PART 3

Approaches and Techniques

6

Qualitative and Quantitative Issues in Research Design

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OVERVIEW

This chapter offers a discussion of both qualitative and quantitative issues in research design within the broad field of management studies. The chapter will take the reader through various stages and levels of consideration in their choice of appropriate research designs.

The chapter begins with a general discussion of the different types of phenomena of interest and research questions a management researcher may be focused upon. We make the observation that there may be more or less known about a researcher's particular phenomenon of interest and that this state of extant knowledge will be the initial guide to the appropriateness of either a qualitative or a quantitative design. This is directly opposed to the strategy that many have fallen prey to in the past: being wedded to a particular design or method irrespective of the nature of the research question.

The chapter then moves on to the second and third sections that individually discuss first quantitative then qualitative research designs. Each section begins with general descriptions of what is usually defined as qualitative or quantitative research. Basic families of methods of data collection and analysis are then discussed. Finally, each section will conclude with an insight into the pros and cons of qualitative and quantitative research designs in practice.

A START POINT: THE RESEARCH QUESTION

The start point of research in any field is the *research question* or problem. For example, in physics one might ask, 'How is the speed of sound affected by the density of the medium through which it is transmitted?' In psychology a research question might be, 'At what stage of development do children uniformly first appear to have identities of self?' In management studies, a research question might be, 'What are the key elements of organizational culture that CEOs choose to address during organizational change?' Whatever the field, research questions tend to be loose at the outset of a piece of research and become tighter as the work progresses. Initially, there may only be a phenomenon of interest, for example the speed of light, child development or organizational culture. The research question then emerges from the particular phenomenon of interest and is gradually tightened by a process of iteration with extant literature to identify research gaps and interesting questions. In this way one moves from being simply interested in organizational culture to asking a specific question about the elements of culture CEOs seem to see as important during organizational change.

It is the nature of a research question that will guide many of the significant choices throughout the duration of a research project. Of these choices, the one most directly influenced is the choice of research design – how the research will be done. That is, whether the research is theory-testing or theory-generative, predominantly qualitative or quantitative in terms of data collection and analysis, and focused on single or multiple units of analysis.

Although all research questions do to some extent begin loosely – we don't know exactly what we are asking until we begin to ask it – there are variations in terms of their initial looseness and the extent to which they do eventually become tight. It is this initial distinction that can give the first clues as to whether a qualitative or quantitative research design is likely to be appropriate in terms of operationalizing the question(s) being asked.

For instance, if a particular phenomenon of interest is one where there is little extant knowledge, then the research question itself is more likely to be loose. That is, there is unlikely to be enough knowledge to pin down specific constructs, variables and relationships to be *tested*. Instead, the job of a piece of research in an unknown area is to begin to uncover what the important constructs, variables and relationships might be and, in effect, *generate* theory. Here, the research is likely to be qualitative and data will be collected in an open-ended loose fashion.

The opposite is true for quantitative research. That is, in an area where there is a reasonable amount of existing knowledge, specific constructs and relationships between them can be isolated. Hypotheses can be generated and operationalized usually as items on a survey instrument of some kind. This form of research is tighter and more structured than its counterpart.

The choice of predominantly qualitative or quantitative research design is then a matter of which is *appropriate* in the light of the research question being asked. The reality of research in the social sciences is that it takes time to build up expertise in a particular research method. It then becomes difficult to abandon that method in favour of a more appropriate method which may be

unfamiliar. However, developing eclectic methodological ability that can be appropriately applied to a range of questions is an essential part of research training.

It is important to recognize that quantitative and qualitative research methods need not live in total isolation from each other. The two approaches should not be seen as discrete either/or options. They can be viewed as labels that describe two ends of a continuum. The two methodologies can complement each other.

Quantitative research design

WHAT IS QUANTITATIVE RESEARCH? Most quantitative management research will involve a questionnaire or survey of some kind, although this is not the only approach to quantitative research in a managerial setting, and neither are the results of questionnaires the only source of quantitative data. Company measures such as annual financial returns or absenteeism rates can also be used in conjunction with survey data. For instance, frequent use has been made of economy- and industry-wide financial performance data as well as individual company reports and historical 'archive' data (for example in board research as summarized by Dalton et al., 1997). In addition, in terms of structured data, it has been common – especially in the United States where databases are well developed – to use detailed demographics as dependent variables in top team exploration (see, for example, Hambrick and Mason, 1984). For the most part in what follows, it will be assumed that the quantitative technique to be employed is questionnaire-based.

