

looked at expressed concern about the lack of empirical research in your field of study or perhaps current studies are incomplete in some way ('A crucial issue for the development of e-Learning...'). Finally, make some sort of reference to your next chapter – Research Methods – so as to provide a link for the reader ('The next stage of this research will detail the Research Methods to be used...'). By providing a summary, highlight of main points, need for empirical research (if you are implementing empirical research) and a link to the next chapter, the conclusion to your Literature Review ought to add to the quality of your dissertation. Depending on the word-length of your dissertation, your summary may be shorter, or longer, in length than the sample summary given in Appendix D.

# 5

## Summary of key points

- Write a brief introduction to your Literature Review, reminding the reader of your research objectives, the topics that you will cover in your Literature Review and how they relate to your research objectives.
- The art of referencing sources is an important part of writing an accomplished Literature Review. The Harvard system of referencing – the author/date system – is popular with staff and students alike.
- The use of Latin terms can add an intellectual flavour to your dissertation, provided they are applied correctly. In the context of a Literature Review, useful Latin terms include: *et al.*, *ibid.*, *op. cit.*, *viz.*, *inter alia*, and *[sic]*.
- Use quotations to support your writing and not as a substitute for your own words. Remember to introduce quotations properly and, when you consider it appropriate, offer comment on them.
- Describing the work of others is a basic undergraduate skill; Master's students are expected to go beyond mere description and engage in critical evaluation. Critical evaluation = description (of something) + your views (on that 'something') + reasons for holding your views.
- Appendix I contains a rich variety of verbs ('accepts', 'captures', 'expresses', 'speculates', etc.) to help you describe the work of other authors.
- Learning involves the development of cognitive skills (mental skills), affective skills (feelings, emotions) and psychomotor skills (physical skills).
- To achieve good marks you need to exhibit higher-level cognitive skills in your writing: *analysis*, *synthesis* and *evaluation* (in Bloom's taxonomy of learning) or *analysing*, *evaluating*, *creating* (in Anderson and Krathwohl's updated model).
- To avoid drifting away from your research focus, create sub-headings in your Literature Review that link explicitly to your research objectives.
- Conclude your Literature Review with a summary of your main findings (related to your research objectives) and have a link to your Research Methods chapter.

Pygmalion, J. (2011). *Succeeding with your Master's dissertation*. England: Open University Press.

# Research methods

*What's it all about?* • Research strategy • Data collection • Framework for data analysis • Limitations and potential problems

## What's it all about?

What is the point of a chapter on research methods? If you intend collecting your own data, i.e. implementing your own empirical research, then you need to tell the reader how you propose to go about this process. Your results will not be trusted if you fail to inform the reader how you did your research. Tales abound of students who fail because they neither provide information on their research subjects – *who, when, where, why* – nor include, for example, their questionnaires (leaving their tutors to guess the questions they allegedly asked and to try and work out why the questions were being asked). Research studies that lack crucial information on the research methods used, and why the research was implemented, are worse than useless and cannot be trusted. The trick, therefore, is to give the reader clear and unambiguous information on these issues, so much so that, if the reader wishes, they could easily replicate your studies. Consequently, the information that you will give to the reader (your tutor/marker) on your research methods will be highly structured and detailed, reflecting the meticulous nature of research work (Gill and Johnson 1997).

You will still need a chapter on research methods even if you have no plans to gather your own raw data but depend purely on secondary data, e.g. a Literature Review, for your findings. In which case, you will clarify where you will get your literature (books, journal articles, government reports, Internet), emphasizing literature that will be of particular relevance to your research objectives and taking care to justify your choice of secondary sources. However,

the typical scenario in a Master's dissertation is for students to complete a Literature Review *and* to collect and analyse their own data. This chapter will focus on the latter scenario, where you are expected, in addition to producing a Literature Review, to collect and analyse your own empirical data. Accordingly, the research methods chapter that you write relates to how you will collect and analyse your empirical data.

Too many students seem to be struck by *vagueitis* – a reluctance to reveal what they are doing in their own research – with the result that their chapter on research methods is often the worse aspect of their research project. In fact, it is the research methods chapter, more than any other chapter, that differentiates the top student from the average/poor student: the top student knows his stuff and is not afraid to provide crystal clear information on the research he is undertaking, including the rationale for his chosen approach; whereas the average/poor student makes it only too obvious that he does not understand this chapter and merely peppers his efforts with unexplained terminology and confusing, and often contradictory, statements.

Surveys often appear in the popular press and monthly magazines: 'A survey shows that 1 million people take drugs!'; '50% of people use email every day', etc. Unfortunately, these surveys are rarely implemented by professional researchers and tend to be paid for by commercial interest groups, thereby tainting the trustworthiness of the results. Details about the research methods adopted – other than '1,000 sampled' – are usually minimal, with little information on how people were selected, the context in which the questions were asked, or the actual questionnaire used, etc. As such, these surveys often lack academic credibility. So do not be influenced by 'research' that is carried out by special interest groups on behalf of the popular press or magazines. Good, solid research requires a much more methodical and transparent approach, one that meets the high standards set by the academic community. The quality press, unlike the popular press, are more likely to adhere to such standards when reporting on surveys (although that is not always the case!) by making use of professional research bodies, such as Populus, and adopting a transparent approach as shown in the excerpt appended to an article by Riddell and Webster (2006: 2) with the title 'Support for Labour [a political party in the UK] at lowest level since 1992':

Populus interviewed a random sample of 1,509 adults over 18 by telephone between May 5 and May 7. Interviews were conducted across the country and the results have been weighted to be representative of all adults. Populus is a member of the British Polling Council and abides by its rules.

For details go to [www.populuslimited.com](http://www.populuslimited.com).

There are a number of strands to a research methods chapter, typically including the following sub-sections:

- Introduction
- Research strategy
- Data collection
- Framework for data analysis
- Limitations and potential problems.

Table 5.1 highlights the sort of questions that your dissertation marker will be thinking about as he goes through your research methods.

Table 5.1. Marker's view of your chapter on research methods

Research methods	Questions to be addressed
Introduction	<i>What specific research objective</i> does your empirical research relate to? <i>Why</i> are you collecting your own data? Is there any indication on how you are going to <i>structure</i> your chapter?
Research strategy	<i>What</i> is your overall research strategy? ( <i>Case study, survey, experimental,-historical,-action research, grounded theory, ethnographic research, or what?</i> ) <i>Why</i> have you chosen that research strategy? <i>How</i> do you intend sampling your target population? <i>Why</i> have you chosen that sampling approach?
Data collection	<i>How</i> do you propose to collect your data? ( <i>Questionnaires, interviews, observation, organizational reports, etc.?</i> ) <i>Why</i> have you chosen to collect your data that way?
Framework for data analysis	Once you have collected your data, what are you going to do with it? In other words, <i>how</i> are you going to analyse your findings?
Limitations and potential problems	<i>Do</i> you see any <i>limitations or problems</i> with your practical research? (E.g. limitations in your chosen strategy or problems getting access to your research subjects?) Have you faced the twin issues of <i>validity</i> and <i>reliability</i> ? (I.e. are the research choices you made <i>appropriate</i> and can your work be <i>trusted</i> ?)

As you can see, there are a lot of *what* and *why* questions – and that is the key to completing a strong research methods chapter. State with absolute clarity *what* approaches you are adopting – for your overall research strategy, specific data collection techniques, means of analysing your data – and *why* you are doing things that way. It is the combination of *what* and *why* that will gain you good marks: ignoring one will cost you dear! Ignoring both will cost you your dissertation!!

Hopefully you now have the hang of writing an Introduction to a chapter, so introducing your research methods chapter should be quite straightforward.

First of all, remind your tutor of your specific research objectives. Next, refer to the research objective(s) that relate to your research methods chapter: 'A valuable aspect of this research relates to Objective 3: the opportunity to study e-Learning strategy and implementation in practice . . .'. Then, remind the reader of the need for your own research work, with reference back to your Literature Review: 'Chapter 2 – Issues and Review of Related Literature' identified a gap in existing research in that there was ample evidence on the need for . . .'. Include the potential benefits of your intended research: 'Objective 3 takes this research one step further . . . By comparing theory with practice the research will gain a fuller . . .'. Finally, outline the topics that you will cover in your research methods chapter: 'This section – Research Methods – will provide the details of the research strategy adopted to address the research issues identified above, together with the means of collecting data for analysis including . . .'. Appendix E – Sample Research Methods – begins with a sample introduction to a research methods chapter, but your chapter may be shorter, or longer, depending on how many words that you have to play with and what you want to say.

Let us now look at the other parts that usually go to make up the research methods chapter, starting with your research strategy.

## Research strategy

### Introduction

Most students tend to score less than average marks for this section, principally because they either do not understand what is meant by a research strategy or they fail to explain why they are using a particular research strategy, or because they select a strategy that is wholly inappropriate for their research.

#### **A common mistake by students**

A common mistake by students is to spend the bulk of their time discussing research strategies in general, with scant attention given to the one that they have chosen and, crucially, why.

What is a research strategy? Quite simply, it is where you describe *how* you intend implementing your own research study, i.e. the strategy that you intend adopting to complete your empirical study. For instance, suppose that you were alarmed at the number of MSc. students who gained poor marks for their dissertation submissions and you wanted to find out why this was so. To

begin with, you would carry out a Literature Review to find out what other researchers had to say about the subject. Suppose further that the findings from your Literature Review revealed that there was a need for empirical data, rather than anecdotal evidence; or that there were a number of empirical studies but that they concentrated on staff views rather than the views of students, and it is the latter group that you want to question. You decide to do your own practical research work to help address this deficiency. To do this, however, you need to work out your overall approach to implementing your research, i.e. your research strategy.

Rather than invent your own research strategy, there are numerous ones from which you can choose, including case studies, surveys, ethnography, and action research, to name but a few. It makes sense to use a tried and tested research strategy because it ought to have academic credibility, although that does not stop academics themselves arguing the merits of one approach over another. What you have to do is to select the approach that best suits *your* research. Related to the student dissertation example above, you could select one MSc. programme in one university – i.e. implement a case study – and interview a sample of students who had failed their dissertation to ascertain their views on why they think they failed.

For the moment, it is time to digress and outline some of the research strategies that are available to researchers, and to you, when carrying out empirical research. A *case study* is a study of one example of a particular type (e.g. Oxford University is one example of a particular type of university, i.e. ancient universities; similarly, Ryanair is one example of one airline, a budget airline). Cohen and Manion (1995: 106) describe a case study thus:

The case study researcher typically observes the characteristics of an individual unit – a child, a class, a school or a community. The purpose of such observation is to probe deeply and to analyse intensely the multifarious phenomena that constitute the life cycle of the unit.

Case studies are very popular with students, probably because they find it easier to focus their research on one organization, or part of an organization. When applying a case study approach, students incline towards using interviews as their main, or sole, means of data collection, although more enterprising students use a mixture of data collection techniques, such as questionnaires, individual interviews and group interviews, aiming not only for a rich output, but higher marks.

A *survey* is a representative selection from the population of a particular type, for instance, a survey of 30 universities from the population of universities in the UK or a survey of 200 retail companies in Europe. Surveys can be time-consuming and so rather than interview the sampled population, students often favour questionnaires. For a sound grounding on survey research methods, read Fowler, F. (2001). *Survey Research Methods*, Thousand Oaks, CA: Sage.

*Ethnography* has its roots in anthropology, the study of people in their natural

environment, in effect, the study of *cultures*. For example, the study of Amazon tribes would qualify as ethnographic research. The ethnographic researcher has not only to record patiently what he observes but he is also expected to provide some sort of interpretation of what he sees. His is a difficult job, not just in terms of the patience that is required, but also with respect to the difficult conditions that these researchers often have to work under. The traditional ethnographic researcher has to be admired. These days, however, ethnography has taken a wider meaning, referring to the study of any culture, old or modern. A modern example of ethnography would be the study of gang culture. Ethnographic research is not something that the novice student ought to attempt without clear guidance from an experienced tutor. If you are interested in pursuing ethnographic research, then you may find the following book of value: Davies, C. A. (1999). *Reflexive Ethnography: A Guide to Researching Selves and Others*, London: Routledge.

*Experimental research* tends to be the domain of the scientist, where he attempts to test an hypothesis (i.e. a theory) through some type of experiment. He will first try to define the problem that he is looking at; next, he will formulate his hypothesis; and finally, he will implement his experiment to test whether or not his hypothesis was correct. The experimental researcher is normally well versed in using statistical tools and techniques.

*Historical research*, as the name suggests, is research that focuses primarily on events that occurred in the distant past (e.g. the conditions under which soldiers lived during the First World War), but it can also deal with events in the recent past (e.g. the growth of the Internet). Historical research is a bit like ethnographic research in the sense that the researcher requires skills in observation and interpretation, except in the case of historical research the subjects under research tend to appear in documents, videos, etc., rather than in real life. You could say that historical research is akin to a detective mystery, but where all the suspects are (normally) dead! When the historical researcher investigates events in the recent past, the issue arises of whether he is engaging in historical research or contemporary research.

