When researchers propose a mixed methods study, most of them think of mixed methods as a parallel or sequential use of qualitative and quantitative approaches to data collection and analysis, while the ‘more adventurous’ (Bazeley, 2003a; p. 387) refer to a full integration of these two approaches. We believe that Bazeley (2003a) and Fielding and Schreier (2001) offer a useful framework for thinking about mixed methods research. They suggest two approaches to mixed methods - a basic approach to method combination and ‘hybrid’ or inherently integrated methods. This chapter follows that framework and first outlines a basic qualitative - quantitative design where both components remain as two separate components in the mixed methods research. The discussion then moves to explain a full integration of the methods which can occur on a number of levels and is facilitated by the use of computer software (Bazeley, 2006).
29. DOING MIXED METHODS RESEARCH

BACKGROUND, POPULARITY AND RATIONALE

Doing mixed methods research means employing both qualitative and quantitative methods of data collection and analysis in a single study. More specifically, a mixed methods approach involves

the collection or analysis of both quantitative and/or qualitative data in a single study in which the data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research (Creswell, 2003, p. 212).

A number of scholars have discussed mixed research methods within the context of the two major research paradigms, qualitative and quantitative, and argued that mixed methods can be considered as a third research paradigm (Johnson et al., 2007; Denscombe, 2008) a third methodological movement (Tashakkori & Teddlie, 2003), and even ‘A Research Paradigm Whose Time Has Come’ (Johnson & Onwuegbuzie, 2004, p. 14). While issues and questions around mixed methods research and its benefits continue to be debated, interest in, and acceptance of, mixed methods is growing strongly as evidenced by the increasing number of books, papers and academic journals devoted to mixed methods research.

Mixed methods research is very powerful for gaining new insights into, and more comprehensive understanding of, phenomena being researched. As an intellectual and practical synthesis of qualitative and quantitative research, mixed methods research can provide highly informative, exhaustive, balanced and useful research results (Johnson et al., 2007). It provides rich data, can initiate new lines of thinking, and by intentionally engaging multiple perspectives and presenting a greater diversity of views, mixed methods research is inclusive, pluralistic and complementary (Maxwell & Loomis, 2003). Further, as argued by many in the mixed methods research movement, it is more ethical to mix methods in order to represent a plurality of interests, voices and perspectives (Greene and Caracelli, 1997). As a research approach, mixed methods is most strongly underpinned by the philosophical approach known as pragmatism which advocates a practical and outcome-oriented method of inquiry and need-based approach to research methods and concept selection (Bazeley, 2003a; Denscombe, 2008; Maxcy, 2003). That noted, there is growing debate that epistemological and ontological issues associated with mixed methods need to be reconsidered in light of an appreciation of the complexity and variability of qualitative and quantitative methods and reductive philosophical thinking (see, for example, Bergman, 2008).
After reviewing empirical studies which applied a mixed methods research design, Greene, Caracelli & Graham (1989) identified five reasons for adopting mixed methods research: (a) Triangulation (i.e. intentional use of more than one method in studying the same phenomenon in order to seek convergence and confirmation of results - it can substantially increase the credibility of research); (b) Complementarity (i.e. elaboration, enhancement, illustration, or clarification of the results from one method with the results from another method – this can assist in understanding the overlapping and different facets of the phenomenon); (c) Development (i.e. using the result from one method to help inform another method); (d) Initiation (i.e. looking for paradoxes, contradictions and new perspectives that may lead to a reframing of research questions and results); and, (e) Expansion (i.e. seeking to extend the breadth and range of inquiry by using different methods for different inquiry components). Clearly, collecting different kinds of data through different methods provides a wider range of coverage that may result in a more detailed analysis of the phenomenon (Tashakkori & Teddlie, 2003). Bazeley tightly summarises the reasons for adopting a mixed methods approach, noting that they are typically employed for the purpose of verification (i.e. do the results of different methods support each other), expansion (i.e. the use of different methods can add to our understanding) and initiation (i.e. generating new ideas) (Bazeley, 2003b).

