

# CHAPTER 2

## The Research Process: A Quick Glance

### **In this chapter you will learn about:**

- The eight-step model for carrying out research

#### PHASE I *DECIDING WHAT TO RESEARCH*

- Step I *Formulating* a research problem

#### PHASE II *PLANNING A RESEARCH STUDY*

- Step II *Conceptualising* a research design
- Step III *Constructing* an instrument for data collection
- Step IV *Selecting* a sample
- Step V *Writing* a research proposal

#### PHASE III *CONDUCTING A RESEARCH STUDY*

- Step VI *Collecting* data
- Step VII *Processing and displaying* data
- Step VIII *Writing* a research report

**Keywords:** *data, data display, data processing, empiricism, hypotheses, interview schedule, non-probability sample, primary data, probability sample, qualitative research, questionnaire, rationalism, reliability, research design, research instrument, research objectives, research problem, research proposal, sample, sample size, sampling design, secondary data, study design, unstructured interview, validity, variables.*

But much advantage will occur if men of science become their own epistemologists, and show to the world by critical exposition in non-technical terms the results and methods of their constructive work, that more than mere instinct is involved in it: the community has indeed a right to expect as much as this. (Poincaré 1952: xii)

## The research process: an eight-step model

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Research methodology is taught as a supporting subject in several ways in many academic disciplines at various levels by people committed to a variety of research paradigms. Though paradigms vary in their contents and substance, their broad approach to enquiry, in the author's opinion, is similar. Such ideas have also been expressed by Festinger and Katz, who in the foreword of their book *Research Methods in Behavioral Sciences* say that, 'Although the basic logic of scientific methodology is the same in all fields, its specific techniques and approaches will vary, depending upon the subject matter' (1966: vi). Therefore, the model developed here is generic in nature and can be applied to a number of disciplines in the social sciences. It is based upon a practical and step-by-step approach to a research enquiry and each step provides a smorgasbord of methods, models and procedures.

Suppose you want to go out for a drive. Before you start, you must decide where you want to go and then which route to take. If you know the route, you do not need to consult a street directory, but, if you do not know the route, then you need to use one. Your problem is compounded if there is more than one route. You need to decide which one to take. The research process is very similar to undertaking a journey. As with your drive, for a research journey there are also two important decisions to make. The first is to decide *what you want to find out about* or, in other words, what **research questions** you want to find answers to. Having decided upon your research questions or **research problems**, you then need to decide *how to go about finding their answers*. The path to finding answers to your research questions constitutes research methodology. Just as there are posts along the way as you travel to your destination, so there are practical steps through which you must pass in your research journey in order to find the answers to your research questions (Figure 2.1). The sequence of these steps is not fixed and with experience you can change it. At each operational step in the research process you are required to choose from a multiplicity of methods, procedures and models of research methodology which will help you best achieve your **research objectives**. This is where your knowledge base of research methodology plays a crucial role.

The aim of this book is to provide you with knowledge that will enable you to select the most appropriate methods and procedures. The strength of this book lies in anchoring the theoretical knowledge of the steps that you need to go through on your research journey. At each operational step, the book aims to provide, at a beginner's level, knowledge of methods and procedures used by both qualitative and quantitative researchers, though there is an inclination towards the quantitative way of thinking.

Quantitative and qualitative research methodologies differ both in their underpinning philosophy and, to some extent, in the methods, models and procedures used. Though the research process is broadly the same in both, quantitative and qualitative research are