*Action research* is where the researcher starts with a particular problem that he wants to solve, or understand better, usually within the environment where he is working (Cunningham 1995). A teacher could carry out action research to improve his teaching. Perhaps his pupils are having difficulty understanding his subject. He would define his problem, plan a means of solving the problem (e.g. more interesting, topical discussions, use of groupwork, etc.), implement his proposed solution, and evaluate the results. The key to understanding action research is to realize from the outset that the researcher is involved in the research not just as a (research) observer but as a participant, i.e. he is part of his own research and his participation can influence his findings. Writing about your own participation in a research project can be problematic: there is the question of objectivity and the temptation to show yourself in a good light in your findings. To gain credibility in the research community, action research, although problem-based, nevertheless follows

accepted research procedures: elucidation of research objectives, review of relevant literature, applied research, discussion of results, conclusion. Some students attempt what they think is action research, but omit the research aspect, and are left with what is in effect a work-based project rather than a well-rounded piece of credible research. For further assistance in understanding action research, read Reason, P. and Bradbury, H. (2000). *Handbook of Action Research: Participative Inquiry and Practice*, Thousand Oaks, CA: Sage.

*Grounded theory* (Glaser and Strauss 1967) is quite a difficult theory to apply in practice, and only a very confident student ought to attempt grounded theory. It is demanding in the sense that it does not follow the normal procedures for implementing a research project: that is, start with a clearly defined research focus, find out through a Literature Review what others have to say about your research problem, implement your own practical research, discuss the findings, come to a conclusion, etc. Instead, grounded theory is a bit higgledy-piggledy, in that you do not start with a clearly defined set of research objectives but follow where your research takes you, building up theory as you go along. You start with a rough idea of the area that you are interested in researching; next, you carry out some empirical research; then you refer to literature that you think is relevant to the work that you carried out; you then, depending what you have read, implement further practical work; and so on, jumping back and forth between your empirical work and your review of relevant literature, until you develop a sustainable theory grounded in your practical research, but influenced by reference to appropriate literature. In other words, the relationship between the Literature Review and your practical research is not sequential but symbiotic, where one feeds into the other. It is very exploratory in nature, and so means that you need to be aware of when to call a halt to your research, otherwise it will be never-ending. It is very much like the relationship between an artist and his painting: what the artist thinks, will influence what he paints; what he paints, will influence what he thinks; but at some point he needs to put down his brush or he could ruin what was a work of art. For more information on Grounded Theory, read:

- Dey, I. (1999). *Grounding Grounded Theory: Guidelines for Qualitative Inquiry*, San Diego: Academic Press.
- Glaser, B. and Strauss, A. (1967). *The Discovery of Grounded Theory*, Chicago: Aldine.

Incidentally, some staff, and so students, refer to the aforementioned research strategies – case study, survey, etc. – as examples of a research method ('The research method that I will be adopting is a case study . . .'), equating a research strategy with a research method. This is fine, but it can be confusing. Your overall research strategy is only one of the methods that you will be using to carry out your practical research: the other methods, which you also have to discuss in your dissertation, include your method of data collection and also the method by which you expect to analyse your collected data. That is why

this chapter in your dissertation is usually called the Research Methods chapter to reflect the fact that you will be writing about a number of methods related to implementing your empirical research (research strategy, data collection techniques, framework for data analysis, etc.). Otherwise, logically, if you equate a research method only to a research strategy, and you call your chapter 'Research Methods', then all you ought to be writing about is your case study, or survey, or whatever, which is clearly wrong because you also need to discuss how you intend to collect and analyse your data. So, instead of writing 'The research *method* that will be adopted is a case study . . .', you ought to be writing either 'The research *strategy* that will be adopted is a case study . . .' or 'One research method that will be adopted, related to research strategy, is a case study . . .', but not 'The research method that . . .'.

### Quantitative vs qualitative research

Some researchers mistakenly group research strategies under two opposing headings: quantitative vs qualitative. Students often replicate this mistake. At a simple level, the former type – *quantitative* – refers to research that is concerned with quantities and measurements, such as the number of people who smoke in a given period on 5th Avenue in New York, or the success rate of dissertation students in the London School of Economics, or the proportion of a population that use a particular type of transport to get to work in Bombay. The number crunching can be more complicated than just gaining simple quantitative information: it can involve calculating, for pension and personal insurance purposes, the probability of dying before retirement for those in a given profession. Hence much of the scientific research that occurs, because it deals with quantifiable data, tends to be grouped under the heading quantitative research. *Qualitative* research, on the other hand, is linked to in-depth exploratory studies (exploring, for example, *why* students pick a particular module to study), where the opportunity for 'quality' responses exist. Denzin and Lincoln (1994: 2) hold that qualitative research involves studying 'things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them'.

In general, quantitative research answers the *how* questions, whereas the *why* questions are left to qualitative research. Of course, the reality is that it is rare that professional researchers, and dissertation students for that matter, stick to only collecting and analysing either quantitative or qualitative data. They usually mix and match (Myers 1997). A student could be interested in quantitative issues such as how many postgraduate students picked a particular module for the taught part of their course, the number that passed that module, as well as qualitative matters such as *why* students selected the module in the first place and what they liked/disliked about the module. This mix of quantitative/qualitative questions is common in everyday life: someone might ask you if you attended so-and-so's party at the weekend (begging a

quantitative y/n response) but also enquire what you thought of the party (encouraging a qualitative answer).

### A common mistake by students

A common mistake by students is to equate *research strategies* with quantitative or qualitative research. Too many students think that it is the research strategy that determines whether their research is quantitative, or qualitative, in nature. For instance, it is common for students to relate surveys to quantitative research and case studies to qualitative research. Although it is generally true that a case study, for example, *suggests* a qualitative study and that a survey, for example, *suggests* a quantitative piece of research, it is not necessarily the case. It is not the research strategy – case study, survey, experimental, action research, etc. – that determines whether-or-not your empirical study is quantitative or qualitative in nature; that is dependent on a combination of your research strategy, your individual research objectives and your data collection technique(s).

Suppose that you decide to do a case study of one university in Paris (e.g. the Sorbonne). A case study is normally associated with an in-depth exploratory study, so a case study of one university in Paris must be a qualitative study, yes? Well, not necessarily. If your case study was intended to determine issues surrounding pass rates, such as the number of students passing each module, the progression rates for different courses and years, including direct entrants, and that you want to collect your data through the use of closed questionnaires, then the nature of this research would be quantitative in nature because the research objectives relate mainly to *how* questions (*how* many students passed each module, etc.) and because questionnaires limit the opportunity for in-depth exploratory responses, tending to yield answers that are easily quantifiable (six people said this, four said that, etc.). On the other hand, you could implement a survey of universities in France, but instead of focusing on how many students failed modules, etc., you could focus on *why* students are failing, and collect your data through interviews. The '*why*' nature of the research and the use of interviews – where the opportunity to explore matters in depth exists – provide evidence that the research would now be primarily qualitative in nature. For more information on qualitative research, read:

- Denzin, N. K. and Lincoln, Y. S. (2000). *Handbook of Qualitative Research*, 2nd edn, Thousand Oaks, CA: Sage.
- Silverman, D. (1997). *Interpreting Qualitative Data: Methods for Analysing Talk, Text and Interaction*, London: Sage.
- Silverman, D. (2000). *Doing Qualitative Research: A Practical Handbook*, London: Sage.

So do not write in your dissertation that you are doing quantitative, or qualitative, research because of the research strategy that you have chosen. A research strategy cannot be, in itself, qualitative or quantitative – it is the combination of your research strategy, your research objectives and your data collection techniques that help determine the quantitative or qualitative nature of your research. When you are explaining why you have picked a quantitative (or qualitative) approach do so by reference to not only your research strategy but also to your research objectives and your means of data collection. Do not exclude the possibility that your research is both quantitative and qualitative in nature. If so, indicate which parts are mainly quantitative and which parts relate to the qualitative aspects.

### **Sampling techniques**

Regardless of whether your research is quantitative or qualitative in nature, it is highly unlikely that you will be in a position to collect data from your whole target population (e.g. all customers who frequent Marks & Spencer), in which case you will need to collect data from a sample of your population (e.g. a sample of those who frequent Marks & Spencer). There are a number of sampling techniques that you can use, including: random sampling, simple random sampling, stratified sampling, cluster sampling, systematic sampling, quota sampling, and convenience sampling.

#### **Sampling techniques**

- Random sampling is where you select, entirely at random, a sample of a population. For example, if you want to know how people intend to vote in a local election, in a particular town, rather than ask everyone in that town (because it may be too costly and perhaps impossible to accomplish in a set period), you might decide to stop a selection of people at random in the street and ask them. Be aware, though, that samples are often open to the accusation of bias – the street you stood in, the time of day you carried out your survey, the number of people you asked, etc., will never please everyone! Whenever politicians do not like the results of a survey, they are inclined to criticize the sampling methods employed. Implementing a random sample helps you reduce bias.
- Simple random sampling is a variation of random sampling. In random sampling it does not need to be the case that each member of your population has the same chance of being selected (e.g. if you pick a Saturday afternoon to sample your population, then football fans, many of whom may be watching their favourite football team at the time of your sampling activity, have less of a chance of being sampled), whereas with simple random sampling every member ought to have an equal chance of being selected. Of course, if you have a large population where it is impossible to

identify every member (so as to allow everyone an equal chance of being selected), then your sample may be subject to significant bias.

- Stratified sampling is where you break down your target population into identifiable groups (strata) and then take samples from each of your groups. For example, students attending a lecture could be classified under the strata 'male' and 'female' or 'school leaver' and 'mature entrant', and samples taken from each stratum.
- Cluster sampling is where you break down your target population into clusters (or groups or strata) but, unlike stratified sampling (where you immediately select samples from each of your groups), you then randomly select a sample of your clusters. From within each of your chosen clusters, you will then select random samples. It is actually quite simple to understand, as the following example shows. Suppose that you want to investigate the health of chickens in Scotland. It would be too time-consuming and expensive to check on the health of every chicken, so you decide to use the different regions of Scotland as your clusters (Strathclyde, Highland, Grampian, South Lanarkshire, etc.) and you then randomly select a subset of these regions, thus reducing the clusters that you need to target. From these clusters you randomly select the chicken plots that you will visit for inspection. You have to be careful that your clusters are of comparable size, so it may be appropriate to merge some of your clusters at the very start of your research before you randomly select the clusters that you will then explore in detail.

- Systematic sampling occurs when you take a sample of your target population at equal or regular intervals. For example, you select every fifth name on a list or every tenth customer record from a customer computer database.
- Quota sampling does not involve random sampling and is therefore vulnerable to the criticism that there is no way of telling if the results are representative of a larger population. Sampling that does not involve random sampling is sometimes referred to as non-probability sampling. In quota sampling, you decide beforehand the type and number of members (i.e. your selection quota) that you intend sampling. When you are stopped in the street and asked about your choice of breakfast cereal or how you will vote in the next election, then it is likely that you are the victim of quota sampling (you have been picked because you are one of the '5 old females' or '10 young males' or '15 professionals' that are on their list for selection).
- Convenience sampling is another non-probability approach to sampling, i.e. it is non-random. It is implemented because, as the name suggests, it is convenient to the researcher. You might decide to interview your fellow students for your dissertation because it is convenient for you to do so; similarly, you might interview staff in an organization where you have worked and have ready access. That is not to say that your research findings will not prove valuable, although they must be treated with caution (if your

sample has not been selected randomly then it is difficult to claim that it is representative). Convenience sampling tends to be used as a form of exploratory research, giving ideas and insight that may lead to other, more detailed and representative research. If you are interested in exploratory research, and not claiming that your findings will be representative of a larger population, then convenience research is perfectly acceptable.

'DEWEY DEFEATS TRUMAN' announced the *Chicago Daily Tribune* in 1948. Quota sampling was used by Gallup to predict the outcome of the Presidential election in the 1948 USA elections. Using quota sampling – which we know is unlikely to produce results that are representative – Gallup predicted that Truman would lose the election to Dewey. The next day the big newspapers led with the headline story that Dewey had won the election. In fact, as history shows, the opposite happened and it was Truman who had won the election. Gallup quickly dropped the use of quota sampling to predict election results and ever since that embarrassing episode has used clustered sampling of interviews nationwide. After his victory Truman was asked to comment on the earlier headlines – 'DEWEY DEFEATS TRUMAN' – to which he replied, 'This is for the books'. He was right, because it has appeared in this book!

