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**Abstract:** Mixed method research is very powerful for gaining new insights and a more comprehensive understanding of the phenomena. As an intellectual and practical synthesis of qualitative and quantitative research mixed method research often provides the most informative, complete, balanced and useful research results which perhaps can explain its popularity. According to some scholars (Mason, 2006) qualitative researchers are getting increasingly involved in the development of mixed method research. Some developments in qualitative research methods, such as for instance Qualitative Comparative Analysis case-€“oriented quantification also contribute to an increasing trend of mixing methods in a qualitatively driven way. These newly developed methods allow for the qualitative analysis to be systematic, formal, as well as rigours and procedurally replicable, and very importantly it becomes possible to achieve the intensity intrinsic to the qualitative research while dealing with more than a handful of cases. This paper is written from the perspective of a qualitative researcher. The aim of the paper is to outline and draw an attention to the ways qualitative researcher enriched a mixed method approach. After outlining background, popularity and rationale for using mixed methods the paper elaborates on some innovative and stimulating ways of combining qualitative and quantitative research methods.

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When a qualitatively oriented researcher moves into the arena of mixed research methods

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Keywords: mixed methods; qualitative research; quantification

1. Introduction

Doing mixed methods research basically means employing more than one type of research methods. According to Morse (2003, p. 190) mixed method design can be defined as “the incorporation of various qualitative and quantitative strategies within a single project”. Similarly, Creswell et al (2003) define a mixed method research design at its simplest level as mixing both qualitative and quantitative methods of data collection and analysis in a single study. They further suggest that a more elaborate definition would include that a mixed method study involves “the collection or analysis of both quantitative and/or qualitative date 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” (Ibidem, p. 212).

A number of scholars discussed mixed research methods within the context of the two research paradigms - qualitative vs quantitative research - arguing that mixed methods can be considered as a third research paradigm (Johnson et al., 2007; Denscombe, 2008), a third methodological movement (Tashakkori and Teddlie, 2003, p.697) or even ‘A Research Paradigm Whose Time Has Come’ (Johnson and Onwuegbuzie, 2004, p. 14). The fact is that mixed methods are becoming more and more accepted, and as Brannen (2005) noted there is a recent surge of interest in the last six years. In 2003 a Sage handbook of mixed methods in social and behavioural sciences was published (Tashakkori and Teddlie, 2003) and a new Journal of Mixed Methods Research published by Sage is now in the third year. In 2005 a special issue of the International Journal of Social Research Methodology was on mixed method and in the same year the Royal Statistical Society organised the session on mixed methods. Responding to the fact that the interest in this research strategy is now coming mainly from early careers researchers, International Journal of Multiple Research Approaches just published a special issue on mixed methods for novice researchers. Popularity of mixed methods is also evidenced in an increasing number of the journals (Quality & Quantity, Field Methods, International Journal of Methodology; Qualitative Research; Qualitative Inquiry; Educational Evaluation and Policy Analysis, Research in Nursing and Health) publishing conceptual discussions and empirical applications of mixed methods research. A mixed method approach has been applied to management research (Currall and Towler, 2003), information systems (Esteves and Pastor, 2004),
health (Morgan, 2006; Andrew and Halcomb, 2009), psychology (Todd et al., 2004), organisational science (Rocco et al., 2003b), and education research (Johnson and Christensen, 2004).

Mixed method research is very powerful for gaining new insights and a more comprehensive understanding of the phenomena. As an intellectual and practical synthesis of qualitative and quantitative research mixed method research often provides the most informative, complete, balanced and useful research results (Johnson et al., 2007), which perhaps can explain its popularity. It provides richer data, can initiate new lines of thinking, and perhaps most importantly, by intentionally engaging multiple perspectives and presenting a greater diversity of views, mixed method research becomes inclusive, pluralistic and complementary (Johnson and Onwuegbuzie, 2004; Maxwell and Loomis, 2003). This dialectical position that it is more ethical to mix methods in order to represent a plurality of interests, voices and perspectives (Green and Caracelli, 1997, p. 14) has been strongly endorsed by the mixed method research movement (Rocco, et al. 2003a). Another philosophical position underpinning this movement is pragmatism, which offers a practical and outcome-oriented method of inquiry and advocates a need-based approach to research method and concept selection (Johnson and Onwuegbuzie, 2004; Denscombe, 2008; Bazeley, 2003a; Maxcy, 2003). For instance, in answering to the question of “How I came to engage in mixed methods research?” one of most influential scholars in this area, Julia Brannen emphasised that it was because of situated pragmatic reasons (Brannen, 2008, p. 54). Also, based on the evidence gathered from interviewing twenty social researchers who use mixed methods Bryman (2006, p.111) argue that ‘a spirit of pragmatism with regard to combining quantitative and qualitative research prevails’, as the researchers consider using mixed methods when the research questions requires that.

