). By pointing out the gaps and deficiencies in the literature, you will be able to lead the reader to the research question(s) your study will address.

15.10 Collecting the research data

Problem You are unable to decide how to collect your research data.

Deciding which data collection method to use is made easier when you realise that your choice is limited:

1. Start by considering the nature of the research problem or issue your study will address (see Chapter 5) and any access to data that will be needed.

2. Then consider your research paradigm (see Chapter 3) and your methodology (see Chapter 4).
3. This should enable you to select appropriate methods for collecting the data (see Chapters 7 and/or 9 and/or 10). You must make this choice in the context of the methods you plan to use to analyse the data (see Chapters 8 and/or 11 and/or 12).

15.11 Organising qualitative research data

Problem You plan to collect qualitative research data, but you do not know when to start the analysis.

In an interpretive study, it is difficult *not* to start the process of analysing qualitative data during the collection stage. Therefore, this is not usually a problem once you get started. Your plan of action should be as follows:

1. As you collect the research data, you need to be clear about your choice of methodology (see Chapter 4) and issues relating to reliability and validity (see Chapters 3, 8 and 9).
2. You need to ensure that your methods for capturing primary data (using equipment such as an audio recorder, camera or video recorder) are supported by notes taken at the time (see Chapters 7 and 9).
3. If you are collecting secondary research data, you need to ensure that you have followed a systematic method (see Chapter 8).
4. While you are collecting the qualitative data, use methods for reducing the amount of material data by restructuring or detextualising the data (see Chapter 8).

15.12 Analysing the research data

Problem You cannot decide how to analyse the data you have collected.

Deciding which method of data analysis to use is made easier when you realise that your choice is limited:

1. The first step is to consider whether you have designed your study under a positivist or an interpretivist paradigm (see Chapters 3 and 4).
2. If you are a positivist, you want your research data to be in numerical form so that you can use statistical methods of analysis (see Chapters 11 and 12). You may need to quantify any qualitative data (see Chapter 10).
3. All positivists will conduct an exploratory analysis of their data using descriptive statistics (see Chapter 11). However, some undergraduates and all Masters and doctoral students will need to go on to use inferential statistics (see Chapter 12).
4. Depending on their philosophical assumptions, interpretivists who have collected qualitative data can use either quantifying methods or non-quantifying methods for analysing their research data (see Chapters 8 and 9).

15.13 Structuring the dissertation or thesis

Problem You are uncertain about how to structure your dissertation or thesis.

If you are uncertain about how to structure your dissertation or thesis, the following plan of action should help:

1. Adopt or adapt the indicative structure of main chapters in a research report (see Chapter 13).
2. Read about what needs to be included in each chapter and name the main sections within each chapter (see Chapter 13). Remember that each chapter will need to have some kind of introduction and a conclusion section that will help provide links between chapters.
3. Based on the indicative proportion of the dissertation or thesis that each chapter represents, allocate an approximate number of words to each of your chapters (see Chapter 13).
4. The last step is to decide what figures and/or tables you will use to summarise your findings/results (see Chapters 8, 9, 11, 12 and 13).

15.14 Writing the dissertation or thesis

Problem You are worried about writing up the research.

If you have followed the guidance in this book, you will have decided on the main structure of your dissertation or thesis at an early stage and will have used the sections in your proposal as the basis of some of the chapters. You will have added further draft material as you embarked on different stages in the research. You should now adopt the following plan of action:

1. You will need to draw up a plan and give some thought to the overall design of the dissertation or thesis (see Chapter 13).
2. You will then be in a position to finalise your literature review, methodology, findings/results and discussion chapters. Once you have drafted your conclusions chapter, develop the introductory section you wrote for your proposal as the first chapter in your dissertation. Then check all chapters to ensure that you use the same terms and wording every time you mention the purpose of the research and the research questions.
3. As you write, make a list of all the bibliographic references you cite. It is essential to follow the referencing system recommended on your course and avoid plagiarism (see Chapters 5 and 13).
4. If you have run out of time, use our eleventh-hour strategies in the penultimate section of this chapter.

15.15 Dealing with writer's block

Problem You are part way through writing up your research, but you are suffering from writer's block.