Quantitative research is best characterized by the analytical approach to the data that are generated. Quantitative research *always* involves the numerical analysis of data. This may be as simple as the production of frequency histograms or as complex as the multivariate statistics of structural equation modelling. The requirement to be able to perform statistical procedures on data means it is necessary that they are collected in a highly structured manner.

There are three broad types of quantitative research: descriptive, comparative or prescriptive. *Descriptive research* involves no comparison between groups. It is essentially a simplified description of some phenomenon, facilitated by using numbers. At one extreme descriptive data analysis may be as straightforward as frequency histograms or reports of means and standard deviations. Alternatively, descriptive techniques also encompass the multivariate techniques of principal components analysis and confirmatory factor analysis. All of these approaches describe underlying structures in the world; they do not compare between groups or predict what the likely outcome of an action will be.

Comparative research involves the statistical comparison of data between two (or more) groups. As an example, the objective of such an approach may be to establish if one management technique or another leads to higher employee job satisfaction or increased productivity. There is a dependent variable (or variables) and an independent variable (or variables). The independent variable refers to the different groups (categories) you wish to

compare; the dependent variable is what is measured – in the previous examples, job satisfaction or productivity. Differences in the dependent variable are taken to be a result of hypothesized differences between the groups specified in the independent variable.

It is often argued that the ultimate objective of science of any kind should be prediction. *Prescriptive data analysis* has this objective embedded within it. Prescriptive statistical approaches range from simple regression to complex structural equation modelling-based approaches, such as path analysis. Some researchers are now even beginning to use neural networks and genetic algorithms for research of this kind (see Garson, 1998). Implicit within any prescriptive approach to quantitative research is an underlying predictive model of *cause and effect*. This model may be simple or complex, but for it to be verifiable through quantitative methods, it must be explicit and it must be capable of being described in the form of mathematical equations.

Issues in quantitative research

Questionnaires embody a basic principle of quantitative research that is both its principal strength and its fundamental weakness. *You only get the answers to the questions that you ask*. This may sound obvious but it is often forgotten. If a vital question is omitted from a survey instrument you will never know what (potential) effect it would have had. Unlike the interview situation, where the interviewee may spontaneously proffer additional, often vital information, this is not possible with a self-completion survey instrument. While this may initially seem like a drawback, it does encourage theoretical rigour and data discipline in the researcher.

Quantitative research requires that the researcher asks the right questions of the participants in the study. To ask the right questions the researcher must know what the right questions are. This is usually achieved in two, non-mutually exclusive ways: by undertaking qualitative interviews with members of the target sample, and/or extensive reviews of relevant published literature. However, not only must the researcher be aware of the potential relationship between the predictor and the criterion variables, he or she must also be aware of any potential interactions with other variables or the confounding effects of other variables.

As relationships between variables must be expressed formally, the means of measurement must also be expressed formally. This means that the study should be replicable by a third party or at another point in time by the same researcher. The results of such research can be compared directly to the previous research. *Replicability* is an essential feature of the scientific method. If results cannot be replicated then either the original research is of questionable quality or it is of limited generalizability. Replicability is much easier to achieve in quantitative research where the process is more structured and the raw data are less dependent on the analyst's interpretive skill.

When dealing with hypothetical constructs and their measurement, *reliability* is a key issue. Reliability refers to the ability of a measurement instrument to produce the same answer in the same circumstances, time after

time. Imagine the problems you would have if, when you were trying to measure the size of this book, the length of one centimetre on your ruler varied. Your problems become compounded when you are trying to measure something that is changing. Instead of a book, imagine trying to measure the growth of two sets of seedlings, one grown in fertilizer and one that isn't. Are any differences due to the fertilizer or down to the ruler? You cannot do quantitative research without a reliable measuring instrument. Your problems are compounded further when you are trying to measure a hypothetical construct, such as job satisfaction or stress. In this case you don't even know what units your ruler is calibrated in! There are techniques to enhance the reliability of your measures and assess their reliability (see Moser and Kalton, 1971 for a good review).

When measuring any hypothetical construct it is advisable not to use a single item. Single-item measures are less reliable than multi-item measures (scales) and are also less valid. If you consider a concept such as 'employee satisfaction' it is likely to have many sub-dimensions, for example satisfaction with the nature of the work, satisfaction with management, or satisfaction with the office environment. A summated scale comprised of several items each tapping a slightly different aspect of satisfaction will provide a more reliable and more valid measure. The test–retest reliability of such a scale can be established by correlating the responses from respondents on two occasions. High correlations are indicative of a reliable scale. Split-half reliability may be more practical in management studies when there may only be one opportunity to access the sample of informants. This method involves splitting the items in a scale purporting to measure a single construct into two halves and correlating the results from each half with each other. If the correlation is high, then both parts of the scale are measuring the same construct.