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 inherently integrated methods. This paper 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.

2. Why and how to combine qualitative with quantitative research methods

After reviewing a number of empirical studies which applied mixed method research design, Green, Caracelli and Graham (1989) identified five purposes for adopting mixed method research: (a) Triangulation- 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 - elaboration, enhancement, illustrations, or clarification of the results from one method with the results from the other method; it helps in understanding the overlapping and different facets of the phenomenon (Johnson and Christinesen, 2004; Mason, 2006). According to Green et al.,(1989) this seems to be a main reason for using mixed methods; (c) Development – using the result from one method to help informed then other method; (d) Initiation -looking for paradox, contradiction and new perspectives that may lead to a reframing research questions and results, and (e) Expansion which seeks to extend the breadth and range of inquiry by using different methods for different inquiry components. Collecting different kind of data by different methods provides a wider range of coverage that may result in a more detailed analysis of the phenomenon (Tashakkori and Teddlie, 2003). Pat Bazeley nicely summarises the rationale for the use of mixed methods by saying that they are typically employed for purpose of verification (do the results of different methods support each other), expansion (use of different methods can add to our understanding) or initiation, as to spark new ideas (Bazeley, 2003b).

A researcher starting with exploring mixed methods research will be surprised by a number of different typologies of combining the methods (Creswell, 2003; Johnson and Christensen, 2004; Morgan, 2006; Morse, 1991, 2003; Leech and Onwuegbuzie, 2006). Based on Handbook of Mixed Methods in Social and Behavioural Research by Tashakkori and Teddlie (2003, p.680) there are almost 40 type of mixed methods designs identified in the literature. Most of the authors developing a
typology of mixed methods tend to focus on relative importance of quantitative and qualitative components and how to sequence them. Drawing on Morse (2003) the ways of combining the methods may be presented 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) and the sequence decision which refers to the order in which the qualitative and quantitative methods are used (Figure 1). Please note that notation system for mixed research uses the arrows to indicate sequencing of the methods and plus signs to indicate concurrent design. Dominance of a method as indicated in capital letters.

<table>
<thead>
<tr>
<th>Time order</th>
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<th>Dominant status</th>
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<tbody>
<tr>
<td>Concurrent</td>
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<td>Sequential</td>
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**Figure 1:** A general typology of mixed research design based on the priority and sequence decisions


When undertaking a mixed method study, a researcher may decide to give an equal emphasis to both qualitative and quantitative phases of the study or to do a study based largely on a single method with small components drawn from the other one- such as to do an ethnographic study which can be supplemented by a statistical study. In terms of timing a research 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 quantitative phase (or vice versa).

The most frequently used mixed-method designs start with a qualitative study followed by quantitative research (Brannen, 2005; Sale et al. 2002). For instance, a very popular sequential exploratory strategy is characterised by an initial phase of qualitative data collection and analysis, which is followed by a phase of quantitative data collection, usually a large scale survey. Another common way of combing methods is a quantitative preliminary type 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 the representative samples. A qualitative follow-up design may benefit quantitative researchers by achieving better and in-depth understanding of statistical association between the variables within a large scale quantitative study. According to Morse (2003) this type of the mixed method design is most frequently used when the results of the main quantitative study are unexpected or unanticipated, so a qualitative study is then conducted to find the reasons for occurring of such results. Finally, in order to improve generalizability of the findings from qualitative research some researchers carry out a smaller quantitative study as a follow up (in order to evaluate results from a major qualitative study. This ‘quantitative follow up’ research design is often used to develop a conceptual model and then to empirically assess it within a particular setting, or in some cases researchers may want to go beyond individual cases and say something about the more representative sample.
3. Qualitatively driven mixed methods research

As qualitative oriented researchers (Mason, 2006, Bryman, 2006, Creswell et al., 2006, Fielding and Schreier, 2001) suggest qualitative research is prominent in mixed method designs and can be used for instrument development, explaining the results of the quantitative research, extending the logic of qualitative explanation and giving voice to different perspectives. Moreover, ‘a qualitative driven’ approach to mixing method offers enormous potential for enhancing our capacities for social explanation and generalisation (Mason, 2006, p. 10). The emphasis on qualitative research in mixed methods design is particularly evident in ‘sequential exploratory design’ (Creswell et al. 2003), where the priority is given to the qualitative aspect of the study.