Make sure you are having regular, balanced meals and drinking enough liquid to stop you becoming dehydrated. All this helps your brain process information efficiently. Take a short break (a 20-minute walk is ideal) to give your mind a rest and relieve the aches and pains of spending hours at the computer. Even though you may be feeling weary, do something aerobic during the break as it will increase your sense of well-being and improve your circulation. In addition, try the following tips (see Chapter 13):

1. Stop trying to write the particular section that is proving to be problematic and turn to a different part of your report.
2. Alternatively, start a totally different task, such as checking your references, preparing tables and diagrams, running the spelling and grammar check or improving your writing by looking up synonyms.
3. Try to find a way round the impasse you are experiencing with the problematic section by generating a mind map or other diagram to help structure your thoughts.
4. Alternatively, reflect on what you have written in that section so far and draw up a list of its strengths and weaknesses. You can also do this by making an audio recording of your thoughts and reviewing them.
5. Have a brainstorming session with your supervisor or a fellow student.
6. Sometimes a good moan to a sympathetic member of the family or a friend is enough to clear the tension and clarify your thoughts.

15.16 Achieving the standards

Problem You are worried about whether your work will be up to the standards required.

Apart from the advice that you should always do your best, the following suggestions should help:

1. The most important source of guidance on standards is the handbook or other source of information provided by your university.
2. You can discuss the criteria with your supervisor (see Chapter 1), who provides feedback in the form of comments on your proposal and draft chapters (see Chapters 6 and 13).
3. There are a number of general characteristics of a good research project (see Chapter 1) and indicative assessment criteria that will give you an idea of what is expected at different degree levels (see Chapter 13).

15.17 Eleventh-hour strategies for finishing your dissertation or thesis

Problem The submission date is looming and you have little to show for the work you have done.

If you have left all or most of the writing up until the eleventh hour, you will be feeling very worried indeed. If this applies to you, we suggest the following strategy:

1. Decide on a structure of chapters and main sections within each chapter, but do not take too long over it; no more than half a day, even for a doctoral thesis. Use the sample structures given in Chapter 13 and put in as many of the subsections as you can. Work out the approximate word count you are aiming for with each chapter.
2. On your computer, open a document for each chapter and name it. Set up the page layout to the required size, margins, pagination, font, line spacing, and so on. Type in the number and name of the chapter and the number and heading for each main section within the chapter.
3. Now aim for volume. Do not worry unduly about grammar, punctuation or references. You must get as many words down as possible in each of the chapters. Leave the

introductory chapter and concentrate on those sections you know well. You should find that the act of writing one part will spark off other aspects which you want to include. This will entail switching from chapter to chapter. In your hurry, you may put things in the wrong places, but that does not matter.

4. When you have written approximately two-thirds of your target word count, stop and print each chapter. This will use up a lot of paper, but you are in a crisis situation and cost must come second to speed now. Put your printout in a ring binder file, using dividers to separate the chapters.
5. Read all the chapters, marking any changes on the hard copy in a bright colour as you go, adding text wherever possible as well as references and quotations from other authors. Now make these corrections and additions to the computer files and open a new file for the references/bibliography. You should find that you are now within 10–15% of your target number of words.
6. Print two copies and persuade a friend or member of the family to read through one and mark down any comments. We imagine that you have missed the deadline to submit draft material to your supervisor and you have been told that you must simply hand in your work by the due date for submission.
7. Meanwhile, collect all your articles and other literature together and skim through them looking for quotations, illustrations or other items you can fit into your thesis. As you have just read it, it should be easy to spot relevant items. Write each item on a separate piece of paper and insert them into your ring binder containing your copy of your latest printout.
8. When you receive your friend's comments, systematically work through your own and your friend's suggestions on your computer files, one chapter at a time, in order. Make sure you have cited your sources and included all the details in your list of references. Use the spelling and grammar check. As you finish each chapter, print it off and read it.
9. Make any final changes and draw up the preliminary pages. Print the required number of copies for binding.
10. Buy a drink for all those who have helped you, but make sure that you are never tempted to procrastinate again!

15.18 Developing a publications strategy

Problem Your supervisor has told you that you need to develop a publications strategy, but you don't know where to begin.

If you are seeking an academic career, getting published may be a prerequisite to securing your first academic job. You may be able to draw several papers from your dissertation or thesis, each focusing on different research questions. Use one of the templates and guides on the Internet to help you create a publications plan (see Chapter 14).