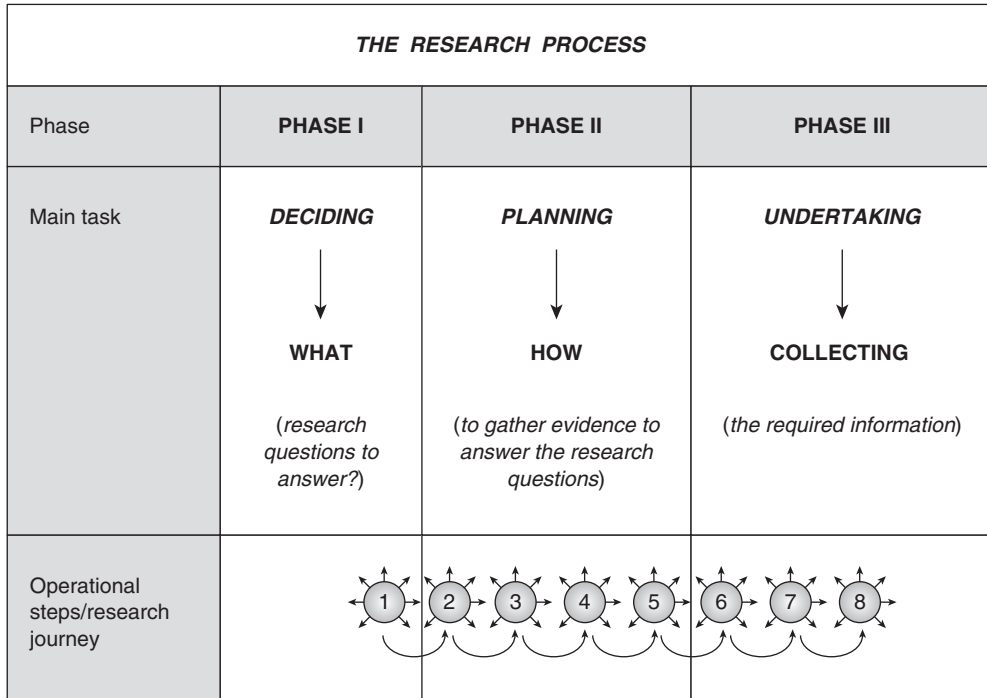


FIGURE 2.1 *The research journey – touch each post and select methods and procedures appropriate for your journey*

differentiated in terms of the methods of data collection, the procedures adopted for data processing and analysis, and the style of communication of the findings. For example, if your research problem lends itself to a qualitative mode of enquiry, you are more likely to use the *unstructured interview* or *observation* as your method of data collection. When analysing data in qualitative research, you go through the process of identifying themes and describing what you have found out during your interviews or observation rather than subjecting your data to statistical procedures. Table 2.1 summarises the differences between qualitative and quantitative research.

Since, at a number of steps of the research process, the choice of methods and procedures is influenced by the quantitative/qualitative distinction, the methods and procedures discussed in some of the chapters in this book are dealt with under separate headings for qualitative and quantitative research; however, the author has tried to keep this distinction to a minimum as the model is applicable to both. Also note that this book is for beginners, it does not cover extensively the applicability and use of each method, model and procedure. In addition, the author has elaborated more on methods, models and procedures associated with quantitative research as compared with those linked with qualitative research. For a deeper understanding of a method or procedure relating to either, you may wish to consult other books identified in the text or in the Bibliography.

TABLE 2.1 *Differences between qualitative and quantitative research*

<b>Difference with respect to:</b>	<b>Quantitative research</b>	<b>Qualitative research</b>
Underpinning philosophy	Rationalism: 'That human beings achieve knowledge because of their capacity to reason' (Bernard 1994: 2)	Empiricism: 'The only knowledge that human beings acquire is from sensory experiences' (Bernard 1994: 2)
Approach to enquiry	Structured/rigid/predetermined methodology	Unstructured/flexible/open methodology
Main purpose of investigation	To quantify extent of variation in a phenomenon, situation, issue, etc.	To describe variation in a phenomenon, situation, issue, etc.
Measurement of variables	Emphasis on some form of either measurement or classification of variables	Emphasis on description of variables
Sample size	Emphasis on greater sample size	Fewer cases
Focus of enquiry	Narrows focus in terms of extent of enquiry, but assembles required information from a greater number of respondents	Covers multiple issues but assembles required information from fewer respondents
Dominant research value	Reliability and objectivity (value-free)	Authenticity but does not claim to be value-free
Dominant research topic	Explains prevalence, incidence, extent, nature of issues, opinions and attitude; discovers regularities and formulates theories	Explores experiences, meanings, perceptions and feelings
Analysis of data	Subjects variables to frequency distributions, cross-tabulations or other statistical procedures	Subjects responses, narratives or observational data to identification of themes and describes these
Communication of findings	Organisation more analytical in nature, drawing inferences and conclusions, and testing magnitude and strength of a relationship	Organisation more descriptive and narrative in nature

Figure 2.2 shows the proposed model. The tasks identified in *arrows* are the operational steps you need to follow in order to conduct a study, quantitative or qualitative. Topics identified in *rectangles* are the required theoretical knowledge needed to carry out these steps. The tasks identified in *circles* are the intermediary steps that you need to complete to go from one step to another. It is important for a beginner to work through these steps in the proposed sequence, though, as already stated, with experience you do not need to follow the sequence.