Split-half reliability is a variation on a theme of the internal consistency of a scale. The internal consistency of the scale (that is, the extent to which all the items are measuring the same construct) can be established by calculating coefficients such as Cronbach's alpha. A high Cronbach's alpha (above 0.7, where this coefficient runs from zero to unity) indicates that the scale is internally consistent. An analysis of the individual items can help to identify 'rogue' items. If the Cronbach's alpha value increases when an item is deleted from the scale this item is decreasing the internal consistency of the scale and should be dropped.

Establishing the *external validity* of the measurement of a hypothetical construct is far more difficult than assessing its reliability. External validity is concerned with establishing whether a measure actually measures what it is purported to measure. There are various types of external validity, the most common being content validity, construct validity, concurrent validity and predictive validity. However, it is important to note that validity of any kind can only be inferred – it can never be truly established.

For a scale to have content validity, its components must encompass all the pertinent aspects of the domain to be assessed. This requires a systematic assessment of the domain at the outset of the scale's development. A thorough review of the literature and extensive qualitative interviewing of a sample of participants drawn from the target population are essential precursors to the

development of a scale for use in quantitative research and are vital to ensure its content validity.

Construct validity refers to the degree of association shown by the scale to other theoretically associated variables. For example, a scale purporting to measure extroversion should also predict that high scorers are more likely to engage in social behaviours than low scorers.

Concurrent and predictive validity are very similar concepts. To establish if a scale has either of these forms of validity, it must be related to an observable phenomenon. As an example of concurrent validity, it may be proposed that a scale measuring the motivation of staff will be associated with higher productivity. There would be evidence of concurrent validity if motivation scores were highly correlated with output in existing staff. The same scale might be used in a selection application where it would be predicted that highly motivated candidates, if employed, should show higher productivity than less motivated job-seekers. If this is true, then there is evidence that the scale exhibits predictive validity.

Internal validity is really an issue in the fundamental design of the study. Internal validity addresses the question, can it reasonably be assumed that A causes B? Many purists would argue that in management studies, which typically uses an *ex post facto* or retrospective approach (in other words it involves the study of concomitant variance rather than causality), there is a fundamental threat to internal validity as it cannot be positively established whether A causes B. Campbell and Stanley (1966) and Kerlinger (1973) offer detailed discussions.

Sampling considerations

There are many sampling techniques, the simplest and most theoretically rigorous being simple *random* sampling. In this approach, a random sample of people is extracted from the pre-defined population of interest. The sample should proportionately reflect the characteristics of the population from which it was drawn. Ideally, this technique requires an exhaustive list of all the potential respondents, although this may not always be possible.

Instead of obtaining a random sample, a slightly easier approach is *systematic* sampling, where every *n*th person is sampled, where *n* is the proportion of the population to be included in the sample. While this is easy it can be subject to periodicity effects. Consider a satisfaction survey sampling every *n*th seat on an aeroplane, which has its seats arranged three-abreast each side of the central aisle. If every fifth seat is sampled there would be no periodicity effect. However, if every sixth seat is sampled only people sitting in window seats may be included in the final sample. Sitting next to a window may, for example, significantly increase their satisfaction with the flight.

Cluster sampling is useful when the groups of interest are geographically dispersed, although it needs to be assumed that they are all similar in composition. An example might be the staff of franchises. Clusters of franchises may be defined – perhaps those in the north, south, east and west of the

country – and staff working in randomly selected franchises in each of the clusters included in the sample.

In the above cases, if the sample required is relatively small there is still a chance that certain respondents from relatively small sub-groups in the population will be under-represented (for example, people from small departments within a large company). *Probability proportionate to size* techniques avoid this problem. If the size of the sub-groups in the population is known, then a random sample of the required proportion can be obtained from each of these sub-groups.

All of the above techniques should produce a representative, probabilistic sample of respondents, the responses from whom should be generalizable to the whole population. However, in certain circumstances a non-probabilistic sample may be required, for example when it is necessary to obtain a sample of sufficient size to undertake a meaningful analysis from a sub-group of specific interest. Quota sampling is an example of such a technique, where the aim may be to obtain a sample of at least 20 respondents from each division of a company, irrespective of the relative size of each of these divisions. Although this ensures that each sub-group is adequately represented, care should be taken when drawing conclusions from the results that relate to the wider population. For example, if such an approach is used to assess employees' attitudes towards performance-related pay, it would be wrong to conclude that *x%* of the total workforce are in favour. It may, however, be possible to draw such a conclusion from a probabilistic sample of the workforce. *Purposive sampling* is another non-probabilistic technique where a certain sample is taken to be representative of the whole population, for example one university may be taken to be typical of all universities of a particular type. Some conclusions may be drawn about the generalizability of results from such a case, but what represents a 'typical' sample is very much a product of expert judgement and may be difficult to defend. Indeed, in all these sampling approaches, unless your sample is chosen carefully, there will always be considerable threats to the validity of any results and the generalizability of any conclusions.