1. You will need to make a long-term plan covering the major publications you would like to achieve over the next three to five years.
2. You will also need a conference plan for each of the major publications that fall within the first year of your long-term plan.
3. Adapt your conference plan to make a plan for journal articles (or book chapters) as required. Show the relevant steps and timescale for each step. Check your plan regularly to make sure you are on track.
4. Finally, draw up a minor publications list – Given the time and effort involved in planning and producing major publications, use the minor publications list to make a note of additional outputs (such as newspaper or professional journal articles) you could achieve without too much effort. These can help you disseminate your findings to a wider audience and thus increase the impact of your research.

15.19 Presenting a conference paper

Problem Your paper has been accepted by a large conference, but you are worried about making a presentation.

The key to an effective conference presentation lies in being well-prepared. If you are giving your paper at a parallel session, you will need to prepare a *Microsoft PowerPoint* presentation. The following tips should help (see Chapter 14):

1. The number of slides depends on how much time you are given for your presentation (typically, 20 minutes). Allow 2–3 minutes per slide.
2. A typical presentation covers:
   - the purpose of the research and the context
   - overview of the conceptual/theoretical framework (if applicable)
   - the methods (and hypotheses, if applicable)
   - the findings/results
   - the contribution, limitations and implications of the study.
3. Keep the wording simple and explain any abbreviations and technical terms.
4. Ensure the font is large enough to read from a distance, especially if reproducing figures and tables from the paper.
5. Speak clearly and not too fast. Look at the audience and not at the screen.
6. Your concluding remarks might focus on areas where you would like advice, or on your plans for further research.
7. Do not exceed the allocated time for your presentation.
8. Ask a friend or colleague to take notes of the questions and comments you receive (or do so yourself), as they provide valuable feedback that will help you develop your paper

15.20 Dealing with reviewers' comments

Problem You have submitted an article to a target journal and have now been sent the reviewers' comments with an invitation to revise and resubmit your manuscript. Your problem is that you don't know how to deal with the reviewers' comments.

There is considerable competition to get articles published in high quality journals. A 'revise and resubmit' decision is a positive outcome as it means that you have a chance of getting published by the target journal. It is common to go through several rounds of revisions, and each time there is a chance that the final decision will be rejection. Despite the challenges, you must persist if you are seeking an academic career. We suggest the following strategy (see Chapter 14):

1. It is hard not to feel emotional when receiving the editor's and reviewers' comments, so do nothing for a few days. Remind yourself that the editor and reviewers are your allies and want to help you to improve and publish your manuscript.
2. When you are ready, plan how you will address the comments.
3. The editor's letter should highlight the main issues. If different reviewers have commented on different things, the editor may draw attention to the common themes. If different

reviewers have given contradictory advice or suggested different ways in which you might address a particular issue they raise, the editor may recommend a way forward. If not, you (and your co-authors) will need to decide on the best solution, which may include emailing the editor for guidance.

4. You need to write response memo that gives careful consideration to every point made by the editor and reviewers.
5. If you disagree with a comment and choose not to address the issue, your response needs to be polite and factual. You must show that you understand the critique and explain your reasons.
6. It is easy to be angry and upset, or to internalise criticism when reviewers use a negative or dismissive tone. Instead, focus on what underpins the reviewer's comment, which may reflect a lack of clarity on your part or a misunderstanding on their part.