In this book the theoretical knowledge required is written around each operational step and follows the same sequential progression as is needed when actually undertaking a research investigation. For each operational step, the required theoretical knowledge is further organised, in different chapters, around the operational step to which, in the author's opinion, it is

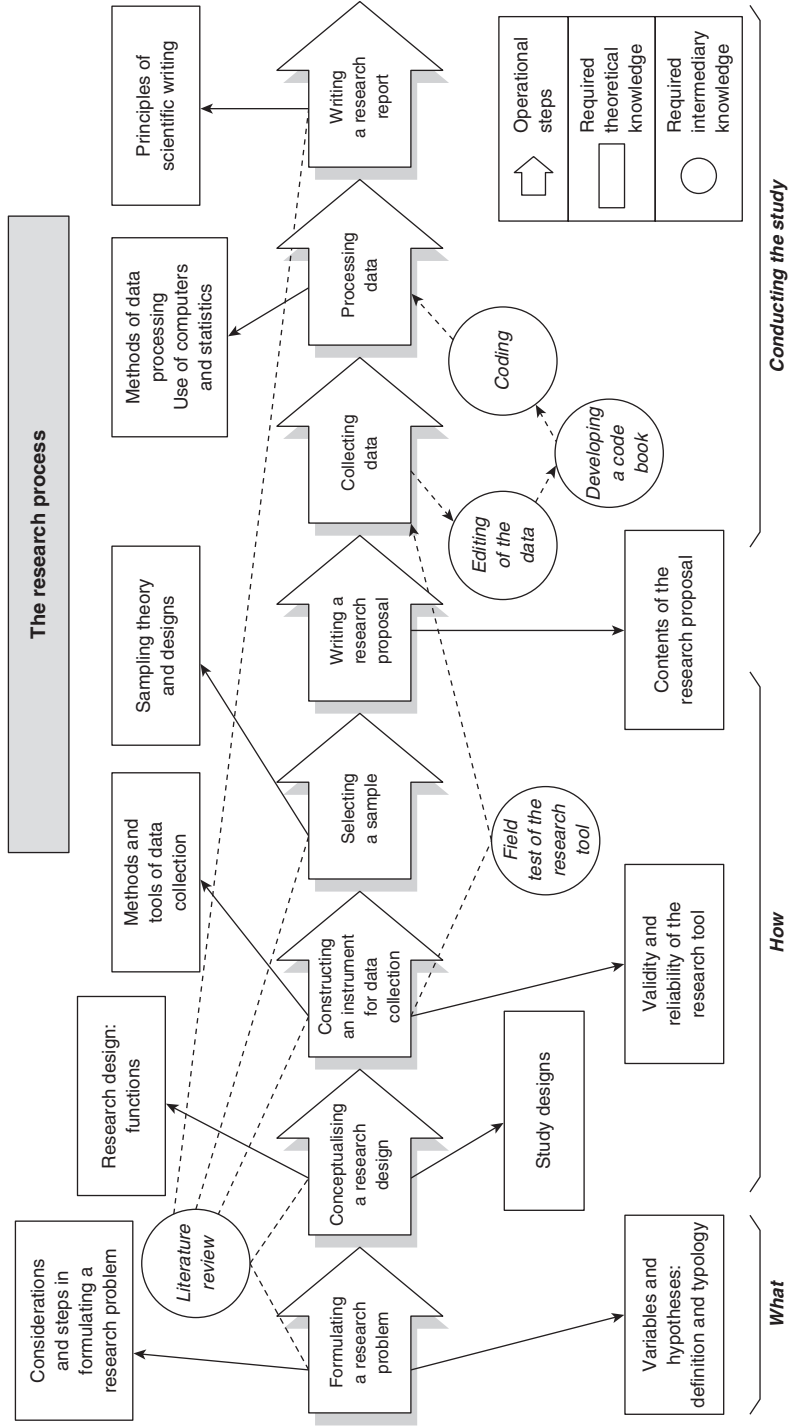


FIGURE 2.2 The research process

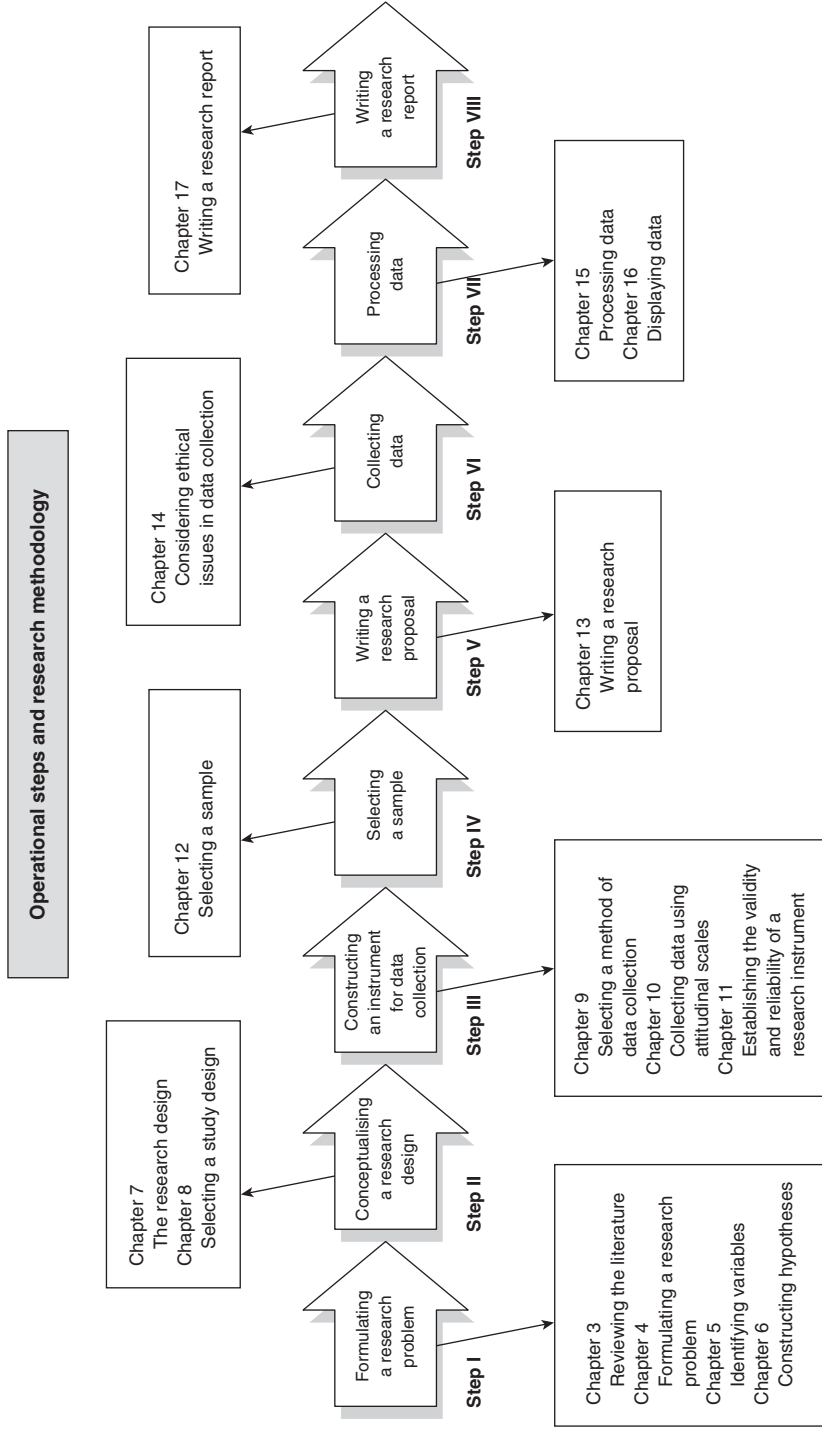


FIGURE 2.3 The chapters in the book in relation to the operational steps

most logically related (Figure 2.3). Again, for a beginner, it is important to study this diagram to relate the theoretical knowledge to the operational steps.

The following sections of this chapter provide a quick glance at the whole process to acquaint you with the various tasks you need to undertake to carry out your study, thus giving you some idea of what the research journey involves.

## **Phase I: deciding what to research**

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### **Step I: formulating a research problem**

Formulating a research problem is the first and most important step in the research process. A research problem identifies your destination: it should tell you, your research supervisor and your readers *what* you intend to research. The more specific and clearer you are the better, as everything that follows in the research process – study design, measurement procedures, sampling strategy, frame of analysis and the style of writing of your dissertation or report – is greatly influenced by the way in which you formulate your research problem. Hence, you should examine it thoroughly, carefully and critically. The main function of formulating a research problem is to decide *what* you want to find out *about*. Chapter 4 deals in detail with various aspects of formulating a research problem.