Analysis of quantitative data

The target in quantitative research is to collect data using *reliable* and *valid* measures from a *representative sample* of respondents. The way these data are analysed reflects the aims of the research, whether descriptive, comparative or prescriptive. This section describes the range of statistical approaches that are available. It *does not* tell you how to undertake each test. For details of test application, you will need to resort to a statistics textbook.

In quantitative analysis, the first thing to recognize is that not all quantitative data are the same. The type of quantitative data gathered dictates the analyses that can be performed and in turn the types of research question that can be answered. A hierarchy containing four general categories of data can be described. Note that a greater variety of more powerful statistical procedures can be applied to higher orders of data.

The lowest level of quantitative data that can be collected are *nominal* data. Nominal (also known as categorical) data signify the presence or absence of a pre-defined category in a case, for example being either male or female, or being a junior, middle or senior manager.

Ordinal data are a slightly higher level, consisting of the *ranking* of observations. For example, people coming through a door first, second and third. Ordinal data make no comment about parameters such as the amount of time between people coming through the door – there may only be five seconds between the first and second person entering the room but half a minute or half a day may elapse before the third person arrives.

With *interval* data the 'distance' between intervals is the same. But note that doubling the distance will not necessarily mean twice as much. The most commonly cited example of this type of data is temperature, measured in degrees Centigrade or Fahrenheit. In both cases, the interval between 1° and 2° is the same as the interval between 2° and 3°; however, as absolute zero is not at zero degrees on either scale, 20° is not twice as hot as 10°.

The highest level of data that you can collect are *ratio* data. There are many examples of this category of data, for example, length in centimetres, time in seconds or number of units produced per hour. This category of data has exactly the same properties as interval data; however, as the zero point is actually at zero, doubling the value *does* mean twice the amount.

Collecting the highest order of data that you can for all variables will widen the range of possible statistical procedures that can be employed and will allow for a greater range of questions to be asked of the data. It is important, however, to recognize that questionnaire surveys are the most common source of quantitative data in management research, and that data do not often fall comfortably into any of these categories. Data from survey items are certainly likely to be of a higher level than ordinal data, but could not be considered interval level (see Figure 6.1). For example, there is no guarantee that the size of the interval between 'strongly agree' and 'agree' is the same as that between 'agree' and 'no strong feelings'. Data of this kind are sometimes referred to as *scalar* data.

Tables 6.1–6.3 present a guide to the more common statistical procedures used and their objectives. In these tables, the column headed 'order of data' refers to the order of data of the measures taken as the predictor (or dependent) variable. The column headed 'numbers of groups' refers to the number of samples. Where there are more than one group, this usually implies comparison of some sort (for example between line workers and managers). Single group designs can be either descriptive or prescriptive.

My manager always listens to my suggestions about how I could do my job better
(Tick *one* box that best reflects your opinion)

Strongly agree	Agree	No strong feelings	Disagree	Strongly disagree
☐	☐	☐	☐	☐

FIGURE 6.1 *Example questionnaire item*

TABLE 6.1 *Descriptive statistical analytical approaches for the analysis of quantitative data*

Order of data	Number of groups	Quantitative method	Purpose
Nominal	One	Frequency count	Simple description
		Π^2 'Goodness of fit'	To assess if the frequency distribution of elements in a sample conforms to that in a known population
	Several	Cross-tabulation	Simple description, broken down by category
Ordinal	One	Spearman's correlation	To assess the degree of concomitant association between two variables
Scalar, interval or ratio	One	Pearson's correlation	To assess the degree of concomitant association between two variables
	One	Principal components analysis or factor analysis	To uncover any latent, underlying structures in a set of many variables
		Confirmatory factor analysis	To confirm if a hypothesized underlying structure in a set of many variables actually exists in a data set
		Cluster analysis	To identify homogeneous sub-sets of respondents on the basis of many variables
	One (or several)	Median or mean (with standard deviation)	Measure of central tendency, and dispersion of sample scores around the mean

TABLE 6.2 *Comparative statistical analytical approaches for the analysis of quantitative data*