appendix: random number tables

94 89 13 41 05	21 62 38 56 02	90 31 07 25 71	40 12 43 50 56	49 90 67 85 30
46 38 11 19 69	92 49 52 15 53	61 17 21 84 22	88 03 72 64 42	20 77 81 43 82
29 65 59 03 45	64 79 59 20 37	33 48 28 89 06	81 63 45 91 58	92 08 88 66 64
92 96 18 25 53	35 45 89 03 16	04 14 58 72 85	33 07 59 02 26	73 18 31 45 03
97 15 34 24 81	75 00 98 29 36	44 69 67 98 05	54 18 52 25 32	28 27 58 65 70
31 08 26 71 61	27 20 42 48 77	08 30 18 53 47	29 99 64 69 08	86 15 29 32 50
18 22 84 23 33	18 21 39 58 04	91 33 81 65 58	63 72 98 92 59	96 42 46 09 21
49 29 90 07 05	34 71 09 46 35	80 13 41 83 59	85 33 34 86 03	58 73 53 14 05
14 59 72 86 44	15 76 93 94 91	77 23 69 73 35	27 81 19 79 25	06 03 12 83 10
69 68 99 06 11	01 72 31 56 54	66 74 85 00 56	09 60 70 05 73	94 92 23 04 93
91 52 43 44 41	34 94 85 86 83	98 59 76 77 74	83 34 55 44 79	37 35 66 73 99
50 21 08 22 80	93 64 50 23 74	84 55 42 14 39	47 90 59 80 91	83 31 60 46 15
32 04 35 42 47	46 77 84 89 73	37 68 75 81 65	84 06 39 67 82	81 85 25 79 88
31 79 94 64 55	22 36 06 98 76	13 28 97 62 67	85 03 48 38 95	75 01 77 50 03
33 73 54 36 63	15 97 79 05 25	06 61 70 17 57	98 61 73 10 26	43 97 62 95 68
85 33 88 48 17	29 98 63 68 08	58 63 27 95 51	93 95 91 01 72	86 22 61 98 87
09 87 26 08 90	62 71 91 58 84	10 79 71 49 89	59 73 31 56 54	67 27 45 46 43
37 03 52 04 47	33 86 02 26 80	70 52 99 66 65	85 92 98 82 30	52 23 10 24 82
78 61 71 99 63	09 59 18 78 24	40 14 67 34 61	45 14 79 84 23	07 06 37 44 49
97 70 27 00 23	81 69 04 16 72	26 59 32 90 62	78 87 34 74 00	33 81 96 65 31
11 59 88 74 43	68 46 86 67 49	48 24 97 50 93	33 86 02 26 80	38 67 82 84 03
08 13 52 07 16	76 96 63 62 38	90 44 09 63 35	18 78 25 59 09	48 95 98 61 73
36 03 29 78 30	11 64 07 31 58	43 65 54 89 83	81 69 05 72 16	10 26 05 66 57
47 71 25 63 23	23 56 29 37 87	27 69 16 01 94	85 17 32 64 93	58 55 65 36 49
69 04 54 26 14	59 47 77 83 21	49 77 18 95 13	08 10 28 74 21	63 94 46 44 75
20 85 18 91 99	34 38 00 12 49	17 53 92 29 18	58 19 10 11 08	09 08 39 20 25
49 26 21 09 45	65 45 06 96 97	98 59 76 77 74	17 88 75 89 47	57 13 72 68 33
39 83 25 76 72	94 04 75 88 02	83 54 41 55 13	99 71 02 09 14	11 50 32 14 41
98 04 33 74 77	85 84 15 95 01	38 37 68 75 80	98 46 61 30 22	61 27 28 02 03
95 14 61 27 66	33 89 44 48 09	64 12 27 97 62	00 40 21 03 50	55 71 96 87 48
58 19 10 11 08	30 35 74 29 38	41 43 84 87 05	00 04 44 99 08	52 55 18 57 67
18 89 47 75 99	65 85 25 51 26	51 14 71 01 64	34 54 95 20 96	83 62 23 41 42
71 02 09 14 98	52 00 95 93 47	76 13 28 08 69	70 22 65 63 17	38 48 93 06 20
46 61 31 22 00	11 45 18 76 48	60 61 58 67 38	81 14 87 45 05	78 03 01 32 40
40 21 04 30 50	36 71 66 09 99	25 39 97 49 21	41 35 79 21 68	45 29 77 92 61
87 86 17 24 29	45 31 00 65 70	49 03 41 01 47	36 05 71 75 15	77 73 83 28 41
13 61 90 76 46	09 64 73 93 60	81 05 82 77 65	70 78 25 65 91	55 13 38 36 67
11 15 55 10 18	86 35 87 04 28	00 95 38 07 28	67 40 93 33 87	74 80 64 12 27
45 65 31 05 07	82 20 80 26 61	39 32 54 87 89	52 86 58 66 16	96 61 66 05 60
80 33 73 27 92	11 83 71 06 74	30 33 51 96 60	88 76 11 50 06	69 89 56 82 31

These tables of 25 random numbers were produced according to the following specifications: Numbers were randomly selected from within the range of 0 to 99. Duplicate numbers were not allowed. This table was generated on 01/03/2021.

glossary

Please visit the companion website for this book **macmillanihe.com/Business-Research-5e** for an online searchable version of this glossary.