It is extremely important to evaluate the research problem in the light of the financial resources at your disposal, the time available, and your own and your research supervisor's expertise and knowledge in the field of study. It is equally important to identify any gaps in your knowledge of relevant disciplines, such as statistics required for analysis. Also, ask yourself whether you have sufficient knowledge about computers and software if you plan to use them.

## **Phase II: planning a research study**

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### **Step II: conceptualising a research design**

An extremely important feature of research is the use of appropriate methods. Research involves systematic, controlled, valid and rigorous exploration and description of what is not known and establishment of associations and causation that permit the accurate prediction of outcomes under a given set of conditions. It also involves identifying gaps in knowledge, verification of what is already known and identification of past errors and limitations. The strength of *what* you find largely rests on *how* it was found.

The main function of a research design is to explain *how* you will find answers to your research questions. The research design sets out the specific details of your enquiry. A research design should include the following: the study design per se and the logistical arrangements that you propose to undertake, the measurement procedures, the sampling strategy, the frame

of analysis and the time-frame. (You should not be confused between study design and research design. Note that the study design is one part of the research design. It is the design of the study itself, whereas the research design also includes other parts which constitute the research process.)

For any investigation, the selection of an appropriate **research design** is crucial in enabling you to arrive at valid findings, comparisons and conclusions. A faulty design results in misleading findings and is therefore tantamount to wasting human and financial resources. In scientific circles, the strength of an empirical investigation is primarily evaluated in the light of the research design adopted. When selecting a research design it is important to ensure that it is *valid*, *workable* and *manageable*. Chapter 7 provides details about the research design most commonly used in quantitative and qualitative research.

There is an enormous variety of study designs and you need to be acquainted with some of the most common ones. Chapter 8 explains some of these designs. Select or develop the design that is most suited to your study. You must have strong reasons for selecting a particular design; you must be able to justify your selection; and you should be aware of its strengths, weaknesses and limitations. In addition, you will need to explain the logistical details needed to implement the suggested design.

### **Step III: constructing an instrument for data collection**

Anything that becomes a means of collecting information for your study is called a ‘research tool’ or a ‘research instrument’, for example observation forms, interview schedules, questionnaires and interview guides.

The construction of a research instrument is the first ‘practical’ step in carrying out a study. You will need to decide how you are going to collect data for the proposed study and then construct a research instrument for data collection. Chapter 9 details the various methods of data collection for qualitative and quantitative studies and the process of developing a research instrument.

If you are planning to collect data specifically for your study (primary data), you need either to construct a research instrument or to select one that has already been constructed. Chapter 10 deals with methods for collecting data using attitudinal scales. The concepts of validity and reliability in relation to a research instrument are discussed in Chapter 11.

If you are using secondary data (information already collected for other purposes), you will need to identify what information is needed and then develop a form to extract the required data. In order to determine what information is required, you need to go through the same process as for primary data, described above.

Field testing (or pre-testing) a research tool is an integral part of instrument construction. As a rule, the pre-test of a research instrument should not be carried out on the sample of your study population but on a similar population which you are not proposing to study. This is covered in greater detail in Chapter 9.



If you are planning to use a computer for data analysis, you may wish to provide space for coding the data on the research instrument. This is explained in Chapter 15.

### **Step IV: selecting a sample**

The accuracy of your findings largely depends upon the way you select your sample. The basic objective of any sampling design is to minimise, within the limitation of cost, the gap between the values obtained from your sample and those prevalent in the study population.

The underlying premise in sampling is that a relatively small number of units, if selected in a manner that they genuinely represent the study population, can provide – with a sufficiently high degree of probability – a fairly true reflection of the sampling population that is being studied.

When selecting a sample you should attempt to achieve two key aims of sampling the avoidance of bias in the selection of a sample; and the attainment of maximum precision for a given outlay of resources.

There are three categories of sampling design (Chapter 12): random/probability sampling designs, non-random/non-probability sampling designs and ‘mixed’ sampling design.

There are several sampling strategies within the first two categories. You need to be acquainted with these sampling designs – the strengths and weaknesses of each and the situations in which they can or cannot be applied – in order to select the one most appropriate for your study. The type of sampling strategy you use will influence your ability to make generalisations from the sample findings about the study population, and the type of statistical tests you can apply to the data.

### **Step V: writing a research proposal**

Having done all the preparatory work, the next step is to put everything together in a way that provides adequate information about your research study, for your research supervisor and others. This overall plan, called a research proposal, tells a reader about your research problem and how you are planning to investigate. Broadly, a research proposal’s main function is to detail the operational plan for obtaining answers to your research questions. In doing so it ensures – and reassures the readers of – the validity of the methodology to obtain answers accurately and objectively.