Order of data	Number of groups	Quantitative method	Purpose
Nominal	Two	Π^2 test of association	To establish if observations in a certain category for a certain group are under- or over-represented
Ordinal	Two	Mann–Whitney 'U' test	To establish if there is a difference between two groups in the rank ordering of cases on a variable
	More than two	Kruskal–Wallis test	To establish if there is a difference between *n* groups in the rank ordering of cases on a variable
Scalar, interval or ratio	Two – with a single predictor variable (dependent variable – DV)	t-test	To establish if there is a difference between the means of two groups on a variable
	More than two – with a single predictor variable (DV)	One-way analysis of variance (ANOVA)	To establish if there is a difference between the means of *n* groups on a variable. (May also be used as a crossed, or factorial, design)
	Two (or more) but with several predictor variables (DVs) used in combination	Multivariate ANOVA	To establish if there is a difference between *n* groups using a weighted linear combination of variables

TABLE 6.3 *Prescriptive statistical analytical approaches for the analysis of quantitative data*[a]

Order of data	Number of groups	Quantitative method	Purpose
Scalar, interval or ratio	One – with a single predictor variable	Regression	To predict the score on a criterion variable from a given score on a predictor variable
	One – with several predictor variables	Multiple regression	To predict the score on a criterion variable from scores on a number of predictor variables
	One – with several predictor variables	Path analysis	To predict the score on a criterion variable from scores on a number of predictor variables, taking into account the effects of mediating variables that have a complex relationship with the criterion
	Two (or more)	Discriminant function analysis	To predict the group of a categorical criterion variable from scores on a number of predictor variables

[a] NB: There are no prescriptive techniques available for lower orders on data.

Misconceptions about quantitative research

Many people tend to think of quantitative research approaches as being an 'objective' rather than a 'subjective' approach to research. Wrong! Quantitative research is a different kind of subjective approach. The subjectivity lies in the scales included in the questionnaire (or perhaps more importantly those not included), the samples obtained and the data reported and analysed.

There is also an assumption that quantitative measures are meaningful in absolute as well as relative terms. Again, this is not necessarily true. Production rates and absenteeism may be meaningful in absolute and relative terms; however, it would be a brave researcher who would suggest that they can produce an absolute measure of hypothetical constructs such as workload, stress or job satisfaction. This is not to say that these measures are worthless but they may only be meaningful in comparative terms.

On a similar note, there is also an *illusion of precision* about quantitative data. Quantitative management research usually requires respondents to record their attitudes, opinions or beliefs, often using a five- or seven-point scale. Researchers frequently report means for these data to two decimal places (or even more). But what does a mean score of 3.27 represent when the division between scale point 3 and scale point 4 is the difference between 'no strong feelings' and 'disagree'?

There is a danger when interpreting quantitative data that the numbers produced begin to have a life of their own. It is absolutely vital to remember what the numbers actually mean and where they have come from. There can be a tendency for the quantitative researcher to lose perspective, focusing on the numbers and not their meaning. Numbers are simply a way to summarize and describe facets of the world. They are not, by themselves, reality.

Qualitative research design

WHAT IS QUALITATIVE RESEARCH? A qualitative research design is one where the data are collected in the form of words and observations, as opposed to numbers. Analysis is based on the interpretation of these data as opposed to statistical manipulation. Qualitative research is associated with research questions and phenomena of interest that require exploration of detailed in-depth data, aimed at description, comparison or prescription. For example, research might be concerned with a detailed description of innovation processes in an organization that is recognized as outstandingly cutting-edge. Alternatively, research might compare two innovative organizations in different industries to uncover either uniform or similar processes.

The case for prescriptive work is cloudier. In order to be prescriptive, the findings of a study usually have to be 'data-generalizable' in that the relationships uncovered in data taken from a sample of the target population have to be generalizable to the whole population. Issues such as sampling and sample size are key. In qualitative research, the aim is usually to provide detail, and large sample sizes are not normally feasible. Consequently, prescription is not normally seen as directly compatible with qualitative research as it is with quantitative. However, this does not rule it out. For instance, a researcher may just have one single question to ask, for example, 'in your organization how do you negotiate with financial institutions when writing annual reports?' This is a specific question but one that cannot be reduced to questionnaire items as we simply know very little about how senior executives do negotiate with financial institutions during annual report writing. The question could be asked of all the top teams of firms in a particular industry which appear in a stockmarket index, for example telecommunications. This might produce more than 100 short interviews. The results of the study could then be used in a prescriptive fashion.

In the main, qualitative research tends to be either descriptive or comparative. However, even though qualitative research is not usually prescriptive, this does not mean it is not generalizable. Generalizability can be associated with either data generalizability or theory generalizability. In the former, researchers should be able to demonstrate that their findings will be replicable in all similar cases. With theory generalizability, the ideas and theoretical contributions reached at the end of the work are generalizable to future work that can advance progress already made. Quantitative research can have both data and theory generalizability, whereas qualitative research usually has just the latter.