abstract A brief summary of the research that covers the purpose of the research, the methodology, the key findings/results and the contribution in a single paragraph, without any citations or bullet points.

action research A methodology used in applied research to find an effective way of bringing about a conscious change in a partly controlled environment.

analogy A means of designing a research study in one subject area by importing ideas and procedures from another area where there are similarities.

anonymity Assurance given to participants and organisations that they will not be named in the research.

applied research A study designed to apply its findings to solving a specific, existing problem.

archival research A study of secondary data from sources such as databases, documents and other records.

axiological assumption A philosophical assumption about the role of values.

bar chart A graphical presentation of a frequency distribution of an ordinal or nominal variable in which the data are represented by a series of separate vertical or horizontal bars. The frequencies are indicated by the height (or length) of the bars.

basic research A study designed to make a contribution to general knowledge and theoretical understanding, rather than solve a specific problem.

bivariate analysis Analysis of data relating to two variables.

brainstorming A problem-solving technique that involves the spontaneous contribution of ideas from one or more interested people with a view to solving a problem. It can be used to generate research topics.

case study A methodology that is used to examine a contemporary phenomenon (the case) in a natural setting using a variety of methods to obtain in-depth knowledge.

categorical variable A nominal variable measured using numerical codes to identify categories.

chi-square test A non-parametric test of association for two variables measured on a nominal scale.

citation An acknowledgement in the text of the original source from which information was obtained.

closed question A question that requires a 'yes' or 'no' answer, or a very brief factual answer, or invites the respondent to choose from a list of predetermined answers.

code A word or phrase assigned as a label by the researcher to identify a theme or topic in the qualitative data collected for analysis.

coding frame A list of coding units against which the analysed material is classified.

coding unit A particular word, character, item, theme or concept identified in the data and allocated a specific code.

cognitive mapping A method based on personal construct theory that structures a participants' perceptions in the form of a diagram.

confidentiality The assurance given to participants and organisations that the information provided will not be traceable to the individual or organisation providing it.

confounding variable A third variable that that influences both the independent variable and the dependent variable and may suggest a false correlation between them.

content analysis A method by which selected items of qualitative data are systematically converted to numerical data for analysis.

continuous variable A ratio or interval variable measured on a scale where the data can take any value within a given range, such as time or length.

correlation A measure of the direction and strength of association between two quantitative variables. Correlation may be linear or non-linear, positive or negative.

critical incident technique A method for collecting data about a defined activity or event based on the participant's recollections of key facts.

cross-sectional study A methodology designed to investigate variables or a group of subjects in different contexts over the same period of time.

cross-tabulation A bivariate analysis of frequency distributions (usually relating to ordinal or nominal variables) in the form of a table.

data (singular datum) Known facts or things used as a basis for inference or reckoning.

data display A summary of data in diagrammatic form that allows the user to draw valid conclusions.

data integrity Characteristic of the research that affect error and bias in the results.

data reduction A stage in the analysis process that involves selecting, discarding, simplifying, summarising and reorganising qualitative research data.