Universities and other institutions may have differing requirements regarding the style and content of a research proposal, but the majority of institutions would require most of what is set out here. Requirements may also vary within an institution, from discipline to discipline or from supervisor to supervisor. However, the guidelines set out in Chapter 13 provide a framework which will be acceptable to most.

A research proposal must tell you, your research supervisor and a reviewer the following information about your study:

- *what* you are proposing to do;
- *how* you plan to proceed;
- *why* you selected the proposed strategy.

Therefore it should contain the following information about your study (Chapter 13):

- a statement of the *objectives* of the study;
- a list of *hypotheses*, if you are testing any;
- the *study design* you are proposing to use;
- the *setting* for your study;
- the research *instrument(s)* you are planning to use;
- information on *sample size* and *sampling design*;
- information on *data processing* procedures;
- an outline of the proposed *chapters* for the report;
- the study's *problems* and *limitations*; and
- the proposed *time-frame*.

## Phase III: conducting a research study

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### Step VI: collecting data

Having formulated a research problem, developed a study design, constructed a research instrument and selected a sample, you then collect the data from which you will draw inferences and conclusions for your study.

Many methods could be used to gather the required information. As a part of the research design, you decided upon the procedure you wanted to adopt to collect your data. In this phase *you actually collect the data*. For example, depending upon your plans, you might commence interviews, mail out a questionnaire, conduct nominal/focus group discussions or make observations. Collecting data through any one of the methods may involve some ethical issues, which are discussed in Chapter 14.

### Step VII: processing and displaying data

The way you analyse the information you collected largely depends upon two things: the type of information (descriptive, quantitative, qualitative or attitudinal); and the way you want to communicate your findings to your readers.

Chapter 15 describes different ways of analysing quantitative and qualitative data and Chapter 16 details various methods of displaying analysed data.

In addition to the qualitative–quantitative distinction, it is important for data analysis that you consider whether the data is to be analysed manually or by a computer.

If your study is purely descriptive, you can write your dissertation/report on the basis of your field notes, manually analyse the contents of your notes (content analysis), or use a computer program such as NUD\*IST N6, NVivo or Ethnograph for this purpose.

If you want quantitative analysis, it is also necessary to decide upon the type of analysis required (i.e. frequency distribution, cross-tabulations or other statistical procedures, such as regression analysis, factor analysis and analysis of variance) and how it should be presented. You will also need to identify the variables to be subjected to these statistical procedures.

## **Step VIII: writing a research report**

There are two broad categories of reports: quantitative and qualitative. As mentioned earlier, the distinction is more academic than real as in most studies you need to combine quantitative and qualitative skills. Nevertheless, there are some solely qualitative and some solely quantitative studies.

Writing the report is the last and, for many, the most difficult step of the research process. This report informs the world what you have done, what you have discovered and what conclusions you have drawn from your findings. If you are clear about the whole process, you will also be clear about the way you want to write your report. Your report should be written in an academic style and be divided into different chapters and/or sections based upon the main themes of your study. Chapter 17 suggests some of the ways of writing a research report.

### **Summary**

This chapter has provided an overview of the research process, which has been broken down into eight steps, the details of which are covered in the remainder of this book. At each step the research model provides a smorgasbord of methods, models, techniques and procedures so you can select the one most appropriate for your study. It is like a buffet party with eight tables, each with different dishes made from similar ingredients. You go to all eight tables and select the dish that you like the most from each table. The main difference between the model and this example is that in the model you select what is most appropriate for your study and not what you like the most. For a beginner it is important to go through all the steps, although perhaps not in the same sequence. With experience you can take a number of shortcuts.

The eight steps cover the total spectrum of a research endeavour, from problem formulation through to writing a research report. The steps are operational in nature, following a logical sequence, and detailing the various methods and procedures in a simple step-by-step manner.

**For You to Think About**

- ▶ Refamiliarise yourself with the keywords listed at the beginning of this chapter and if you are uncertain about the meaning or application of any of them revisit these in the chapter before moving on.
- ▶ Reflecting on the differences between quantitative and qualitative research (as outlined in Table 2.1), determine which approach you are more inclined to follow. To what extent does this reflect your own underpinning philosophy?
- ▶ Use the information provided in Table 2.1 to map the main differences between quantitative and qualitative research at each step in the eight-step model.