Another example of a disputed survey occurred when *The Herald* newspaper (2007: 1) led with the headline 'Labour leads in new poll but 50% still to decide'. The headline refers to the Labour Party in Scotland apparently in poll position to win the up-and-coming elections for control of the Scottish Parliament at the expense of the Scottish National Party (SNP). This survey contradicted all previous surveys of voter intentions, which hitherto had shown the SNP with a sizeable lead. *The Herald* (2007: 6) provided details of the sampling methods adopted:

*It surveyed a random sample of 1000 adults across Scotland by telephone between March 22 and March 27. The survey was quota controlled by geography, age, gender, and socio-economic grade, and results then re-weighted to ensure balanced representation was obtained. The margin for error is plus or minus 3%.*

Yet the survey could be criticized on a number of fronts. First, 50% of respondents identified themselves as undecided on how they would vote in the forthcoming election, therefore that fact alone would seriously damage the credibility of the survey (or rather any claim to 'balanced representation' based on the survey). Macleod (2007: 6), reporting for *The Times* newspaper, comments that 'the poll's validity was damaged by the fact that as many as 50 per cent of the respondents were "undecided" and that it was conducted by an organisation with no discernible track record on political polling'.

Also, quota sampling appears to have been used to collect voter intentions ('The Survey was quality controlled...'). In quota sampling, the selection process is dependent on human judgement and so subject to bias. The attractiveness of quota sampling to organisations lies in the relatively inexpensive costs and ease of implementation, but such practical advantages may not be enough to compensate for the methodological weakness inherent in quota sampling: lack of confidence in the results.

Sample size is an issue in quantitative research, particularly when you want to claim that your findings are representative of a larger population. Generally speaking, the larger your sample size, then the more representative your results. Students who interview two people, asking each only three questions, are unlikely to convince their tutor that the results are representative of a larger population. The Internet site <http://www.surveysystem.com> has produced a calculator to help you determine your sample size (Figure 5.1) with different degrees of confidence.

Determine Sample Size

Confidence Level:  95%  99%

Confidence Interval:

Population:

Calculate Clear

Sample size needed:

Figure 5.1 Calculating your sample size

To use the calculator, you need to understand the terms *confidence level* and *confidence interval*. To quote the site (<http://www.surveysystem.com/sscalc.htm#terminology>):

The confidence interval is the plus-or-minus figure usually reported in newspaper or television opinion poll results. For example, if you use a confidence interval of 4, and 47% of your sample picks an answer you can be 'sure' that if you had asked the question of the entire population [then] between 43% (47-4) and 51% (47+4) would have picked that answer.

The confidence level tells you how sure you can be [about your results]. It

is expressed as a percentage and represents how often the true percentage of the population who would pick an answer lies within the confidence interval. The 95% confidence level means that you can be 95% sure; the 99% confidence level means you can be 99% certain.

If you are not comfortable using statistical techniques, then stick to qualitative research, where you typically use case studies, open questionnaires and/or semi-structured interviews. You will still need to justify your sample selection though. For further reading on quantitative research, refer to:

- Buglear, J. (2001). *Stats Means Business*, Oxford: Butterworth Heinemann.
- Buglear, J. (2004). *Quantitative Methods for Business: The A to Z of QM*, Oxford: Elsevier.
- Field, A. (2000). *Discovering Statistics Using SPSS for Windows: Advanced Techniques for Beginners*, London: Sage.
- Henry, G. (1990). *Practical Sampling*, Newbury Park, CA: Sage.
- Sapsford, R. and Judd, V. (1996). *Data Collection and Analysis*, London: Sage.
- Sapsford, R. (1999). *Survey Research*, London: Sage.

For a useful overview of research approaches, both qualitative and quantitative, refer to:

- Dawson, C. (2006). *A Practical Guide to Research Methods*, Oxford: How Books Ltd.
- Saunders, M., Lewis, P. and Thornhill, A. (2007). *Research Methods for Business Students*, 4th edn, Harlow: FT Prentice Hall.

### Positivism and phenomenology

Researchers can sometimes get carried away with terminology and instead of using the terms *quantitative* and *qualitative* to describe the nature of their research, they substitute the term *positivism* for quantitative research and the term(s) *interpretivism/phenomenology* for qualitative research. Tutors teaching research methods to students sometimes reiterate this fusion of terminology. Unfortunately, there are occasions when students, without grasping the meaning of these new terms, mimic their tutors with disastrous consequences. They see their tutors using such terminology, and so they themselves feel obliged to incorporate the same terminology into their dissertations. If you do not understand what these terms mean then why use them? You are only highlighting your ignorance, and will lose marks as a result. It is depressing for a tutor to see students using terms which they clearly do not understand, yet insist on using because they feel that is what their tutors want to see. No! If you are not sure about research terminology, ask your tutor. That is what he gets paid for – to help you. It is better to show your ignorance during the process of writing your dissertation than at the end, after you have submitted: in the former you only lose virtual marks, whereas in the latter you lose real marks.

Nevertheless, some explanation will be provided here of the terms *positivism* and *interpretivism/phenomenology*, just in case you feel the need to use them in your dissertation. A researcher with a *positivist* view of the world is someone who holds that reality is objective and independent of the observer and so can be measured and predicted (Orlikowski and Baroudi 1991; Remenyi *et al.* 1998). Measuring the temperature at which different types of metals melt could fall into the category of positivist research (since the melting metal is not influenced by human observation). What the positivist researcher is really saying is that his type of research – positivist research – is not influenced by the unpredictable behaviour of human beings and that, as a result, his findings are more reliable (e.g. such-and-such a metal melts at such-and-such a temperature, full stop). Positivist research is common in the world of science (mathematics, physics, chemistry, etc.) and less prevalent in the arts-based research world (e.g. sociology, history, history of art, etc.), where the latter normally involves, and is influenced by, human participation and observation. The emphasis on quantifiable data is the reason that positivist research is equated with quantitative research, but the two concepts, although similar, are not exactly the same (e.g. providing students with questionnaires to complete, with a view to obtaining quantifiable data, is an example of quantitative research, but is not an example of *positivist* research, because the questionnaire responses are dependent on human participation, and therefore human influence).

*Interpretative* researchers, on the other hand, hold to a very different view of the world than positivist researchers. Interpretative researchers believe that there are many, equally valid, interpretations of reality, and that, further, these interpretations are dependent on when they are made and the context in which they are made, i.e. they are *time* and *context* dependent. A student who accepts the ‘ontological assumption associated with interpretative/constructivism that multiple realities exist that are time and context dependent... will choose to carry out [their] study using qualitative methods so that they can gain an understanding of the constructs held by people in that context’ (Mertens 1998: 161). If your research concentrated on, say, interviewing your fellow students on their views of their dissertation tutors, then you would be engaging in interpretative research: students would present a variety of views, some praising their supervisors, others offering criticism, with a range of views expressed on why students like/dislike their supervisor (a student who previously applauded his supervisor might change his mind if he failed his dissertation and vice versa for a student who disliked her supervisor but changed her mind when she gained a high mark!). One colleague carried out research recently where he interviewed students as they progressed from first year to third year, capturing their views on how they were coping with group-based coursework. He was adopting an interpretative philosophy to his research study in that he was interested in his students’ interpretations of their group-work experiences, which he also recognized might alter as they advanced through their studies (i.e. time and context dependent). For interpretative

researchers, human participation and observation, and the context and time these occur, are fundamental to their research. The emphasis on human interpretations of events leads interpretative research to be identified, correctly, with qualitative research.

Phenomenological research is just a fancy word for interpretative research i.e. the focus on individual perceptions of events. Phenomenology has strong philosophical foundations, where the phenomenological philosopher, just like his later phenomenological research cousin, is interested in how the world appears to others, i.e. in subjective experiences. Some researchers divide phenomenological research into two categories: phenomenological research that deals with *describing* events and phenomenological research that attempts to *explain* as well as *describe* events. Mostly it is the latter interpretation – description and explanation – that is accepted as phenomenological research what is the value of just describing what has happened when you could go further and try and explain why something happened? Your interpretation of your qualitative data might be wrong, but at least it will have value in trying to engender further debate, or lead to further lines of enquiry.

One could argue that the positivist researcher's view of his research – that it is untainted by human influence and so more reliable – is erroneous and just wishful thinking. In the first place, positivist researchers are often wrong. Scientists once thought that the world was flat. That the Sun rotated around the Earth. Airplanes continue to crash. Missiles go astray. Economic forecasting, based on quantitative modelling, is often wrong; and so on. There is also the argument that even in the world of positivist research, human influence cannot be avoided. Once measurements have been taken, and results produced, the results themselves require human interpretation. Scientists often disagree about how to interpret the same research data (e.g. global warming) and they have been known to interpret research data that best suits their own career interests, or the interests of their political or financial masters. For instance Dinwoodie (2007: 6) reports that the Director of the Information Services Division (ISD), a body that produces statistical data on health issues in Scotland, laments that:

*The independent, neutral and honest interpretation of statistics is often lost in the middle between opposing interpretation poles . . . On the one hand the media and political opposition concentrate on negative themes and interpretation. The Scottish Executive [the ruling political body] and ministers naturally press for any positives to be highlighted . . . We find it difficult to steer a neutral course when publishing statistics, especially so because most of the statistical collections . . . have the Executive [the ruling political body] as the main sponsor.*

That is not to say that interpretative research is any more reliable, or somehow 'better' than positivist research. Both types are useful, and have their place, and both types are fallible, because humans are fallible.

## Justifying your research strategy

After identifying the research strategy that best meets your own research objectives, you now have to do two things: first, explain that research strategy, to show your tutor that you understand your chosen research strategy and, second, justify why that approach best meets your research needs.

### A common mistake by students

A common mistake by students is to select a research strategy (survey, case study, historical research, etc.) and then to try and see how it fits in with their research objectives. That is a back-to-front way of doing things. What you ought to do is consider your main research questions/objectives and reflect on which research strategy best meets your needs. In short, a *survey* is used when you are seeking representative views; *experimental* strategy is required when you are interested in causal relationships; *historical* research for events that occurred in the past; a *case study* when you seek an in-depth, investigative study; and so on.

Of course, there are practical considerations that might influence your choice of research strategy, given the reality that students tend not to have much time to implement their empirical research (your dissertation usually has to be completed in a short time-frame). So, although you might decide that a survey of 50 employers, using interviews, might provide the basis for an excellent empirical study, you have to take on board practical issues: do you have the time for such a survey (using interviews)? Will you get access to all your research subjects? Do you have the time to analyse all your collected data? In brief, are you being unrealistic and over-ambitious? Practical considerations can form part of the justification for your chosen research strategy and data collection techniques.

Let us look at the e-Learning sample research objectives identified earlier in this book as an example of how to select and justify a particular research strategy:

- 1 *Identify the forces driving e-Learning and the barriers to the successful delivery of e-Learning programmes.*
- 2 *Evaluate critically models and frameworks relevant to supporting academic staff in coping with e-Learning.*
- 3 *Explore staff stakeholder views and practices related to e-Learning preparation, including drivers and barriers to e-Learning.*
- 4 *Formulate recommendations on staff preparation issues.*

Objectives 1 and 2 above could initially be covered in the Literature Review. Objective 3 ('Explore staff stakeholder views and practices . . .') is a practical objective, requiring the implementation of empirical research. Which research strategy should we adopt to meet this objective and how can we justify our selection? Central to this objective is the keyword 'explore', which implies an in-depth, exploratory study of staff stakeholder views and practices. Suppose that you have decided that a case study best allows you to implement objective 3. Within a sub-section of your research methods chapter entitled research strategy, make it clear: (a) which research strategy you have decided to adopt; (b) your understanding of what that strategy is; and (c) your justification for choosing that strategy. Saunders *et al.* (2000: 92) stress the importance of justifying the relevance of your chosen research strategy to your work: 'what matters is not the label that is attached to a particular strategy, but whether it is appropriate for your particular research . . .' Below is a sample answer tackling these very points for the above empirical research, where examples of what is to be addressed appear in square parentheses – [a], [b], and [c] – to let you see how the sample answer in Appendix E is constructed:

[a] The research strategy that will be used to implement the empirical research is a case study. What is a case study approach and why is it suitable for this research? [b] Cohen and Manion (1995: 106) describe a case study thus:

'... the case study researcher typically observes the characteristics of an individual unit – a child, a class, a school or a community. The purpose of such observation is to probe deeply and to analyse intensively the multifarious phenomena that constitute the life cycle of the unit.'

According to this definition, a case study is therefore concerned with close observation of how a particular population group behave in a particular context. [c] A case study approach facilitates this researcher's drive to probe deeply into a university's response to e-Learning, by devoting time and energy concentrating on specific aspects of e-Learning in one higher education institution. [b] However, there is some disagreement about what constitutes a case study. Yin (2003: 13), for example, defines a case study in a different way:

'A case study is an empirical inquiry that

- Investigates a contemporary phenomenon within its real-life context, especially when
- The boundaries between phenomenon and context are not clearly evident'.