data saturation	The stage in the analysis of qualitative data when the inclusion of new data does not enhance or change the findings, and further coding is no longer feasible.
deductive research	A study in which a conceptual and theoretical structure is developed which is then tested by empirical observation. Thus, particular instances are deducted from general inferences.
delimitation	Establishes the scope of the research.
dependent variable	A variable whose values are influenced by one or more independent variables.
descriptive research	A study where the aim is to identify and describe the detailed characteristics of phenomena to provide a basis for arguments founded on empirical evidence.
descriptive statistics	A group of statistical methods used to summarise, describe or display quantitative data.
diary	A method of collecting data where selected participants are asked to record relevant information in diary forms or booklets over a specified period of time.
dichotomous variable	A variable that has only two possible categories, such as gender.
discourse analysis	Refers to a number of approaches to analysing the use of language in a social-psychological context.
discrete variable	A ratio or interval variable measured on a scale that can take only one of a range of distinct values, such as number of employees.
dissertation	A lengthy, detailed discourse that is written as part of an academic degree.
diversity and equality studies	Based on a number of difference perspectives on social stratification, and focus on equal rights and treatment for all groups of people in society.
dummy variable	A dichotomous quantitative variable coded 1 if the characteristic is present and 0 if the characteristic is absent.
empirical evidence	Data based on observation or experience.
epistemological assumption	A philosophical assumption about what constitutes valid knowledge in the context of the relationship of the researcher to that being researched.
error	The difference between the mean and the data value (observation).
ethnicity studies	Used to investigate the experiences of ethnic groups in society.
ethnography	A methodology in which the researcher uses socially acquired and shared knowledge to understand the observed patterns of human activity.
experimental study	A methodology used to investigate the relationship between two variables, where the independent variable is deliberately manipulated to observe the effect on the dependent variable.
explanatory research	A study where the aim is to understand phenomena by discovering and measuring causal relationships between variables.
exploratory research	A study where the aim is to provide a better general understanding of phenomena when there are few or no earlier studies. It can also be used to examine the feasibility of a larger, more rigorous study later.
extraneous variable	Any variable other than the independent variable which might have an effect on the dependent variable.
factor analysis	Identifies which variables in a set of variables measured on a rating scale are interrelated, on the basis that each variable could be measuring a different aspect of an underlying concept.
feminist studies	Used to investigate and seek understanding of phenomena from a feminist perspective.
field experiment	An experimental study conducted in a natural location.
focus group	A method for collecting data whereby selected participants discuss their reactions and feelings about a product, service, situation or concept, under the guidance of a group leader.
frequency	The number of observations for a particular data value in a variable.
frequency distribution	An array that summarises the frequencies for all the data values in a particular variable.
gender studies	Used to investigate the experiences of men and women in society.
generalisability	The extent to which the research findings (often based on a sample) can be extended to other cases (often a population) or to other settings.
grounded theory	An iterative process with systematic procedures for the joint collection, coding and analysis of data with a view to developing inductively derived theory.
Harvard system of referencing	A system where citations are shown as author and date (and page number if quoting) in the text and the references are listed in alphabetical order by author at the end of the document.
hermeneutics	A methodology that focuses on the interpretation and understanding of text in the context of the underlying historical and social forces.
histogram	A refinement of a bar chart where adjoining bars touch, indicating continuous interval or ratio data. Frequency is represented by area, with the width of each bar indicating the class interval and the height indicating the frequency of the class.
hypothesis (plural hypotheses)	A proposition that can be tested for association or causality against empirical evidence.
hypothetical construct	An explanatory variable that is based on a scale that measures opinion or other abstract ideas that are not directly observable.
independent variable	A variable that influences the values of a dependent variable.
index number	A statistical measure that shows the percentage change in a variable from a fixed point in the past.

inductive research A study in which theory is developed from the observation of empirical reality. Thus, general inferences are induced from particular instances.

inferential statistics A group of statistical methods and models used to draw conclusions about a population from quantitative data relating to a random sample.

information The knowledge created by organising data into a useful form.

interpretivism A paradigm that emerged in response to criticisms of positivism. It rests on the assumption that social reality is in our minds, and is multiple and subjective. Therefore, social reality is affected by the act of investigating it. The research involves an inductive process with a view to providing interpretive understanding of social phenomena within a particular context.

interquartile range A measure of dispersion that represents the difference between the upper quartile and the lower quartile (the middle 50%) of a frequency distribution arranged in size order.

interval variable A variable measured on a mathematical scale with equal intervals and an arbitrary zero point.

interview A method for collecting primary data in which a sample of interviewees are asked questions to find out what they think, do or feel.

keyword A word or phrase that captures the essence of a conference paper, article or other item. It is used by software to search databases and by search engines to search websites for items containing that keyword.

kurtosis A measure of the extent to which a frequency distribution is flatter or more peaked than a normal distribution (a normal distribution has a kurtosis of 0).

laboratory experiment An experimental study conducted in an artificial setting.

limitation A weaknesses or deficiency in the research.

line graph A graphical presentation of a frequency distribution in which the data are represented by a series of points joined by a line; only suitable for continuous data.

linear regression A measure of the ability of an independent variable to predict an outcome in a dependent variable where there is a linear relationship between them.

literature All sources of published data on a particular topic.

literature review A critical evaluation of the existing body of knowledge on a topic, which guides the research and demonstrates that the relevant literature has been located and analysed.

literature search A systematic process with a view to identifying the existing body of knowledge on a particular topic.

location The setting in which the research is conducted.

logistic regression A form of multiple regression that is used where the dependent variable is a dummy variable and one or more of the independent variables are continuous quantitative variables. Any other independent variables can be ordinal or dummy variables.

longitudinal study A methodology used to investigate variables or groups of subjects over a long period of time.