Many qualitatively-oriented researchers (Mason, 2006, Bryman, 2006) suggest that qualitative research is prominent in mixed methods designs, and that a ‘qualitatively driven’ approach to mixing methods offers enormous potential for enhancing our capacities for social explanation and generalisation (Mason, 2006). Others, such as Denzin and Lincoln (2005), and particularly Howe (2004), are rather critical of this approach and argue that qualitative and quantitative paradigms cannot and should not be mixed. Further, based on claims that mixed methods designs are direct descendants of classical experimentalism, a presumed methodological hierarchy is posited that sees quantitative methods as dominant. Without too little space to go into the detail of philosophical debates around quantitative and qualitative methods, it must suffice to note that the authors of this chapter do not accept the assumption that qualitative research should have secondary status in mixed methods inquiry. Indeed, this chapter is written from the perspective of a qualitative researcher seeking to explore some innovative and productive ways of combining qualitative and quantitative research methods.

When researchers propose a mixed methods study, most of them think of mixed methods as a parallel or sequential use of qualitative and quantitative approaches to data collection and analysis, while the ‘more adventurous’ (Bazeley, 2003a; p. 387) refer to a full integration of these two approaches. We believe that Bazeley (2003a) and Fielding and Schreier (2001) offer a useful framework for thinking about mixed methods research. They suggest two approaches to mixed methods - a basic approach to method combination and ‘hybrid’ or inherently integrated methods. This chapter follows that framework and first outlines a basic qualitative - quantitative design where both components remain as two separate components in the mixed methods research. The discussion then moves to explain a full
integration of the methods which can occur on a number of levels and is facilitated by the use of computer software (Bazeley, 2006).

HOW TO COMBINE QUALITATIVE AND QUANTITATIVE RESEARCH METHODS

Researchers commencing exploration of mixed methods research will be surprised by the number of different typologies of mixed methods designs (Creswell, 2003; Johnson & Christensen, 2004; Morse, 2003; Leech & Onwuegbuzie, 2006). Tashakkori and Teddlie (2003) referred to almost 40 types of mixed methods design that were identified in the literature. Most of the authors developing a typology of mixed methods tend to focus on the relative importance of quantitative and qualitative components and how they are sequenced. Following Morse (2003), the ways of combining the methods may be based on two decisions a researcher has to make: (a) the priority decision which determines the extent to which the qualitative or quantitative methods will be the principal component of the design; and, (b) the sequence decision which refers to the order in which the qualitative and quantitative methods are used.

Table 29.1 The Priority–Sequence Model (adapted from Morse, 2003)

<table>
<thead>
<tr>
<th>1. Qualitative Preliminary</th>
<th>2. Quantitative Preliminary</th>
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<tr>
<td><strong>Purpose:</strong> Smaller qualitative study (focus groups or in-depth interviews) helps guide the data collection in a large quantitative study; usually used for generating hypotheses and developing content for questionnaires; often used in large scale survey research for identifying the context specific variables and for the improvement of the measurements.</td>
<td><strong>Purpose:</strong> Smaller quantitative study helps guide the data collection in a principally qualitative study; an initial small scale quantitative study provides a demographic portrait of participants and can be instrumental in developing in-depth questions for interviews; a preliminary survey of the empirical settings can help to select the sites for the in-depth research.</td>
</tr>
<tr>
<td><strong>Example:</strong> Krivokapic-Skoko and O’Neill (2008)</td>
<td><strong>Example:</strong> Crump and Logan (2008)</td>
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<tr>
<th>3. Qualitative Follow-up</th>
<th>4. Quantitative Follow-up</th>
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<td><strong>Purpose:</strong> Smaller qualitative study helps interpret results from a large quantitative study; for instance, a quantitative study explores statistical relationships across a large sample and a follow up qualitative study looks at specific case studies to better understand these relationships; it can be especially useful when provocative or contradictory results are found in quantitative research.</td>
<td><strong>Purpose:</strong> Smaller quantitative study helps evaluate and interpret results form a major qualitative study; a survey can follow up the finding of the case study research to explore the generalisability of the findings from qualitative research.</td>
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<tr>
<td><strong>Example:</strong> Orhan and Scott (2001)</td>
<td><strong>Example:</strong> Esteves and Pastor (2004)</td>
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When undertaking a mixed method study, a researcher may decide to give equal emphasis to the qualitative and quantitative phases of the study, or decide to complete a study based largely on a single method with small components drawn from another (e.g. do an ethnographic study which can be supplemented by a statistical study). In terms of timing, the researcher has to decide whether the qualitative and quantitative phases of the study will occur at approximately the same point in time, or whether the qualitative phase will be followed by the quantitative phase (or vice versa).