Continuing . . .

Yin, with the above definition, is trying to distinguish a case study from other research strategies. An *experiment*, he argues, intentionally separates

phenomenon from context; *historical* research, although integrating phenomenon and context, normally deals with non-contemporary events; *surveys* can investigate phenomena and context together, but lack the in-depth investigation of a case study approach. That a case study is an in-depth study of a phenomenon is not evident from Yin's definition (Cohen and Manion's definition makes the depth of study clear – *probe deeply and analyse intensely*), although his book *Case Study Research* makes it obvious that he knows that case study research is a detailed and time-consuming undertaking. [c] This research is concerned with an in-depth study of the phenomenon e-Learning in a contemporary context – a university environment – where the boundaries between e-Learning and a university environment are not obvious. For example, the review of literature showed clearly that there is confusion over what is meant by the term e-Learning; further, it is difficult to compartmentalize e-Learning in a teaching and learning institution; also, the boundaries, if there are any, between e-Learning and learning, a university's primary focus, whether it be through teaching or research, are not *clearly evident*.

Adding . . .

[b] and [c] Although this research meets Yin's second condition – *the boundaries between phenomenon and context are not clearly evident* – it seems likely that Yin's second condition has more to do with emphasizing the interpretative/constructivist view of the world than insisting that complexity of environment is a necessary condition that needs to be satisfied to justify the use of a case study as a research strategy (in any case, the university environment is a complex environment and one that encompasses different stakeholder perspectives and interest groups). Thus, either definition of a case study, whether it be Cohen and Manion's simple, but helpful, description of a case study, or Yin's conditional definition, meets this researcher's aim of delving deeply into a contemporary phenomenon, e-Learning, within the context of a university environment.

Finishing with . . .

[c] Given the nature of this research – in-depth study of a contemporary phenomenon (e-Learning), in a complex environment (a university), where a variety of stakeholder perspectives are sought (with a specific focus on academic staff preparing for e-Learning, but where other staff will form part of the study to place the study in the context of a complex environment), and where the underlying research philosophy is based on an interpretive understanding of the world – a strategy that meets the needs of this research is a case study. . . . the case study approach provides the focus that is required, emphasizes depth of study, is based on the assumption that reality can only be understood through social constructions and

interactions, and that the context in which the phenomena under study is situated is complex. These facets of case study strategy fit perfectly with the aim of objective 3 of this research: to implement an in-depth exploratory study of staff stakeholder views and practices related to e-Learning preparation, including drivers and barriers, focusing on a specific unit of analysis (a team of academic staff preparing for e-Learning for a particular programme), but obtaining other stakeholder views in recognition that a university is a complex environment and academic staff views need to be placed in context.

Notice that in attempting to justify the choice of a case study for the above research, the student has reflected on what a case study is in order to map its benefits onto what he is trying to achieve in his research objective 3, thereby justifying his research strategy. As stated previously, a sensible approach is to state quite categorically the research strategy that you will choose, define that strategy – to show your dissertation marker that you understand the strategy you have chosen – and then, as above, justify your selected strategy. Try and refer to literature when laying bare your reasoning: this demonstrates that you are well read and allows you another opportunity to exhibit your skills in critical evaluation.

Essentially, what you have to remember is that you need to **define your chosen strategy and justify why it meets your research needs**. As long as you do that, then your marker will see that you understand the strategy that you have picked and, importantly, why you have picked it (once again, it is the *what* and *why* questions that you focus on in your chapter on research methods). Of course, the length of your answer will depend on the type of dissertation that you are doing and the number of words that you have to play with.

Appendix E – Sample Research Methods – contains an example of a research methods chapter, exaggerated in length in order to try and explain, in depth, issues germane to writing a chapter on research methods. For now, look at the sample Introduction and sample Research Strategy sub-sections. Notice the techniques adopted in writing these two sub-sections. The sample Introduction reminds the reader of the initial research objectives and identifies the core objective that relates to the gathering of empirical research, as well as reminding the reader that the Literature Review findings point to the need for empirical research. The sample Research Strategy also underlines the main research objective/question to be addressed through empirical research, clarifies whether it is qualitative research and/or quantitative research that is sought, dismisses research strategies that are inappropriate, identifies the preferred research strategy, and justifies it. Finally, the sample chapter acknowledges criticisms of a case study because sometimes it is good to face criticisms of your chosen research strategy head-on – remember, no research strategy is perfect.

It is unlikely that your Research Strategy sub-section will be as large as the sample research strategy in Appendix E, unless you are doing a PhD. The

sample sub-section deliberately enlarged to underline key points of discussion. Nonetheless, you will still be expected, as a minimum, to say what your strategy is and why it is appropriate to your research.

### The question of reliability (and validity)

Is your empirical research reliable? Is it valid? And what is the difference between the two? If your postgraduate dissertation is subject to a viva – an oral examination – then the question of validity and reliability is likely to be raised by your examiners. Which means that you will need to be prepared to defend against the charge that your research is invalid and unreliable. Even if you are not subject to an oral examination, your marker may expect you to face the issues of validity and reliability in your research dissertation. Play safe – include a paragraph or two on why your research is valid research and why it can be relied upon.

What counts as *valid* empirical research? Valid research is research that is acceptable to the research community. How, then, do we know what is acceptable to the research community? What is acceptable to the research community – academics and practitioners engaged in research – is research that: is based on tried and tested research strategies and data collection techniques (to be discussed on p. 101); uses data analysis techniques (to be discussed on p. 113) that are deemed *appropriate to your research*; all of which are implemented properly. So, if you use a survey as your research strategy, and it is appropriate to your research (i.e. you have successfully argued the case), then you are heading towards the goal of achieving valid research. Similarly, if you collect your data using data collection techniques (e.g. questionnaires, see Appendix F) that are relevant to what you want to achieve, then you are building up the case that your research is valid. And if you analyse the data that you have collected in a way that is apposite to your research, then you are helping to achieve research that is valid. In other words, *valid research* is all about implementing your empirical work – from selection of an overall research strategy to the collection and analysis of your data – in a way that uses research approaches and techniques suited to each of these activities.

Here are a few hypothetical examples of research that would be open to the accusation of being invalid. You seek to ascertain from the general public their views on the war in Iraq, which you wish to claim are representative of the general population. You adopt a case study of those staff working in an Army Recruitment Office. This research would be invalid because the target population – Army Recruitment Officers – could not be said to represent the general population; and besides, a survey would be more appropriate. You are keen to implement an in-depth discussion with old people about how they are being cared for in their old age and you decide to base your results on a survey questionnaire. This research would be invalid because a questionnaire, however detailed, would be inappropriate to your aim of achieving an

'in-depth discussion': interviews would be more appropriate, or a combination of questionnaires and interviews. *Valid* research is about the appropriateness of the choices you make in terms of your research strategy and data collection/analysis techniques.

What counts as *reliable* empirical research? Central to reliable research is the concept of *trust*: can your results be trusted? Your work could be valid but unreliable, that is to say you could adopt a research strategy that is appropriate to your research (e.g. a case study), use data collection techniques that you consider relevant (e.g. interviews, sample documents), and apply a suitable means of analysing your collected data, yet your work may be untrustworthy. How could that be? If you interview your research subjects but keep no record of your interviews, then your research may be viewed as unreliable. Or if you are vague about who you interviewed and when the interviews took place, then your research may not pass the reliability test. The best way to achieve research that can be relied upon is to make available to your examiner, either in the body of your dissertation or in your Appendices, details of where you did your empirical research (i.e. research site), who you researched (i.e. sample selection information), together with evidence of what you did with the sample population (e.g. experiments, interview questions, etc.) and what you found (e.g. experiment results, transcript of interviews, etc.). Yin (2003: 38) states that the way to deal with reliability is to 'make as many steps as operational as possible and to conduct the research as if someone were looking over your shoulder'. That is sound advice.

The issue of bias may also impact on the reliability of your research. For instance, if you are claiming that your results are representative of a larger population but your sampling was non-random, then your results (as in the earlier 'DEWEY DEFEATS TRUMAN' example) are not reliable. Similarly, interviewing as a means of data collection is a tricky business because sometimes the respondent is trying to please the interviewer and so gives answers that will please the interviewer (or show the respondent in a good light). Gavron (1996: 159) recognized the problem of eradicating bias altogether, particularly in relation to interviews: 'It is difficult to see how this [bias] can be avoided completely, but awareness of the problem plus constant self-control can help'. Even the simple act of observation is not bias-free: in trying to make sense of what we are looking at we are influenced by own prejudices, experiences, and personal baggage. Phillips and Pugh (2007: 50) agree: 'There is no such thing as unbiased observation.'

So, *valid* research relates to how you gather and analyse your empirical data, i.e. the strategies and techniques that you use (e.g. surveys, interviews, etc.), whereas *reliable* research focuses on the need for a record of evidence that you did indeed do the research (in a fair and objective way). If a tutor, or external examiner, asks you about the validity of your research, then you need to answer in terms of the appropriateness of the research strategy that you picked, the relevance of the data collection techniques that you used, and the (fitting) way that you analysed your data. If you are questioned on

the reliability of your research, then you should answer with reference to your record of evidence (e.g. detailed information provided on your site and sample selection, sample questionnaires, interview transcripts, etc.) and the steps that you took to achieve fairness and objectivity (e.g. random selection of subjects). You can also argue that your research is reliable because you used valid strategies and techniques appropriate to your research objectives AND you have a detailed record of your research plan (e.g. people interviewed, questions asked, etc.) and its implementation (e.g. completed questionnaires, transcripts, etc.) AND you took steps to minimize bias in your work (e.g. random selection of research subjects). In other words, although valid research is not proof that your research is reliable, it can be used to strengthen the case for trusted research when combined with the other tests for reliability.

A further argument for reliability relates to the experience of the researcher. Companies that have a long record of trusted research publications, such as Ernst & Young or PriceWaterhouseCoopers, have a good chance of their research output being accepted as reliable work because of their experience in the field. Similarly, many of your tutors will have a record of publishing that, in turn, will add weight to the reliability of future research that they intend pursuing. Although it is unlikely that you, a student, will have similar research output as your tutor or large companies, you can argue that any classes that you attended on research methodologies, together with close supervision, will have aided you in producing research work that can be deemed reliable. If you have indeed produced a research paper which, for example, was presented at a conference, then you can certainly argue that your work, in summary form, was accepted by your peers and, hopefully, received enthusiastically!

## Data collection

### Preparation, preparation, preparation

Once the research strategy has been selected, a method of collecting the research data is required. Data collection methods include a variety of techniques: sampling (discussed earlier), secondary data, observation, interviews, and questionnaires. Researchers may use more than one technique to collect data. Using more than one technique allows you to *triangulate* results. Triangulation occurs when you use different sources of data to get a range of perspectives (particularly useful in qualitative research) and so achieve a more rounded picture, or 'thick description' of what you are looking at (Geertz 1973). If you were to ask a fellow student how he got on in his exam he might reply 'I did fine'; but if you then decided to check his results on the examination board you might discover that he barely passed; and, further, if you were able to see his examination script and read the examiner's comments you might get a better insight into what he did well at and where he lost marks. Triangulation can be time-consuming but it has its rewards.

Preparation is absolutely crucial to successful data collection: making arrangements to obtain your supervisor's views on your proposed research methods; putting together, and implementing, a pilot study if you have time negotiating access to your data subjects; development of your actual questions (interview questions, questionnaires); and giving yourself enough time to collect your empirical data and write up your results. Unfortunately, when students are asked to collect and analyse their own data, they often leave themselves little time to do justice to these tasks, and it can show in the final output: rushed, confused, superficial, and vague.

If you intend interviewing your research subjects, then plan your questions beforehand. You can impose a rigid structure to your interview by sticking strictly to your pre-arranged questions. Or you can introduce a degree of flexibility to the interview process by using a semi-structured questionnaire. That is, you can go into the interview with a limited number of pre-arranged questions but with a willingness to let the interview ebb and flow, following associated leads and new issues as they arise.

Qualitative interviewing, using semi-structured questions, makes use of open-ended questions to encourage meaningful responses (Patton 1990). Open questions are so-called because the respondent is not confined to a limited number of responses. Examples of open questions are:

What do you think of the benefits, if any, of e-Learning?

Why did you register for this course?

What are your views on capital punishment?

What problems have you encountered with train travel?

Tell me about your marriage?

How would you define *happiness*?

The flip side of using open questions is that they can prove difficult for respondents to answer. Respondents might be tempted to give you an 'answer' that either shows themselves in a good light or which they think will please you; or they might blurt out the first thing that crops into their head! How many times have you been asked an open question and given a quick response, one which you later regret as inadequate and not reflecting what you genuinely believe or wanted to convey?