Mann-Whitney test A non-parametric test of difference for two independent or dependent samples for ratio, interval or ordinal variables.

mean A measure of central tendency based on the arithmetic average of a set of data values.

median A measure of central tendency based on the mid-value of a set of data arranged in size order.

method A technique for collecting and/or analysing data.

methodological assumption A philosophical assumption about the process of research.

methodological rigour Refers to the appropriateness and intellectual soundness of the research design, and the systematic application of the research methods.

methodology An approach to the process of the research encompassing a body of methods.

mind map An informal diagram of a person's idea of the key elements of a subject that shows connections and relationships.

mixed methods The pragmatic use of methods drawn from different paradigms to collect, analyse and integrate qualitative and quantitative data in the same study.

mode A measure of central tendency based on the most frequently occurring value in a set of data (there may be multiple modes).

morphological analysis A problem-solving technique that can be used to generate research topics by identifying the key dimensions and attributes of a subject, placing them in a matrix and adopting a 'mix and match' approach.

multicollinearity The existence of very high correlation (≥ 0.90) between independent variables in a multiple regression mode, which can give rise to less reliable statistical inferences.

multiple methods The use of more than one method drawn from the same paradigm as in methodological triangulation.

multivariate analysis Analysis of data relating to three or more variables.

nominal variable A variable measured using numerical codes to identify named categories.

non-participant observation A method of observation in which the observer is not involved in the activities taking place and the phenomena studied.

normal distribution A theoretical frequency distribution that is bell-shaped and symmetrical with tails extending indefinitely either side of the centre. The mean, median and mode coincide at the centre.

observation A method for collecting data in a laboratory or a natural setting to observe and record people's actions and behaviour.

ontological assumption A philosophical assumption about the nature of reality.

open question A question that cannot be answered with a simple 'yes' or 'no', or a very brief factual answer, but requires a longer, developed answer.

ordinal variable A variable measured using numerical codes to identify order or rank.

parameter A number that describes a population.

participant observation A method of observation in which the observer is involved in the activities taking place and the phenomena studied.

participative inquiry A methodology that involves the participants as fully as possible in the study, which is conducted in their own group or organisation.

Pearson's correlation coefficient A parametric test that measures linear association between two continuous variables measured on a ratio or interval scale.

percentage frequency A descriptive statistic that summarises a frequency as a proportion of 100.

personal construct A set of concepts or general notions and ideas a person has in his or her mind about certain things.

phenomenon (plural phenomena) An observed or apparent object, fact or occurrence, especially one where the cause is uncertain.

pie chart A circular diagram showing the percentage frequency distribution of a nominal variable in which the data are represented by a series of segments. Each segment represents an area that is proportional to the whole 'pie'.

plagiarism The act of taking someone's words, ideas or other information and passing them off as your own because you fail to acknowledge the original source.

population A precisely defined body of people or objects under consideration for statistical purposes.

positivism A paradigm that originated in the natural sciences. It rests on the assumption that social reality is singular and objective, and is not affected by the act of investigating it. The research involves a deductive process with a view to providing explanatory theories to understand social phenomena.

pragmatism Contends that the research question should determine the research philosophy and that methods from more than one paradigm can be used in the same study.

predictive research A study where the aim is to generalise from an analysis of phenomena by making predictions based on hypothesised general relationships.

primary data Data generated from an original source such as your own experiments, surveys, interviews and focus groups.

protocol analysis A method for collecting data used to identify a practitioner's mental processes in solving a problem in a particular situation, including the logic and methods used.

qualitative data Data in a non-numerical form.

quantitative data Data in a numerical form.

quantitative variable A ratio, interval or dummy variable.

questionnaire A method for collecting primary data in which a sample of respondents are asked a list of carefully structured questions chosen after considerable testing, with a view to eliciting reliable responses.

random sample An unbiased subset of a population that is representative of the population because every member had an equal chance of being selected.

range A measure of dispersion that represents the difference between the maximum value and the minimum value in a frequency distribution arranged in size order.

ranked data Quantitative data arranged in size order so that statistical tests can be performed on the ranks.

rating scale A hypothetical construct for obtaining ordinal data, such as the Likert scale.