The Priority–Sequence model (Table 29.1) summarizes four basic types of mixed method research design based on whether the principal method is qualitative or quantitative and whether the complementary method occurs as a preliminary of a follow-up stage. The most frequently used mixed method designs start with a qualitative study followed up by quantitative research (Sale et al., 2002). For example, a common sequential exploratory strategy commences with an initial phase of qualitative data collection and analysis, and this is followed by quantitative data collection, frequently a large-scale survey (Quadrant 1, Table 1). Occasionally, focus group analysis (with a semi-structured format) is chosen as it is known to be useful in the identification of issues and themes that can subsequently be drawn upon to assist in the development of relevant survey questions. Another common way of combing methods is a quantitative preliminary type (Quadrant 2) where an initial small-scale quantitative study helps guide the data collection in a principally qualitative study. This design gives qualitative researchers the opportunity to select cases based on knowledge of representative samples. A qualitative follow-up design (Quadrant 3) may benefit quantitative researchers by achieving better, and in-depth, understanding of statistical associations between the variables within a large-scale quantitative study. According to Morse (2003), this type of mixed methods design is most frequently used when the results of the main quantitative study are unexpected or unanticipated, and a qualitative study is then conducted to find the reasons for the occurrence of such results. Finally, in order to enhance the generalisability of findings from qualitative research, some researchers carry out a ‘smaller’ quantitative study as a follow up (Quadrant 4) to a major qualitative study as a means of evaluating results from the qualitative phase. This ‘quantitative follow up’ research design is often used to support development of a conceptual model and then to empirically assess it within a particular setting or, in some instances, researchers may want to go beyond individual cases and say something about a more ‘representative’ sample.

QUALITATIVELY DRIVEN MIXED METHOD RESEARCH AND ‘HYBRID’ METHODS

There is a tendency among mixed methods researchers to include a much larger volume of unstructured data (that is, for example, used for hermeneutic analysis) than is the norm among researchers working within the qualitative tradition (Bazeley, 2004). Further, there is a growing trend of quantifying qualitative...
research (Sale et al. 2002). This so called ‘quantitizing’ of data (Johnson and Christensen, 2004) involves converting qualitative data into numerical codes that can be quantified and analysed statistically. Others, such as Mason (2006), note increasing ‘mixing [of] methods in a qualitatively driven way’ which sees the combination of hermeneutic methods for understanding the meaning of texts with techniques aimed at the reduction and standardisation of information contained in large amounts of textual data where qualitative coding is converted into quantitative variables which can be further statistically analysed.

Some developments in qualitative research methods outlined below, such as Ragin’s (1987) qualitative comparative analysis, Heise’s (1991) and Griffin’s (1993) event structure analysis, or Kuckartz’s (1995) approach towards case–oriented quantification, support these ‘quantifying’ tendencies. Such developments allow for qualitative analysis to be systematic, formal, rigorous and procedurally replicable, and, importantly, it becomes possible to achieve a richness and intensity commonly associated with qualitative research while dealing with more than a handful of cases. These approaches are referred to as ‘hybrid methods’ (Fielding and Schreier, 2001), approaches that constitute an integration of qualitative and quantitative elements, approaches where these elements may be so closely ‘packed’ as to be practically indistinguishable.