*Closed* questions are an alternative to open questions. They are used when you want a specific answer to a limited range of responses, such as:

Please indicate your sex:

Male  Female

Which of the following reflects your views on capital punishment?

1. Support capital punishment
2. Against capital punishment
3. Indifferent

You can combine open and closed questions in the same interview or within the same questionnaire, or even within the same question by including the option of 'Other (please specify)' as shown below:

What problems have you encountered with train travel?

- A. Overcrowding
  - B. Delays
  - C. Expensive
  - D. Discomfort
  - E. Other (please specify)
- 
- 
- 

If your research is primarily quantitative in nature and you are using questionnaires to collect your data, then make sure that your questions are precise and suitable for later software analysis. SPSS is a standard data analysis package that students can use to aid their quantitative research. Although the acronym SPSS stands for Statistical Package for the Social Sciences, its use is not confined to research in the social sciences. Statistical packages such as SPSS depend on you creating data sets or files, which in turn are extracted from your completed questionnaires; therefore your questionnaires need to be thought through with the resulting data analysis process in mind. You could work backwards and imagine the type of data file that you will be entering into your chosen statistical software package, as shown in Table 5.2 (where M = male, F = female, 0 = degree, 1 = diploma, 2 = school qualification, 3 = other).

Table 5.2 Example of coded data file

Age	Sex	Qualification
19	M	0
23	F	2
30	M	2
18	M	3
20	F	1
	Etc.	

From there, you can then work out the sort of questions you need to ask to enable you to create that data file:

Please enter your age: \_\_\_\_\_  
Sex: Male \_\_\_\_\_ Female \_\_\_\_\_  
Qualification(s):  
Degree \_\_\_\_\_  
Diploma \_\_\_\_\_  
School \_\_\_\_\_  
Other (please specify): \_\_\_\_\_

Do not start your empirical research unprepared, hoping somehow that things will come together. Give yourself enough time to write your chapter on research methods. Seek your supervisor's advice on how you intend to collect and analyse your data (e.g. does she think that your data collection techniques are appropriate?). Work out your questionnaires/interview questions in full. Ask yourself if the responses to your questions, whatever they may be, will help you meet your specific research objectives (i.e. are your questions relevant?). Plan your physical collection process (e.g. interviews with data subjects) and give yourself plenty of time to analyse your results. For more information on questionnaire design and interviewing, read Oppenheim, A. N. (1992). *Questionnaire Design, Interviews and Attitude Measurements*, London: Pinter.

### What and why?

#### ***A common mistake by students***

A common mistake committed by students, when writing about the data collection techniques they propose using for their empirical research, is to be vague about what *they* did, and why, opting instead to concentrate their efforts on providing the reader with a dull list of data collection techniques that are available to researchers in general.

This is very boring to the reader, and it is not going to get you many, if any, marks. In this section of your dissertation you will need to identify:

- 1 Where you will get your data from (people coming out of a shopping centre, fans in a football stadium, employees from a number of companies, or wherever).
- 2 Your sample size (number of experiments/companies/people).
- 3 Your sampling technique (random, stratified, quota, convenience, etc.).
- 4 How you will extract your data (interviews, observation, questionnaires, tests, etc.).

In addition, when you write all this down in your dissertation make sure that you justify each of your choices for the aforementioned points 1, 2, 3 and 4. Also, as evidence of point 4 – how you will collect your data – you should place your intended questionnaire/interview questions in your appendices section at the back of your dissertation. After you have collected your data, insert in your appendices an example of a completed questionnaire/interview session, taking care to remove identifying information that your research subjects may wish to remain hidden (such as employee names or company details). The key to your data collection sub-section is to provide enough detail so that the reader can, if he wishes to, repeat your research. In that way the information that you provide about your empirical work will be unambiguous and transparent, and so avoiding potential examiner comments such as 'not sure how many companies this student sampled' or 'this student fails to make it clear why he has adopted the use of questionnaires as his means of data collection' or 'this student has not included his questionnaire so the actual questions asked remain a mystery!'

Let us take the e-Learning case study as an example of how to record information about your intended empirical work. In Appendix E, 'Sample Research Methods', there are two fully worked-out sub-sections which are relevant: *Data Collection: Site and Sample Selection*; and *Data Collection Techniques*. You can peruse the detail of these sub-sections at your leisure, but for now we will focus attention on specific points. Remember, the sample chapter on research methods is longer than one would expect to see in a Master's dissertation, and that is because certain parts have been exaggerated in length to emphasize key issues for you, the reader.

The empirical research for the e-Learning example is based on a case study of one university from which a number of staff are to be sampled, to meet objective 3 of the research study ('Explore staff stakeholder views and practices related to e-Learning preparation, including drivers and barriers to e-Learning'). Hence the heading *Data Collection: Site and Sample Selection*. If your empirical work is different, then you should have a different heading. If you intend visiting a number of companies, i.e. more than one site, then change your heading accordingly, e.g. *Data Collection: Sites and Sample Selection*.

What forms the content of a sub-section entitled *Data Collection: Site and Sample Selection* and how do you go about recording this information? First, you state *where you are getting your data from*: the physical location(s)/departments and *sample size* (number of research subjects). Also, take the opportunity to remind the reader about your research strategy and do not forget to justify your site selection. If you are investigating the behaviour of crabs on a number of beaches, then say which beaches you will be using – i.e. your research sites – and why you have chosen those particular beaches. If you intend sending out questionnaires to a number of companies about their e-security measures, then say which companies (or types of companies, if anonymity is a requirement laid down by your research subjects) and why you have chosen those

particular companies (you may have selected them at random). If you are going to interview students from a particular undergraduate programme, from a particular year-group, then state the basic details (university/course/year) and why that particular site/course/year-group.

To begin with, you need to state quite categorically the 'site(s)' and the number of research subjects (people/crabs/etc.) that will form the source of your data. Taking the e-Learning example as an illustration one would need to identify (a) the university (as it is a single case study); (b) the main department; and (c) the programme, and the number of staff that go to make up the source of the data. Once again, points (a), (b) and (c) appear in square parentheses in bold below to make it easier for you to identify the constituent parts of the sample answer:

[a] The site will be Inverclyde University (IU). This case study is not intended to be an exhaustive study of all the e-Learning initiatives operating in the university. Such a study would, in order to produce meaningful results, be enormously time-consuming and perhaps never-ending (e.g. as one moved the study from one School or Faculty to another School or Faculty, or indeed between departments, new blended e-Learning programmes may suddenly appear and others may just as quickly disappear). [b] Instead, one division within the Inverclyde Business School (IBS) will form the focus of academic staff interviews. [c] Specifically, those staff involved in preparing lecture and seminar material on the VLE software platform Blackboard for a suite of post-graduate programmes in E-Business, Knowledge Management and Management of Information Systems will receive structured interviews. This will allow a focused, achievable approach to the study, giving academic staff the opportunity to express detailed views on e-Learning preparation. Eight teaching staff who have been involved in preparing material for their modules for Blackboard usage on the China programme will be interviewed.

Next, you need to justify your choice of data sources. In the e-Learning example, this could be justified by, first of all, drawing attention to the hitherto lack of in-depth studies in this area:

The opportunity to implement a case study within a university to explore staff stakeholder views and practices related to e-Learning training, including drivers and barriers to e-Learning, is an exciting one. Empirical research in e-Learning tends to take place via the mechanism of e-mailed questionnaires (examples include: Britain and Liber 1999; Rockwell *et al.* 2000; Gerrard 2002; Massey 2002), resulting in a preponderance of quantitative data (such as '61% of all respondents rated the overall quality of e-Learning as fair or poor') rather than probing, qualitative data. In addition, such surveys tend to be sent to one individual or centre for

response, hence locking in different stakeholder views. This empirical research will attempt to delve deeply into an institution's approach to e-Learning by implementing a case study and by concentrating on collecting qualitative data from pertinent stakeholders. It is hoped that the results of this study will provide the reader with a three-dimensional picture of e-Learning and, through its *relatability*, add to the tapestry of knowledge that is forming around the field of e-Learning.

Then you can establish why you are focusing on Division X within your selected institution:

Given that a major focus of this research is to gain a deeper understanding of how staff, in practice, prepare for e-Learning, in whatever form, and that these staff have prepared aspects of the e-Learning part of this blended approach, then selecting X [name of Division] as part of the case study presents an excellent opportunity to address issues surrounding staff views and experiences of e-Learning preparation. Selecting X is not a pretence that X is representative of other Divisions, or Departments, within Inverclyde University and that what happens in X in this context happens, or will happen, elsewhere. Instead, it is to the concept of *relatability* – discussed earlier – that is expected to be of interest to other Departments in other universities. E-Learning is of great interest to universities and the experiences and perspectives of one department will add incrementally to the knowledge base of e-Learning research.

There are two other reasons for choosing X's postgraduate programme as the main focus for this case study. The UK Council for Postgraduate Education (1999), in a report – *The International Postgraduate: Challenges to British Higher Education* – raised the issue of the potential for using new technologies for teaching and learning with international postgraduate students but revealed that evidence of staff e-Learning experiences with international postgraduate students were from 'anecdotal' sources (section 7: 2). Selecting X's postgraduate programme provides an excellent opportunity to obtain empirical data on how X's staff prepare for e-Learning and how they prepare for the challenge of dealing with students (and staff) from a different culture. Secondly, The Commission of the European Communities (2002: 5) lamented that the 'most successful players [in e-Learning initiatives] to date, however, remain the well-established and prestigious institutions'.

If there are other research subjects from whom you wish to extract data, then remember to include them, saying why you are incorporating them in your sample:

If Division X is viewed as central to this case study, then, in order to achieve a three-dimensional perspective of e-Learning at IU, other stakeholders need to form part of this research. To concentrate solely on staff from Division X would produce, at best, a two-dimensional perspective experiences and views of academic staff and their Head of Department. To gain a fuller perspective, the research needs to be widened to include staff outwith Division X. Those who have a part in training academic staff to cope with e-Learning ought to form part of the study. Similarly, *elite* staff – staff with influence, and who are well-informed in the organization (Marshall and Rossman 1989) – need to be included. . . .

To capture a School/Faculty view of e-Learning issues, the Dean of the Inverclyde Business School (IBS) will be included in the case study; similarly, the Principal and Vice-Chancellor is included to give a strategic perspective on e-Learning. The Pro Vice-Chancellor of Learning and Information Services will be part of this study, for his over-arching role in achieving strategic objectives related to the use of ICT. And because Division X is located in IBS, the C&IT Fellow located in IBS (someone with direct responsibility for encouraging and supporting e-Learning initiatives in the IBS) will also be interviewed. This thick view of e-Learning will be enhanced further by including members of those who have a role in best teaching practices within IU: the Head of the Academic Practice Unit (APU), together with a member of the Teaching and Learning Team (LTAS). In effect, empirical data will be obtained from academic staff involved *in the field* of e-Learning preparation, from staff in the e-Learning Innovation Support Unit, as well as staff with a specific role in offering guidance and strategy on teaching practice; and, for a wider management perspective, data will be captured from the Head of X, the Dean of IBS and the Principal and Vice-Chancellor.

Finally, in relation to your data sources, it is good practice to summarize, for easy reference, the information in the form of a diagram, as shown in Figure E2 (taken from the sample chapter on Research Methods in Appendix E).

Next, you can explain your sampling method (state what it is and justify your approach):

Convenience sampling was used to select both the university and the postgraduate program. It is convenient because the researcher works at the university. This means that the subjects under study have not been chosen at random and that therefore there can be no claim to achieving representative views related to the broader university community. Instead, this research has as its focus the aim of achieving an in-depth and qualitative insight into e-Learning preparation issues. The review of relevant literature established that e-Learning is an area of increasing interest in the wider university community and so the results of this study will be of

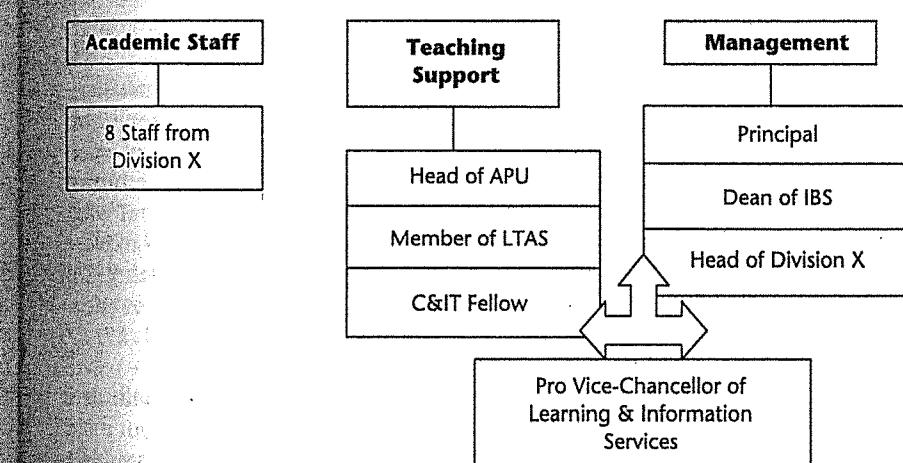


Figure E2 Inverclyde University (IU) Research Units

interest to those grappling with similar staff preparation issues. Convenience sampling is also used because of time issues and easy access to research subjects.