Whether it is descriptive or comparative, qualitative research is usually exploratory, in-depth and can contain some or all of the criteria listed below (Miles and Huberman, 1994).

- Intense and prolonged contact in the field.
- Designed to achieve a holistic or systemic picture.
- Perception is gained from the inside based on actors' understanding.
- Little standardized instrumentation is used.
- Most analysis is done with words.
- There are multiple interpretations available in the data.

With its aims to see the world from the point of view of the informant, become immersed in their detail and get close to the phenomena of interest, qualitative management research has a foundation in ethnography. Ethnography in organizations can be undertaken by simply 'hanging around' the organization, talking in corridors or over lunch, being a 'fly on the wall' at meetings, or in a more structured way as a direct participant in the activities being studied. Ethnographic data usually take the form of fieldnotes written up by the researcher, and, where available, transcripts of transactions. Chapter 7 contains a fuller discussion of ethnographic approaches.

In management studies the most common means of qualitative data collection are structured interviewing, semi-structured interviewing, unstructured interviewing, non-participant observation, company documents already written and documents written specifically for the research, for example diaries and journals. Note that in each of these cases, whether the data are a document, a transcript or a set of notes, they exist in their rawest form in words. However, this does not mean that they can't be categorized and subjected to statistical analysis.

Qualitative research is not necessarily small scale, looking at a single event, individual, group or organization; it can make comparisons across numerous units. In general, the more units that are included, the less depth is achievable, and this is the trade-off. Usually though, sample sizes are much smaller than in quantitative research. For instance, whereas a questionnaire might be mailed to 700 people a qualitative research design might be targeting only 30 informants. There are no rules about how many is enough. The number of interviews, observations diaries or surveys needed depends on the research question and the limitations of time, money and researchers available to collect and analyse the data.

Issues in qualitative research

STAYING OPEN TO SURPRISE Qualitative research has at its core a strength that counterbalances one of the weaknesses of structured, quantitative research. That is, qualitative research is capable of answering not only the questions asked, but if executed in a relatively unstructured fashion, also answering those not originally asked. For instance, at the outset of exploratory work, a researcher is unlikely to be entirely sure what they are asking and what may or may not be important to that enquiry. Further important questions, constructs and relationships are likely to emerge as a project progresses. Many qualitative researchers will experience the element of surprise as important factors and questions begin to emerge during fieldwork or analysis. The key is for the researcher to ensure that they stay open to being surprised and not devoted to their initial set of expectations.

There has been a lot of debate over the extent to which researchers can or should remain entirely free of preconceptions, allowing key constructs and relationships to 'emerge' from the data via systematic grounded analysis. The argument that people are capable of being a 'blank slate' is difficult to sustain. Perhaps the best a researcher can do is try to remain as theory/expectation-free

as possible. Trying to stay 'free' is in fact one of the arts (Wolcott, 1995) of qualitative research, and, as with any other skill, this requires practice. Concrete things can be done to help guard against being overly assumptive early on in research. These include: (1) engage in supervision, that is, get another individual to challenge your ideas as they are developing; (2) when a pattern is first emerging, look for negative instances and deliberately explore those in more detail; (3) listen to your own intuition, especially when it is telling you that you might be following the wrong scent.

LARGE AMOUNTS OF DATA Undertaking qualitative research carries a health warning that should be taken seriously before commencing a project of any kind: data overload. The amount of words a researcher can end up having to interpret can accumulate at a worrying rate. For instance, for every hour of taped interview, one can expect to spend approximately another 10 hours working on it. The first four of these can be spent transcribing the tape (depending on typing speed and/or number of people talking). There are some useful tips. First, get the best recording equipment you can, this makes transcription considerably easier. Be sure you need to transcribe all the data. There may be peripheral interviews that may never be needed; wait until you are sure you need them before transcribing. Finally, if it won't compromise your data for someone else to transcribe and there are funds available, delegate this task. Once transcription is complete, the remaining six hours of effort are expended in the analysis of the data. This will usually involve multiple iterations of: reading, coding, re-coding, re-reading and comparison of the transcript.

RELIABILITY AND VALIDITY Reliability and validity in quantitative research have been discussed in the first half of the chapter. However, these concepts change their meaning somewhat when associated with qualitative work. For instance, in quantitative research, it is commonly viewed that validity is scarified for reliability. That is, the control and simplification necessary to achieve reliability can lead the researcher to ignore the fundamental complexity of social phenomena (Walker, 1985). Blumer describes this more harshly: 'inside of the "scientific" protocol, one can operate unwittingly with false premises, erroneous problems, distorted data, spurious relationships and inaccurate concepts' (1969: 29). In short, the fact that quantitative designs are not embedded in the world of the informant can challenge their basic validity.