(a) Case–oriented quantification

This method, developed by Udo Kuckartz and associates from Humboldt University, Berlin (Kuckartz, 1995), is appropriate for qualitative research dealing explicitly with a large number of individual cases and using semi-structured interviews. The case–oriented quantification combines qualitative and quantitative approaches during the evaluation of qualitative research data. The method includes a specific mathematical procedure for analysing qualitative data and can be used to classify the cases and construct a typology. The process starts with qualitative research where the goal is to unpack the subjective meaning of textual data and identify the relevant dimensions of whole cases. The dimensions developed from the data are then transformed into case-oriented variable and case-specific variable values. After that, formalised methods of comparison, such as cluster analysis and correspondence analysis, are applied to generate an empirically-based typology.
(b) Hermeneutic-classificatory content analysis

Edeltraund Roller and associates from the Free University, Berlin (Roller et al., 1995) endorse combing quantitative and qualitative content analyses. In using this method, a large quantity of information embedded in texts is reduced through a process of formal coding and the creation of a conceptual network of categories. Relevant information contained in the text segments is transformed into a quantitative data matrix which is then statistically analysed in order to find the frequency distribution of certain codes or code patterns.

(c) Qualitative Comparative Analysis (QCA)

Charles Ragin proposed a relatively new method for the formalisation and extension of the comparative case-study approach and conceptualised it as moving beyond qualitative and quantitative research (Ragin, 1987). Introduced as a ‘synthetic strategy’, this method complements qualitative and quantitative analyses by providing a more complex approach than most quantitative research methods, and it is more ‘systematic’ than most qualitative research methods. QCA also brings a form rigour and a variable concept of quantitative methods to qualitative ones. Additionally, it offers some of the causal complexity and in-depth analysis of qualitative to quantitative research methods.

QCA is essentially case-oriented comparative research that provides a ‘systematic’ and holistic analysis of a moderate number of cases. The method builds on the strengths of explanatory and interpretive research by primarily bringing complexity and intensity of in-depth investigation to a moderate number of cases, while maintaining rigour, replicable procedures and the use of formal logic. In terms of technical procedure, QCA systematises and transforms empirical evidence into algebraic forms, and then uses Boolean algebra to do comparisons. The dialogue between theory and evidence is well structured. Starting from theoretical arguments that determine the minimum set of case attributes, QCA proceeds indicatively by simplifying the complexity of the evidence in a systematic, stepwise manner. In doing QCA, cases are transformed into the unique combinations of selected causal conditions and associated outcomes, and then compared and interpreted holistically focusing on their attributes. Thus, in applying QCA, each case remains contextualised as a whole – a meaningful, interpretable and specific configuration of causal conditions/attributes and outcome variables (Krivokapic-Skoko, 2003). QCA appears to be of substantial utility in research sites with contextual and multiple causal relations. The method assumes that causal variables are effective only when operated in conjunction with each other, consequently the impact of each causal variable should be discussed only in a particular context.

QCA has become increasingly popular among social science researchers and has been applied to different academic disciplines, such as political science (Berg-Schlosser and De Meur, 1994), sociology (Wickham-Crowley, 1991), forestry
science (Helström, 1998), and such areas of management science as organisational management (Romme, 1995) and public management (Kithener et al., 2002).

A common concern with the employment of QCA and Boolean algebra is that they require dichotomous variables, and they do not allow for fine-grained measures of the attributes in question. In order to overcome that limitation, Ragin (2000) has recently incorporated ideas of fuzzy-set logic into qualitative comparative analysis (QCA). The fuzzy-sets allow for continuously coding variables according to the degree of their association with the qualitative categories of interest. With fuzzy-sets, set membership is not restricted to the binary values of 0 and 1, but may instead be defined using membership scores ranging from ordinal up to continuous values.