In truth, you can disclose your sampling method just about anywhere in your data collection sub-section – it does not need to be *immediately* after you have revealed your sample size. It can be before it or after it, or even within your earlier sub-section on research strategy.

Now you will need to start explaining *how* you will collect data from your sources, i.e. clarify and justify your data collection techniques. Do not get bogged down in the common mistake of just listing the general benefits of the techniques that you intend using: try and discuss the relevance/benefits of your chosen techniques to *your* research. In other words, articulate the type, or types, of data collection techniques that you will be adopting, indicating who will be subject to what data collection technique, and assert your rationale for using those techniques. For instance, if you want to email questionnaires to your research subjects, then state this and justify why you are using email questionnaires as opposed to, say, interviews. If you are interested in interviewing employees from a particular company, then say so, explaining how you will conduct your interviews (i.e. structured or semi-structured interviews?), who will be subject to these interviews, and how interviewing will help you collect the data that you need to complete your empirical research.

Incidentally, a structured interview – where you have a pre-prepared set list of questions that you would like answered – allows you to keep a tight grip over the interview process and maintain a focused interview; while semi-structured interviews – where you have an outline structure with key pointer questions, hoping to generate a fluid, dynamic interview – gives you, the

interviewer, an opportunity to confront co~~o~~sues and at the same time allow the interview process to take unexpected twists and turns. Of course, there is nothing to stop you having a completely structured set of interview questions, to establish a focus, but where you are quite prepared to let the interviewee expand on issues as he sees fit (this can be done through the use of open questions, such as 'What are your views of x?'). You may wish to use a mix of data collection techniques, in order to achieve a more rounded view of what you are researching. The advantage of interviewing is that you can explore interviewee responses and get at the root of issues. In effect, interviewing is a conversation between interviewer and respondent with the purpose of eliciting certain information from the respondent' (Moser and Kalton 1971: 271).

The following extracts from the e-Learning example in Appendix E – where interviews and secondary data, such as in-house reports, form the main data collection techniques – illustrate the previous points, *viz.*: [a] clarify your main data collection technique(s); [b] justify it/them; and [c] indicate who is subject to which technique and type of questions:

[a] Qualitative data will be obtained primarily through the vehicle of interviews. [b] This will open the opportunity to discuss, with the various stakeholders, e-Learning issues in depth. [a] However, in order to establish a framework around the interviews, and to focus on specific issues with different interviewees, the interviews will be structured with questions prepared beforehand, but the interviewer will be open to new issues and follow different, associated leads depending on the responses and willingness of the interviewee. Qualitative interviewing, using structured questions, makes use of open-ended questions – such as, for example, 'What do you consider to be the benefits, if any, of e-Learning?' – to encourage meaningful responses (Patton 1990).

[c] Interviewing different staff (e.g. Principal, academic staff, member of LTAS, etc.) will allow for cross-comparisons of responses, encouraging different perspectives of similar e-Learning issues to emerge (e.g. rationale for involvement, perceived barriers, staff support required, etc.). For example, the Vice-Chancellor and Dean of IBS will be questioned mainly on strategic issues related to e-Learning, whereas the Head of X, although receiving questions on strategic issues, will be questioned mainly on implementation issues linked to strategic objectives, including support for staff training. The interviews will be recorded, where possible, for two reasons: to ensure that the analysis of data is based upon an accurate record (e.g. transcript) and to allow the interviewer to concentrate on the interview.

Continuing with details of staff to be interviewed . . .

The following staff will be interviewed:

- 1 Principal and Vice-Chancellor of Inverclyde University (IU)
- 2 Pro Vice-Chancellor of Learning and Information Services
- 3 Member of e-LISU
- 4 Head of Academic Practice Unit (APU)
- 5 The Dean of the Inverclyde Business School (IBS)
- 6 The Head of the Division X
- 7 Member of Learning and Teaching Strategy (LTAS) Team
- 8 C&IT Fellow
- 9 8 Academic Staff from Division X: module teaching team involved in development of teaching and learning material, using Blackboard, for the delivery of an MSc E-Business to students in China.

Including the benefits of choosing the above stakeholders:

[b] By selecting a variety of e-learning stakeholders, from those involved in strategic decision-making (1, 2, 4 and 5), those charged with providing training to academic staff (2 and 3), those involved in providing IT Support (2 and 5) and learning and teaching advice (3, 4, 7 and 8), and by selecting a Division that has recent experience of implementing e-learning strategy (6 and 9), it is expected that an enriched understanding of e-learning will emerge, one that will better inform the e-learning process and assist in the development of, for instance, the ingredients for improved guidance to support those faced with implementing e-Learning: academic staff.

If you are making use of secondary data (such as company records), then state explicitly what secondary data you will be using, and why:

Secondary data, in the form of university documents and academic staff teaching and learning material, will also be collected to form part of the analysis. The secondary data will come from a variety of documented sources:

- University Strategic Plan
- IBS Plan for 2002/03–2005/06
- Division X's Strategic Plan
- Learning, Teaching and Assessment Strategy (LTAS) 2000–2004
- APU E-Learning Strategy

The secondary data, coupled with the interview data, will assist in providing a rich picture of e-Learning in the university by facilitating a comparison of the stated University/Business School/Divisional objectives against staff perceptions, at various levels within the institution.

Finally, you should inform the reader in which Appendix you will be placing your questions and raw data, for example:

Appendix A contains the collection of structured questions to be used for the academic staff; Appendix B contains the actual interview transcripts of interviews with academic staff; and Appendix C contains the questions and transcripts of interviews with elite staff.

A convenient and cost-effective way to collect qualitative data, often favoured by students, is to use *focus groups* (Marshall and Rossman 2006). Instead of interviewing subjects on a one-to-one basis, in a formal, uninviting environment (e.g. an office), focus groups provide an opportunity to gather together a pre-determined number of interview subjects, usually in a relaxed setting, to discuss their attitudes towards whatever topics you want discussed. The emphasis on capturing people's views means that focus group-based research is phenomenological in nature and linked to qualitative research. However, getting data from a focus group is not straightforward. You need to plan your discussion topics in advance, decide how to collect your data, pay attention to the flow of discussion (allowing others to contribute), recognize when to call a halt to particular discussions; as well as making every effort to minimize bias. On this last point, it is very easy to manipulate inadvertently what you want people to say, by the questions that you ask and in your responses – oral and facial – to comments given by members of the focus group. This can happen to such an extent that your input may contort what you think you are witnessing, or as Heisenberg (1958: 288) put it: 'What we observe is not nature itself, but nature exposed to our method of questioning'. Perhaps complete objectivity is a fallacy, something that can never be achieved, as posited by Zukav (1979: 328):

*'Reality' is what we take to be true. What we take to be true is what we believe. What we believe is based upon our perceptions. What we perceive depends upon what we look for. What we look for depends upon what we think. What we think depends upon what we perceive. What we perceive determines what we believe. What we believe determines what we take to be true. What we take to be true is our reality.*

Zukav's perspective on objectivity, although perhaps over-cynical, underlines the need for you not to covet deliberate bias and to make every effort to minimize accidental bias.

When you engage in focus groups you are in effect participating in a form of action research. You are not a full participant because you are not answering the questions you pose. At the same time, it cannot be claimed that you are a neutral observer, because you are asking questions, directing the flow of discussion, interrupting debate, inviting others to contribute, revealing unwitting approval/disapproval (a slight frown here, a quiet smile there, laughing at a joke, shaking your head at an argumentative participant, and so on). Indeed your mere presence impacts on the group dynamics and the questions that you ask influences the nature and tone of group member responses. It is probably more accurate to describe your role as a *participant observer*. That said,

there is a dynamism to be found in focus groups that make them suited to exploratory, in-depth qualitative studies (e.g. case studies).

You do have some flexibility on how you structure this part of your chapter on research methods. You are free to have one sub-section in your chapter to cover both your site/sample selection information and your data collection techniques (e.g. *Data Collection Information*), i.e. there is no rule that you need to separate where and how you collect your data into different sub-sections (as done in Appendix E). As long as you give the information in a detailed and clear manner, that is what is important. It is worth repeating that the length of the sample answers are not indicative of how much you need to write: that all depends on the type of dissertation you are writing and the number of words at your disposal. That said, the research issues that need to be addressed and the principle of how you can record your answers remain the same.

## Framework for data analysis

After you have disclosed how you propose to collect your research data, you should then go on to explain how you intend analysing what you have collected.

### *A common mistake by students*

A common mistake by students is to collect the data with no prior plan of how to go about making sense of their raw data. The inevitable consequence is that they become quickly bogged down and confused about what to do next, and this sense of befuddlement becomes evident in their final submission.

When you get your empirical data you need to *describe* what you have collected and then *analyse* the data (although you can describe and analyse simultaneously), producing what is called your 'empirical research findings'. Your overall research findings, in effect, are the combination of your literature review work and your empirical findings. Collectively, this is sometimes referred to as *synthesizing* your research work, i.e. the bringing together of your main research output from both your Literature Review and your empirical research. However, you first need to elucidate how you envisage going about the task of describing and analysing your empirical data. This can be done by outlining a *framework for data analysis*.

Before you can produce such a framework, though, you need to know the difference between *data description* and *data analysis*. Suppose that you issued a questionnaire and that it was completed by 100 respondents. You start to describe the results for question 1, which asked 'Do you like the [UK] Prime

Minister (Y/N)? You count how many people responded 'Y' and how many people responded 'N'. A description of what you found could be as follows '82% of respondents stated that they do not like the Prime Minister.' (At a simpler level, describing your raw data can entail prerequisite tasks such as transcribing taped interviews or writing down notes about an organization you recently visited.) Interpreting what this means is not so simple, and is unlikely to occur after looking at the results of just one question. Instead, analysis tends to be a cumulative process, dependent on the results from a number of question responses combined with cross-referencing of related Literature Review findings. For instance, if other parts of the same questionnaire highlighted that most people objected to the 2003 invasion of Iraq, then you might start to analyse the Prime Minister's unpopularity in terms of the war in Iraq, i.e. by combining questionnaire results you can begin to place meaningful interpretation on aspects of your collected data. Data description is a necessary step before data analysis, with the former simpler and relatively easy to do, involving a straightforward statement of what you found, while the latter takes you into the realm of interpretation, usually requiring cross-referencing of data descriptions, together with references to your Literature Review findings.

If you are attempting to analyse quantitative data, you could exploit the power of statistical data analysis software. For instance, you could use simple cross-tabulation together with elementary graphical models to convey basic statistical information (allowing you to describe your empirical data) as well as utilize more advanced features such as statistical correlation and regression, hypothesis testing and time-series analysis (giving you evidence to support detailed analysis). Table 5.3 provides a list of some of the statistical tools and techniques that you can use to describe and then analyse your quantitative data. Descriptive statistics are used to help you present your quantitative data in a manageable form.

In the context of a student dissertation, a framework for data analysis is usually straightforward. Once again, let us return to the e-Learning case study for illustration purposes (*Framework for Data Analysis*, in Appendix E) to see how easy it is to develop, and explain, a framework for data analysis (in this

**Table 5.3 Examples of statistical techniques for quantitative research**

Descriptive statistics	Advanced statistics
<b>Summary Statistics</b> (mean, median, mode, range, central tendency, standard deviation, variance);	Student's t-test; Chi-square test; Analysis of variance (ANOVA);
<b>Tabulation</b> (simple tabulation and cross-tabulation);	Regression analysis; Correlation;
<b>Graphics</b> (bar chart, pie chart, line chart, multi-series line chart).	Fisher's least significant difference test; Time-series analysis.

case related to qualitative research). The case study raw data comes mainly from two sources: interviews from academic staff who are preparing e-Learning material for a postgraduate programme, and *elite* staff interviews, i.e. those staff who are in a position of power to influence the direction of e-Learning at Inverclyde University. How can we go about analysing these two sets of data? One way to analyse qualitative interview data is to first of all break down the interview data into easily identified *themed* subsets, and then compare and contrast staff responses to each themed group of questions. For example, if a number of questions in the interview related to 'drivers for e-Learning', then the data for that particular theme can be described and analysed as a separate unit. Similarly, if another group of questions centres on 'barriers to e-Learning', then you can compare and contrast staff responses relative to the theme 'barriers to e-Learning', and so on. However, at some point you need to cross-reference how staff have responded to different questions in order to build up a fuller picture of what your data is telling you.