Even though reliability is not usually addressed directly, that does not mean that the qualitative researcher is not rigorous. After all, bad research is bad research. In qualitative research it is more often the case that there is less of an expectation that another individual (or perhaps even after a period of time has elapsed, the same individual) could find the same interpretation in the data. None the less, trustworthiness and quality of findings are important. In qualitative research there are fewer established norms to generate trust automatically than in quantitative research (for example, Cronbach's alpha greater than 0.7). However, although still not established as standard practice – and there are many who argue that standard practice has no place in qualitative research – measures can be taken to maximize trustworthiness.

The first of these is *confirmability*. This is effectively concerned with *transparency* in data interpretation: can someone else follow your audit trail of evidence? Confirmability does not necessarily mean that another individual would reach the same conclusions as you (in other words, adopt the same interpretation of the data). Rather, that they can clearly see where your interpretation comes from, and, supported by the fact that you were in the field, trust that it is the most compelling interpretation. Demonstrating *parallel meanings* across the data set can also generate confirmability. That is, showing that your interpretations are applicable across all the data (from all units and all forms of data) rather than choosing to support your conclusions from one aspect of the data. One give-away that findings are not applicable across the data would be multiple quotations from one interview when several were available. Another would be multiple citations from one time period in a longitudinal design at the expense of the other time periods when data were collected. One final aspect of confirmability concerns quality checking for *systematic confirmatory bias*. Here, evidence would be given that either multiple methods converged on the same interpretation in spite of any bias the researcher may have, or that multiple individuals (coders) converged on the same interpretation. However, for some qualitative researchers, attempting to produce multi-coder convergence is allowing the rules and language of quantitative research to bound qualitative research unnecessarily. To reduce rich, highly complex data to a set of a few basic relationships that a group of individuals can reliably agree upon undermines the point of qualitative research. Consequently, it is less common to find trustworthiness generated via multiple coding.

The second means of generating trustworthiness in qualitative research is to directly examine (either by asking questions of oneself or asking a colleague to do so) the *authenticity* of the interpretations gained from the data. Miles and Huberman (1994), suggest several questions to ask.

- 'Are the descriptions gained "thick" enough'? In other words, are they contextually rich, is there a lot of information and insight drawn specifically from the research site?
- 'Do the descriptions ring true', or do they seem in any sense improbable or highly unlikely?
- 'Have the rules for interpretation been made specific'? Were they stated ahead of time and if they were changed was that change justifiable?
- 'Have rival explanations been considered', or has only one explanation been considered from the start?
- 'If there is an element of prediction, were the predictions accurate', or did the events that unfolded fail to confirm the interpretations offered?
- 'Do the original informants agree with the interpretations?' Have they been asked and is there a record of their views about the conclusions drawn?

If the answers to some or all of the questions above indicate authenticity and there have been some efforts to establish confirmability, then generally, qualitative research can be argued to be both valid and, in the language of

quantitative research, reliable. A major sticking point in qualitative research is that a standard practice has yet to emerge and if a new researcher looks for a format or exemplar to follow, either in journals or a thesis, they will be disappointed. To a large extent this is a result of the variable nature of qualitative research, but more importantly it is the result of the relative novelty of published qualitative management studies in comparison with quantitative.

Qualitative analysis

In the analysis of qualitative data, there are two important factors to bear in mind. First, there is little standardization in terms of data collected across studies – each analysis will to some extent be a uniquely designed event. Second, there are multiple interpretations (and ways of arriving at them) available in the data – there are no absolutes that can be encompassed in table form as is the case in quantitative research (see Tables 6.1 to 6.3) where a type of data relates to a type of analysis. The way in which data are analysed in qualitative research depends on the research question, the way the data were collected and, ultimately, what is appropriate to achieve the objectives of the research.

None the less, there are two very basic families of data analysis in qualitative research that offer a general choice before project-specific aims and objectives are taken into account. The first of these is *content analysis*. In this form of analysis, the contents of the data collected are explored to uncover either emergent patterns, evidence of expected patterns or pattern matching between multiple cases. There are various software tools available that help *manage* this process but will not (unless the analysis is as simple as a word count) do the analysis for you. These include NVivo and Atlas, as well as other data-specific tools such as Decision Explorer which handles cognitive maps (see Chapter 10). When using packages such as NVivo, each instance of a particular pattern can be collected under one node in a model and kept entirely cross-referenced. Once the entire data set is coded having searched for expected, emergent and matched patterns, what is created is a model of nodes behind which sit all the data. The nodes can then be manipulated to begin to create a conceptual account of the data. This process, although benefiting hugely from computer support, is after all cognitive and can be done manually with cards, coloured pens and a lot of handwriting. The former is often preferable and moreover helps improve the trustworthiness of the analysis by showing the kind of transparent audit trail of interpretation described earlier.