(d) Event-Structure Analysis (ESA)

Event Structure Analysis, or ‘a qualitative model of quantitative research’ as David Heise referred to it, is a formal and replicable technique of qualitative data research that is used for analysing and interpreting events (Heise, 1991). This method is deemed more rigorous than a case study approach and focuses on the temporal order and sequencing of actions. It provides narrative explanation, and goes inside singular events and systematically organises information about events so as to explain how something happens. The method is formal as it uses a set of logical rules to analyse cases. The formal rules produce results that can be replicated and generalised to other cases. The method is qualitative in the sense that it draws on some subjective criteria and the understanding of the researcher, and it seeks to preserve the context of circumstances in which events take place. ESA is considered appropriate for causal analysis with an emphasis on process and contingency, and it can be used to interpret cases or events holistically (Griffin and Ragin, 1994).

ESA focuses on a single culturally or historically specific event, more precisely, it focuses on a narrative of the event. Here a narrative is an analytic construct that is used to identify a group of events and incorporate them into a single story (Stevenson & Greenberg, 1998). Narratives have a specific beginning, a series of intervening actions, and an end point which can be based upon a number of paths and interconnections between the actors. ESA is a formal technique of narrative analysis, and it tracks the temporal ordering and sequencing of actions in order to explain a singular event (Griffin, 1993).

While ESA was originally developed to study cultural routines (Corsaro & Heise, 1990), it has since been applied to a study of racial conflicts in the USA (Griffin, 1993) and labour strikes and causal consequences of labour union campaigns (Brown, 2000). ESA is deemed to be very appropriate for analysing complex social processes and collaborative actions (Stevenson et al., 2003) as well as examining the processes of organisational formation (Hager and Galaskiewicz, 2002).
Q methodology (QM) has been used by a number of qualitative researchers for eliciting, evaluating and comparing human subjectivity. It has been conceptualised as a hybrid approach, an approach that Stenner and Stainton Rogers (2004) have labelled ‘qualiquantology’ to reflect its qualitative and quantitative features. Q methodology allows for a ‘scientific’ study of people’s own perspective, meanings and opinions (Previte et al., 2007), or as McKeown and Thomas (1988) note, it is ‘a method for the scientific study of human subjectivity’. Originally developing within a positivist tradition, Q methodology is increasingly seen as providing an innovative approach to qualitative analysis that strengthens conceptual categorization through the quantification of patterned subjectivities, using Q-sorts. Q-sorts are statements that are broadly representative of the discourse on the topic to be researched and they enable participants to respond to issues based on their individual experience (Previte et al., 2007). Individual responses captured by Q-sorts are then factor-analysed to identify patterns of subjective perspectives across individuals. The input of subjective data result in the production of ‘objective structures’ (Previte et al., 2007). Application of Q methodology can be found in psychology (Shemmings, 2006), landscape and tourism research (Fairweather & Swaffield, 2002), management science (Steelman & Maguire, 1999) and political science (Brown, 1980).

REFLECTIONS

While a mixed methods approach to research will not allow you to readily transcend philosophical divisions and debates associated with qualitative versus quantitative research methods, mixed methods research can be a highly useful and appropriate means of accessing and interpreting the social world and the problems and issues that confront us as researchers. They can allow for the generation of knowledge that it is rich and nuanced as researchers can variously apply methods that may offer opportunities to achieve greater insight and understanding than would be the case pursuing solely qualitative or quantitative methods.

As should be clear from the foregoing discussion, complexity abounds with mixed methods, not least because of the multiple approaches to parallel, sequential or integrative mixed methods research. Approaching mixed methods research you should be clear about your research aims and objectives so that you can carefully consider, and justify, the benefits, limitations and appropriateness of the methods you adopt. With well selected and applied mixed methods you will be able to respond to complex questions in ways that are sophisticated and insightful. It is for such reasons that we, like so many others, have frequently adopted mixed methods in our own research.
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