How you prepare to collect your data has an impact on how easy it will be to analyse it once collected – so, if you wish to analyse data via themes within your subject area then incorporate these themes in your initial questionnaires/interviews, etc. using appropriate headings (e.g. Computer Security Breaches Suffered, Impact of Security Breaches, Countermeasures Adopted, Views on Government Advice, Recommendations to Other Companies, etc.). Appendix F contains a sample questionnaire which illustrates how to group your research questions into themes: there are six themes in this example and each theme is clearly headed. For instance, the first theme – e-Learning drivers – consists of questions linked to that theme:

#### A. THEME: University Drivers for e-Learning

##### Question 1A

The university's Strategic Planning Document makes reference to e-Learning targets and objectives.

*Do you know what these are?*

##### Question 2A

The Inverclyde Business School's (IBS) plan for 2002/3 to 2005/6 also makes reference to e-Learning targets and objectives.

*Do you know what these are?*

##### Question 3A

*Why do you think university management wish academic staff to become involved in e-Learning?*

##### Question 4A

*What advantages do you think e-Learning will have for students?*

##### Question 5A

*What advantages do you think e-Learning will have for academic staff?*

The general structure of the sample questionnaire, with the themes evident from the section headings, is designed to make the task of data analysis easier.

**A. THEME: University Drivers for e-Learning**

(Questions)

**B. THEME: Barriers**

(Questions)

**C. THEME: Preparation**

(Questions)

**D. THEME: IT Infrastructure**

(Questions)

**E. THEME: Academic Staff Motivation**

(Questions)

**F. THEME: Reflections and Future Directions**

(Questions)

It makes sense when you are preparing your data collection techniques to reflect on your questionnaire/interview design in terms of their impact on your later data analysis. Grouping related questions together under an appropriate heading, as above, will make life easier for you when you eventually get around to undertaking your data analysis.

Returning to the e-Learning example, a useful start would be to explain to whoever is reading (and marking) your dissertation that the analysis of the interview data, obtained from the academic staff and the elite staff, will revolve around the idea of themes. As such, these themes have to be made apparent to the reader:

To help focus the interviews in terms of reflecting the main objectives of this research and ease the analysis of the qualitative data, the interviews will be structured according to themes. These themes reflect the overall aim and objectives in this research and also echo main areas arising from the review of literature: *University Drivers for e-Learning, Barriers, Preparation, IT Infrastructure, Academic Staff Motivation* and, to conclude,

*Reflections and Future Directions*. It is important not to view these themes as separate topics: they are inter-related. All of the topics could have been placed under the heading 'Preparing for e-Learning'. For example, questions on academic staff motivation relate specifically to what motivates/demotivates staff to become involved in e-Learning; similarly, IT Infrastructure concerns the IT support suitable for an e-Learning environment. The themes are there to help the interviewer and interviewees focus, and as an aid to the analysis of the transcripts.

If you want, you could also indicate the spread, or type, of questions to your stakeholders:

Further, as an indication to the quest for depth as well as focus to this research, academic staff will be asked 4 questions on Drivers, 5 questions on Barriers, 2 questions on IT Infrastructure, 5 questions on Motivation, 3 questions on Reflections and Future Directions, and over 30 questions (including sub-questions) on Preparation. Table E1 reveals the breakdown of questions (including sub-questions) under each theme, for academic staff and elite staff. An additional theme – e-Learning Strategy – is included for elite staff, to reflect their role in the strategic shaping and delivery of e-Learning.

Using a diagram, or table, is an effective way to communicate summary information, adding a professional touch (e.g. Table E1, from Appendix E):

Table E1 Case study: breakdown of themes and questions

Theme	Academic staff questions	Elite staff questions
X. e-Learning Strategy	–	10
A. Drivers	5	4
B. Barriers	5	6
C. Preparation	33	12
D. IT Infrastructure	2	6
E. Academic Staff Motivation	6	3
F. Reflections and Future Directions	3	4

Although the e-Learning example explains that interview questions will be analysed in terms of themes – drivers, barriers, etc. – there is still the big picture to consider. By that, one means your general approach to data analysis. For the e-Learning example this involves collecting interview data, describing it (i.e. interview transcriptions + simple written statements of who said what), followed by interpretation of the descriptions (= analysis). Wolcott (1994) refers to this approach as a process of *description, analysis and interpretation*, while Miles and Hubermann (1984) and Creswell (1997) emphasize that such an approach is non-linear, involving repetition and reflection.

Once again, where possible, produce a grammatic summary of your approach to data analysis (in this case, taken from the sample chapter on research methods, Appendix E), with a little preamble to introduce it:

Figure E3 illustrates graphically the approach that will be adopted to analyse data from the Case Study, based around the iterative process of *description*, *analysis* and *interpretation* (Wolcott 1994) of the collected data, particularly with regard to extracting and understanding emerging themes. However, analysis of qualitative data is not a linear activity and requires an iterative approach to capturing and understanding themes and patterns (Miles and Huberman 1984; Creswell 1997).

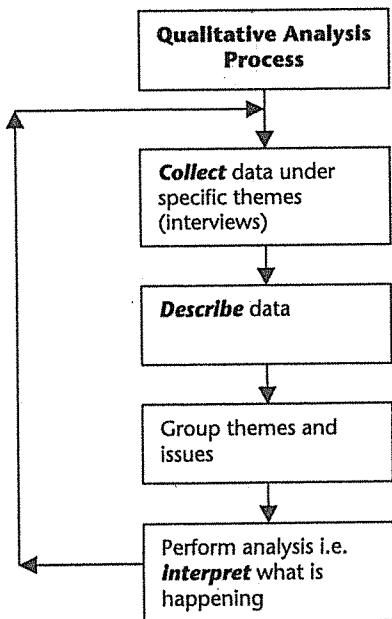


Figure E3 Qualitative data analysis process for Inverclyde University case study

You might also wish to raise any issues about how you collected your data (from transcribing, to data protection issues, use of notes, dependence on memory, etc.), as shown in the e-Learning example:

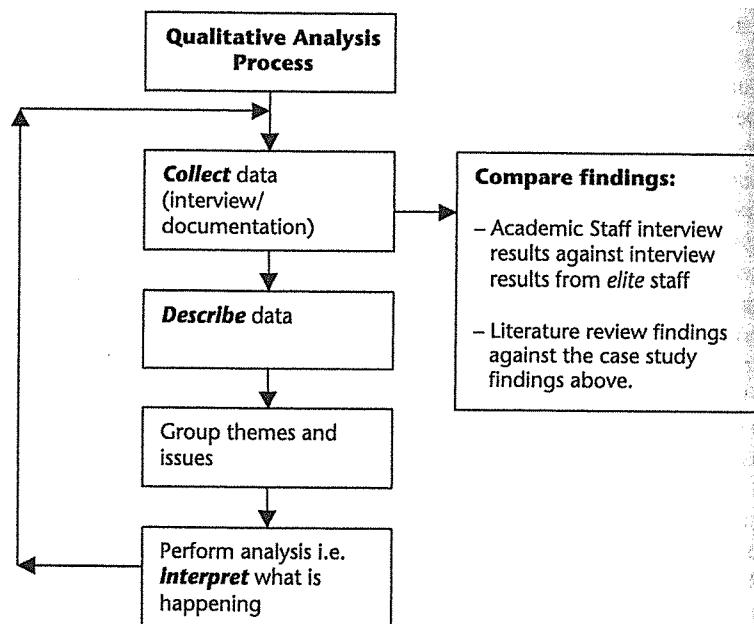
The question of how to record the interviews is one that has been given much consideration in this case study. Taking notes as respondents talk is one simple alternative. However, the disadvantage of having to write as respondents are talking, and so failing to give respondents your full attention and, in turn, perhaps omitting crucial comments and nuances,

together with the problem of having to interpret summary comments some time after the event, in the end made this mode of recording unsuitable. Instead, all interviews will be recorded on tape and transcribed. Such an activity will prove time-consuming, but the resulting data will aid in the researchers aim of gathering enriching, qualitative data. Over-riding advantages include the freedom to concentrate on the interview process and, crucially, the capture of everything said by the respondents. As each interview will be structured under the themes mentioned earlier (Drivers, Barriers, etc.), the transcriptions for each interview will not form one mass of oral text, but rather be categorized under pre-determined topics and sub-topics, in turn aiding the analysis phase. One last point on transcribing: all the interviews will be transcribed. As Strauss and Corbin (1990: 31) recommend: 'better more than less'. The researcher has decided to err on the side of caution and have all interviews transcribed.

Data analysis rarely consists of only description and analysis of themed groups of sub-questions in isolation (i.e. looking at Theme A, then Theme B, then Theme C, and so on). For the richer dimension it is often necessary to cross-reference respondent data, linking different sub-groups of data (or, in this case, 'themes'), adding cumulative meaning through an iterative process, and, particularly in the context of a student dissertation, comparing and contrasting your raw data description and analysis with your Literature Review findings. Therefore, if you have some raw data under a theme entitled e-Learning Barriers, then you could interpret your raw data findings not only in relation to what your respondents tell you within that specific theme, but also what they told you in other related themes that might give you a better understanding of their views, and against what the literature said about the barriers to e-Learning. In other words, you are comparing and contrasting your raw data at a number of levels. In your chapter on research methods you can let your supervisor know how you will analyse your collected data:

An important part of this research is to analyze the Case Study data, comparing and contrasting different stakeholder perspectives (as above), and to reflect on the Case Study results with respect to the findings in the Literature Review. Figure E3 is updated (Figure E4) to show this overarching reflective process.

Even if you think your diagram is self-explanatory, take your reader through your diagram. This helps remove any misunderstanding and shows your tutor that you have a clear understanding of your data analysis framework. A summary of Figure E4 could be as follows (notice that the summary finishes with a quotation, taking the opportunity to add weight to the approach to data analysis):



**Figure E4** Qualitative data analysis process for Inverclyde University case study [updated]

In terms of analysis, there will be a two-pronged approach: first, the academic staff case study findings will be described and analysed; second, the elite staff case study findings will be described and analysed, not only comparing elite staff findings against each other, but also comparing elite staff findings against academic staff findings. However, it is in the second phase that, as well as comparing elite staff findings against academic staff findings, relevant literature review findings will also be compared and contrasted against the case study findings (this is to avoid repetition of comment with reference to the findings in the literature review). The essence of this qualitative analysis paradigm reflects accepted practice in dealing with qualitative data, and is perhaps more succinctly described by Bogdan and Biklen (1982: 145) as 'working with data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others'.

Too often students populate their dissertations, from beginning to end, with unexplained diagrams. Worse, students can be seen embedding diagrams in their dissertation yet fail to refer to their diagrams in the body of their text, in which case the diagrams are not even acknowledged by the students

themselves and so serve no purpose, and therefore gain no marks, and might even lose some!

There are many approaches to data analysis. This sub-section has merely described one approach, based on the concept of *themes*, using the e-Learning case study example to illustrate key points. The important factors that you should take on board are:

1. You ought to inform the reader how you intend analysing your data.
2. How you implement your data collection techniques can impact on your data analysis (so think carefully about how you design your interviews, questionnaires, experiments, etc.).
3. Your data analysis framework will involve data description followed by data interpretation.
4. Cross-referencing of data results, coupled with references to related Literature review findings, will help produce a more meaningful analysis of your empirical data.
5. Remember to illustrate your data analysis approach through the use of diagrams/figures/tables. And do not forget to explain your diagrams/figures/tables!

## Limitations and potential problems

It is unusual for researchers, at any level, not to recognize limitations in their own work. In a paper published in *Women in Management Review* by Ogden *et al.* (2006: 43), for example, the authors acknowledged the limitation of using a case study as their research strategy but justified it with an appeal to capturing a rich picture of individual human experiences:

*Due to the combination of the depth and sensitivity of the research topic, a case study approach is adopted (Yin 1994). Although the lack of probability sampling inherent in the case approach means the results cannot be generalised, the results provide a rich and detailed picture of the experiences and perceptions of individuals working within the industry. Analysis of this data provides a valuable insight into contemporary inhibitors and enablers of females' career development in financial services.*

Similarly, the student dissertation that is problem-free or not limited in some way does not exist; so do not try and fool your examiner and pretend otherwise. On the other hand, your examiner is not interested in every single problem that you have encountered while doing your dissertation, from perceived bad supervision to your initial inability to find relevant literature. If you include a section on 'Limitations and potential problems' (or whatever you

want to call it) within your chapter on Research Methods, then it is limitation and problems related to your empirical research work that your examiner expects to read about, not problems in general. By facing possible criticisms of how you conducted your empirical research, you are displaying a certain level of research maturity. Of course, do not go overboard and undermine your good work!

As stated above, in such a section – *Limitations and Potential Problems* – you ought to focus on issues connected to your empirical research and not your dissertation as a whole. Such issues tend to concentrate on your chosen research strategy, data collection techniques, including site and sample size and selection where appropriate, and analysis of collected data.