The other basic family member of qualitative analysis is *grounded analysis* (the subject of Chapter 8). This form of qualitative analysis comes from a particular approach to management research – grounded theory (Glaser and Strauss, 1967). In this approach, the researcher's objective is usually highly exploratory, targeted at answering a particular research question by allowing findings and interpretations to emerge from the data, whilst searching for unexpected/emergent patterns. Grounded analysis offers a series of guided stages to be followed in order to reach the point where the model of explanation generated can be said to truly account for the data collected. In this way

grounded analysis has many advantages. However, it is rare for a piece of written up grounded research to display all of the stages undergone. Consequently, books and papers such as Johnson (1981, 1987) and good quality doctoral theses, are useful guides.

Whichever family of qualitative analysis is adopted, and whatever project-specific tasks are completed as part of it, the centrally important aspect of qualitative analysis is that it is an insightful and in many ways intuitive process. Wolcott (1995) describes it as art and calls for researchers to listen to and not be afraid of their instincts. He offers a quote from Michaelangelo talking about his sculpting of David which is suggested to capture the experience of qualitative analysis: 'I just chipped away at anything that wasn't David'. This may sound hollow until qualitative analysis has been experienced. The particular explanation or interpretations that finally make sense of all the elements of the data can simply dawn upon the researcher. Everything clicks but it may never become exactly clear how and why such an idea began to take shape. These intuitive leaps are simultaneously the core strength and weakest point of qualitative research.

Conclusion

This chapter has presented an overview of the quantitative and qualitative methods available for use in the social sciences. The particular focus has been on the practicalities and realities of conducting research in a management environment. In the first part of the chapter the several key messages about the nature of quantitative research in managerial settings were addressed. These were mostly concerned with identifying the type of quantitative research to be undertaken (descriptive, comparative or prescriptive) and assessing the reliability and validity of any psychometric measures obtained. The type of measures obtained (the level of data) has important implications for the analytical strategy to be employed. It was also made explicit that quantitative research often builds on the foundations laid by prior qualitative research. Quantitative research is highly dependent upon theoretical structures for its rigour; however, these theoretical structures have to come from somewhere, and that somewhere is often qualitative research.

In the second half of the chapter five important aspects of conducting qualitative research in a managerial environment were considered. First, qualitative research is designed to operate well in areas that are complex, messy, causally ambiguous and where there is little extant knowledge. In the field of management there are many areas which fall into this categorization and which therefore lend themselves to qualitative research designs. Second, qualitative research is usually descriptive or comparative but may also be prescriptive. Third, qualitative research is conducted from the point of view of the informant and a high degree of engagement with the informant's world is central to its success. Consequently most forms of qualitative data collection provide very rich data sets. Fourth, as a result of the richness of the data, there are many interpretations available at the point of analysis. The challenge of qualitative analysis is to provide the most compelling interpretation of the

data. To be compelling, qualitative researchers need to pay attention to transparency and trustworthiness whilst holding on to intuition and insight. Fifth, both qualitative data collection and analysis rely on the development of skill. That is, skill to attend to, extract and gather rich information and skill in uncovering the insights that lie within the data. In short, qualitative research is perhaps the 'art' form that Wolcott (1995) describes rather than the reliance on technical expertise that characterizes quantitative research.

The aim of this chapter has not been to play one major form of research design off against another. Rather it has been to demonstrate that the most important factor in choosing a research design is what is appropriate to answer a particular research question. Often the two types of research work complement each other to produce such an answer.

Study questions

1 Do you have a current preference for qualitative or quantitative research? No matter how mild that preference, sit back and ask yourself why you are drawn to one approach more than the other. Consider what is at the root of what you like and dislike about each.
2 Take a research question or research theme that you are currently working with. Challenge yourself to think of how that project might emerge if you took (a) a qualitative approach, and (b) a quantitative approach. What have you learned about the pros and cons of each for your work?
3 If you intend to adopt either a qualitative or quantitative approach, think about how you can make sure that you stay open to surprises in your data collection and analysis. Come up with five danger signals that would alert you to your becoming blinkered or biased.
4 Numbers or indeed snippets of text in themselves have no meaning. Think of strategies that you could employ ahead of data collection to make sure you capture and protect the meaning in your data.

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