ratio variable A variable measured on a mathematical scale with equal intervals and a fixed zero point.

references A list containing bibliographic details of the sources cited in the text.

relevance tree A diagram that can be used to generate research topics by dividing a broad subject area into increasingly smaller clusters of related subsidiary areas.

reliability The accuracy and precision of the measurement and absence of differences in the results if the research were repeated.

repertory grid technique A form of structured interview based on personal construct theory during which a matrix (the grid) is developed that gives a mathematical representation of the constructs the interviewee uses to understand and manage their world.

research A systematic and methodical process of inquiry and investigation with a view to increasing knowledge.

research design The detailed plan for conducting a research study.

research paradigm A framework that guides how research should be conducted based on people's philosophies and their assumptions about the world and the nature of knowledge.

research problem The particular problem or issue that is the focus of the research.

research proposal A document that sets out the research design for a proposed study.

research question The specific question relating to the research problem that is addressed by the research.

research topic The general area of research interest.

results currency The generalisability of the research results.

rhetorical assumption A philosophical assumption about the language of research.

sample A subset of a population.

sampling frame A record of the population from which a sample can be drawn.

scatterplot A diagram for presenting data where one variable is plotted against another on a graph as a pattern of points, which indicates the direction and strength of any linear correlation. The more the points cluster around a straight line, the stronger the correlation.

seasonal variation A pattern in the movements of time series data repeats itself at regular intervals.

secondary data Data collected from an existing source such as publications, databases and other records.

self-plagiarism The act of reusing your own published words, ideas or other information and passing them off as new because you fail to acknowledge the original source.

seminal work A landmark study that presented a new idea of great importance or influence in the field.

significance level The level of confidence that the results of a statistical analysis are not due to chance. It is usually expressed as the probability that the results of the statistical analysis are due to chance (usually 5% or less).

skewness A measure of the extent to which a frequency distribution is asymmetric (a normal distribution has a skewness of 0).

Spearman's correlation coefficient A non-parametric test that measures linear association between two variables measured on a ratio, interval or ordinal scale.

standard deviation A measure of dispersion that is the square root of the variance. A large standard deviation relative to the mean suggests the mean does not represent the data well.

standard error The standard deviation between the means of different samples. A large standard error relative to the overall sample mean suggests the sample might not be representative of the population.

statistic A number that describes a sample.

statistics A body of methods and theory that is applied to quantitative data.

stem-and-leaf plot A diagram that uses the data values in a frequency distribution to create a display. The data values are arranged in size order and each is divided into the leading digit (the stem) and trailing digits (the leaves).

stratified sample A random sample chosen by selecting an appropriate proportion from each strata of the population.

supervisor The person responsible for overseeing and guiding a student's research.

survey A methodology designed to collect primary or secondary data from a sample, with a view to generalising the results to a population.

systematic sample A random sample chosen dividing the population by the required sample size (n) and selecting every nth subject.

theoretical framework A collection of theories and models from the literature which underpins a positivist study. Theory can be generated from some interpretivist studies.

theoretical saturation The stage in the analysis of qualitative data when the inclusion of new data no longer reveals any further theoretical insights.

theory A set of interrelated variables, definitions and propositions that specifies relationships among the variables.

thesis A detailed discourse that is written as part of an academic degree.

time series A sequence of measurements of a variable taken at regular intervals over time.

time series analysis A statistical technique for forecasting future events from time series data.

trend A consistently upward or downward movement in a time series data.

triangulation The use of several sources of data, multiple methods and/or more than one researcher to investigate the same phenomenon in a study.

***t*-test** A parametric test of difference for two independent or dependent samples for ratio or interval variables.

Type I error An error that occurs when H_0 is true, but the test leads to its rejection.

Type II error An error that occurs when H_1 is true, but the test leads to the acceptance of H_0.

unit of analysis The phenomenon under study about which data are collected and analysed.

univariate analysis Analysis of data relating to one variable.

validity The extent to which a test measures what the researcher wants it to measure and the results reflect the phenomena under study.

variable A characteristic of a phenomenon that can be observed or measured.

variance The mean of the squared errors.

viva voce A defence of a dissertation or thesis by oral examination.

weighted index number An index number constructed by calculating a weighted average of some set of values, where the weights show the relative importance of each item in the data set.

subject index

S

T