#### **Questions that you can reflect on**

- What are the known criticisms of my chosen research strategy? (If you read the literature on your chosen research strategy, then you are bound to unearth criticisms – every research strategy has its critics as well as its supporters, some more vociferous than others!)
- Is my approach to collecting my data limited in any way? (E.g. why am I using questionnaires when interviews might give me more meaningful results? Perhaps you are unable to get access to your research subjects or they are so geographically dispersed that it is impractical to visit them.)
- Is my sample population big enough? (E.g. a criticism may be that your experiment/questionnaires/interviews etc. are limited in number, but the lack of time available to you, as a student, may form part of your justification.)
- Is my research open to the accusation that it is invalid? (I.e. have I argued successfully that the way I approached my research is appropriate to achieving my research objectives/questions?)
- Am I vulnerable to the claim that my empirical work is unreliable? (I.e. have I provided enough detail to show that I did the research and that my findings are trustworthy, e.g. provided site and sample selection information, questionnaire samples, made efforts to reduce bias, etc.?)
- Can I generalize as a result of my empirical work? (Does it matter if I can't?)
- What efforts have I made to ensure that my empirical research is, as far as possible, fair and free from bias? (E.g. if you know the research subjects – for instance, they may be fellow students whom you wish to interview – what mechanisms have you set in place so that your views of them and, equally, their views of you, do not influence your findings?)

It is important to recognize potential problems and to show how you have addressed them. Avoid producing just a *list* of issues. Identify perceived limitations of your work/potential issues and *explain* what you have done to

negate those risks. It is the top students who do well in this section because they are confident in putting up a stout defence of their work, even with identified shortcomings.

To help clarify the question of limitations/potential problems linked to your research methods, a defence of potential issues in the empirical research for the sample e-Learning dissertation will now be developed. To begin with, below is recognition that a case study – the chosen research strategy for the practical research – is limited because generalizations cannot be made from case studies. However, a defence of the case study is also given, with the author appealing to *relatability* as his goal rather than *generalizability*.

There are limitations to this research, as well as issues related to implementing a case study in an environment where one is employed. The results of this study cannot be generalized to the wider research community. Indeed, the results of this research cannot even be generalized to represent the university under study: although key elite staff will be interviewed, and strategic documentation will be referred to, the study of a different programme team in the institution, preparing for e-Learning, may lead to different results. The question of the validity of case study research, in the sense that generalizations cannot normally be made, has already been discussed and addressed. This researcher is using a tried and tested research strategy, appealing to the concept of *relatability* rather than *generalizability*, although it was also argued that generalization, although not immediate, can take place over a period of time – incremental generalizability – as more empirical research case studies are implemented. This researcher is sacrificing immediate generalizability for depth of study.

Next, the issue of the reliability of the research work is discussed:

Nonetheless, there is also the question of the *reliability* of using such a strategy, particularly when interviews are used as the main means of data collection. In the first place, there is the matter of studying one instance of one phenomenon, the results of which are not open to immediate generalization. Next, there is the question of depending on a data collection technique – interviews – that relies on personal opinion, and so open to bias and inaccuracy. Even more problematic, how can the researcher maintain *objectivity* when he interviews colleagues in an environment wherein he works!

In terms of the reliability of case study research, Yin (2003: 38) states that the way to deal with reliability in a case study is to 'make as many steps as operational as possible and to conduct the research as if someone were looking over your shoulder'. This research work met this test of reliability by providing details of the appropriateness of the case study strategy to

this research, as well as the data collection techniques to be used, the site selected, the type of staff to be interviewed, their roles, the specific themes that will be addressed, the actual interview questions, and the method of data analysis. In addition, full transcripts are provided. Reliability is sought through a highly structured, transparent and detailed approach to this study, using a research strategy and data collection techniques that have validity in the research community.

And then dealing with the question of bias.

The issue of depending on interviews as the main source of data, when interviewees can exhibit bias or poor memory recall, was dealt with by ensuring that the researcher was not depending on his results from only one or two respondents, but on a number of sources. To begin with, a team of academics preparing for a new suite of programmes will be interviewed. A number of views are collected on the same issues, from staff working on the same programmes, ensuring that the researcher is not dependent on one or two respondents for key data. Second, staff from outside this programme will be interviewed, further removing the dependence on opinion that may be factually wrong or skewed and to place academic staff views in a wider context, lessening the opportunity for bias or misinformation. Third, the interview questions are extensive and detailed, where some of the same issues are tackled in different themes (e.g. barriers to e-Learning), which presents an opportunity for staff to consider some topics in different contexts and acts as a check on the consistency of staff views. Fourth, documentation will be used as a means of understanding the university's e-Learning objectives and implementation issues, and also used to compare against interview answers. It must also be accepted that people are not robots and that to err is human, both in terms of expressing occasional bias and making honest errors of recollection; but that for the most part respondents will answer interview questions in a professional, competent manner. Nonetheless, by adopting the aforementioned procedures, it is expected that any bias or misinformation will be minimized.

If your research subjects are people known to you, for example, work colleagues or friends, then you need to be prepared to meet the claim that your work is vulnerable to bias. The findings from the sample e-Learning research case study are based, for the most part, on interviews of work colleagues (fellow academics). This is openly recognized in the discussion below, but, in addition, the researcher outlines how he intends to achieve objectivity and, therefore, trust in his findings:

Interviewing one's colleagues raises the issue of objectivity. Implementing a case study within one's place of employment has the comforting

advantage of access to subjects. However, such a scenario brings with it problems that, if not managed properly, may hinder the research and endanger relationships between the researcher and the participants in the research project. There may be the concern expressed that 'how can a colleague, albeit one engaging in research, not be influenced by his prior knowledge of his fellow colleagues' views and bring such knowledge to bear when interpreting transcripts of interviews?' This indeed was a concern expressed by a colleague, and relates to the objectivity of the researcher. To minimize such an influence, the researcher adopted the following strategy: until he had secured all staff interviews and completed the transcripts, the researcher would refrain from attending any e-Learning seminars within Division X (to avoid directly or indirectly presenting his views of e-Learning or acquiring the views of his research subjects); after the transcription of interviews, staff names would be replaced by codes (Lecturer A, Lecturer B, Senior Member of Staff A, and so on); and a deliberate and significant time-gap created between the transcriptions and transcription analysis to further minimize the possibility of bias when interpreting staff views. Furthermore, as far as is practical, staff transcriptions will be edited to remove identifying comments. This may help allay any concerns that staff may have concerning their transcriptions, with the added benefit that they may speak more freely.

Still on the theme of reliability, the researcher now attempts to reduce fears that, while carrying out his interviews, his colleagues may have difficulty in perceiving him as a researcher rather than just a colleague:

Another issue, connected to objectivity, is that it may prove more difficult for colleagues to view the researcher other than a colleague than it may be for the researcher to view current colleagues as research subjects. This is a danger that the researcher is aware of and will attempt to minimize by clarifying the researcher's role and by informing participants of the purpose of the research, the uses of the collected data and the manner in which participants could assist in the research. The fact that the researcher is recognized within Division X as a researcher with publications in the field may go some way to gaining the respect and trust of colleagues.

As you can see, what you have to do is confront openly any perceived limitation of your research methods (selected research strategy, site and sample selection, data collection issues, etc.) and associated problems, such as achieving objectivity in your findings. The aforementioned issues do not exhaust all the possible problems that you might encounter in your empirical work. For example, if you are new to implementing empirical research, like most students who embark on a major dissertation, then you might claim justifiably that your lack of experience in this area, and shortage of practical skills (e.g. in

carrying out interviews, questionnaire design, data analysis, etc.) present a possible limitation in implementing your empirical research. If this is your first attempt at a dissertation, then it will be a learning experience, one where you will make mistakes (and hopefully learn from them). Nevertheless, you should not submit yourself as incompetent! Explain how your attendance at classes on research methods, sage advice from your supervisor, your own learned reading and, where appropriate, pilot testing have all contributed towards mitigating this apparent limitation.

Another potential barrier that might hinder the smooth implementation of your empirical work is the possibility that you may encounter difficulty in getting access to your research subjects when you want them – the answer may lie in the timing of your practical research and maintaining regular contact with those whom you want to ‘research’. Too many students fail to appreciate how time flies. Naively, they leave their empirical research to the last minute and neglect to consider the possibility that their research subjects might be too busy to see them. As one student wrote in her dissertation:

While carrying out the required research the author had to take into account the amount of time she had in which to collect the necessary data for analysis before the date of [submission for] the dissertation . . . However, while arranging interviews the interviewees often found it difficult to make time to take part in the interview as they were occupied with their own duties or unavailable for interviewing. This posed a problem for the author as she already had time constraints of her own to manage in order to complete the dissertation in time.

Another student made the same point:

The time allocated for completion of this project was restricted to one academic year. One might think that this is a considerable length of time; however, given other priorities and commitments, the time left to conduct research was limited . . . as a consequence there was no time to research every aspect of the subject, therefore strategic decisions had to be made as to what was relevant . . . Moreover, there was no time to properly evaluate [*sic*] the work as it was being done, meaning that some relevant issues may have been overlooked.

Student complaints about lack of time are quite common, particularly as submission deadlines approach, and are usually evidence of a lack of planning and foresight on the part of the student. Year after year, tutors witness numerous dissertation students, at various levels, leaving their dissertation work to the stage where the best that the student can hope for is a basic pass. Plan your work from the start; as far as possible adhere to your anticipated milestones; do a bit of work on your dissertation every week; and keep in touch with your supervisor.

With respect to our intended empirical work, try and maintain contact with your research subjects, from the moment that they have agreed to participate in your research up until the moment you make use of them, or they will forget all about you! It is not uncommon for students to approach their supervisor with a hang-dog expression, complaining that the people who had agreed to be interviewed three months ago are no longer available or have changed their mind. Do not leave your empirical work to chance: be organized. And leave enough time to accommodate mishaps.

### Summary of key points

- Your research methods chapter is where you describe the methods that you will use to implement your research and, importantly, explain the reasons behind your choices. An appropriate structure would cover: research strategy, data collection techniques, approach to data analysis, and acknowledged limitations of your work.
- The *research strategy* refers to your over-arching approach to your empirical research, and there are a number of tried and tested strategies to choose from, examples of which include: case study, survey, ethnographic, experimental, historical, action research, and grounded theory. You must *identify* your research strategy, *describe it* and *explain* why it is appropriate to your research.
- The question of whether your research is *quantitative* or *qualitative* in nature, or a mixture of both, depends not on your choice of research strategy alone but on the combination of your research strategy + research objectives + data collection techniques.
- *Sampling* is the process of selecting a portion of a target population. Sampling techniques available to you include: random sampling, simple random sampling, stratified sampling, cluster sampling, systematic sampling, quota sampling, and convenience sampling.
- *Positivist research* is research that is objective and independent of the observer and which can be measured and predicted. *Interpretative/phenomenological research*, on the other hand, accepts that there are many interpretations of phenomena and that these interpretations are time – and context – dependent.
- Your research work should be *valid* and *reliable*. *Valid* research is about the appropriateness of the choices you make in terms of your research strategy and data collection/analysis techniques pertaining to your research objectives. *Reliable* research refers to the trustworthiness of your research findings, which you achieve through transparency on how you implemented your research.
- In your sub-section on data collection techniques, you need to state from where you will get your data (a football stadium, employees from a number

of companies, or wherever), your sample size (number of experiments/companies/people), your sampling technique (random, stratified, quota/convenience, etc.), and how you will extract your data (interviews, observation, questionnaires, tests, etc.). Justify your choices.

- A *framework for data analysis* is an outline of how you expect to analyse your collected data.
- Identify perceived limitations of your work and/or potential issues and explain what you have done to reduce those risks.

# 6

## Writing up your findings

*The general approach • The process of description, analysis and synthesis: an example*

### **The general approach**

The task of writing up your results is a necessary, if somewhat time-consuming and laborious, process. If you have worked out a way to analyse your results beforehand, then your job will be so much easier.

#### ***A common mistake by students***

A common mistake by students is to write their chapter on research methods devoid of any reference to data analysis, with the result that when they eventually have the data in front of them they are not sure what to do with it!

Create a simple structure for your *findings* chapter. Have an uncomplicated title, such as 'Case Study Results' if you carried out a case study, or 'Survey Findings' if you implemented a survey, or the more generic 'Empirical Research Findings', or even 'Findings and Discussion'. The latter title captures the idea that you will describe and discuss your results. Better still, you could call your chapter 'Survey Findings: Description, Analysis and Synthesis', thus identifying the type of empirical research that you did – in this case, a survey – as well as informing the reader that you will partake in three main types of intellectual activity: a simple description of your results; discussion about what you found; and, finally, an integrative analysis of your empirical data against your Literature Review findings (i.e. the synthesis bit). Although your