However, others such as Denzin and Lincoln (2005) and particularly Howe (2004) are rather critical arguing that qualitative and quantitative paradigms cannot and should not be mixed. This incompatibility thesis is partly based on the claims that that mixed methods designs are direct descendants of classical experimentalism and that there is a presumed methodological hierarchy with quantitative methods on the top.

Without an intention of revisiting the debate on ‘the paradigm wars’ or elaborating on a dichotomy between quantitative and qualitative research, the authors of this paper do not accept the assumption that qualitative research is given secondary status in mixed method inquiry. Instead this paper is written from the perspective of a qualitative researcher who seeks to explore some innovative and stimulating ways of combining qualitative and quantitative research methods.

There is a tendency amongst researchers to include much large volume of unstructured data used for hermeneutic analysis than it has been traditionally used in qualitative analysis (Bazeley, 2004. In addition to that there is a increasing trend of quantifying qualitative research (Sale et al. 2002). So called ‘quantitizing’ data (Johnson and Christensen, 2004; Tashakkori and Teddlie, 2003) involves converting qualitative data into numerical codes that can be quantified and analysed statistically. Other authors, such as Mason (2006) refer to as ‘mixing methods in a qualitatively driven way’, which combine hermeneutic methods for the understanding of the meaning of texts with techniques for the reduction and standardisation of information contained in large amounts of textual data and 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.

(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. Within general social science a case study approach usually refers to intensive analysis of a single instance of phenomenon being investigated (Yin, 2003) when many features of a few cases are thoroughly examined. The case–oriented quantification allows for achieving that intensity while examining a large number of cases. 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. As embedded in hermeneutics (Neumen, 2003; Schwandt, 2001) the focus is on a detailed study of the text and connections among its parts and a detailed reading or examination of text, where a researcher discovers meaning embedded within the text. While getting inside text a researchers tries to first understand it as a whole and then to develop a deep understanding of how its parts related to the whole. 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, if 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 focussing 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 (Kithenerm 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) and the method became rather popular (Pajunen, 2008; Kvist, 2003). 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 and 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 and 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).

(e) Q methodology

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. 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 and Swaffield, 2002), management science (Steelman and Maguire, 1999) and political science (Brown, 1980).

5. Concluding comments

When researchers propose a mixed method 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 ‘more adventurous’ refer also to a full integration of these two approaches. Apart from outlining the reasons why qualitatively oriented researchers may consider using mixed methods this paper intended to draw an attention to these innovative developments in integrating in research methods which are gaining momentum. The popularity of these inherently integrated methods can be explained by the fact that they are designed to achieve both generalisation and in-depth analysis. They are mainly aligned with integrative mixed methods where intensity of detailed hermeneutic analysis is merged with the extensiveness of statistical inferences to large number of cases.

A qualitatively driven approach to mixed methods offers enormous potential for generating new ways of understanding the complexities of the phenomena we are exploring and also allow for preserving the intensity of analysis while dealing with a large numbers of cases and large amount of the empirical data. Mixed methods can enhance and extend the logic of qualitative explanation particularly by enriching a qualitative comparative logic by more standardised approach across many cases.
However, there is still an open issue of which quality criteria should be employed in mixed methods research. Is it appropriate to use traditional criteria associated largely with quantitative research—reliability, validity, generalizability, and replicability? Or, is it appropriate to use the separate criteria for evaluating quantitative and qualitative components of mixed methods research, or is it possible to devise new criteria specifically for evaluating mixed methods research? Bryman (2006) and Brannen (2005) suggest that the criteria may depend upon the dominance of the qualitative and quantitative data and the type of data analysis used in a study. This approach may not be appropriate where both qualitative and quantitative components are equally significant such as in the more integrated approaches outlined in this paper.

It is obvious that mixed method research requires more resources and time than studies that use only a single research approach. Researchers do need to have a broader set of skills and expertise in both quantitative and qualitative methods. One of the new challenges for mixed methods as Julia Brannen argued in 2009 is that mixed method research designs have an important part to play in cross-national comparative research, as they will be able to analyse global trends and cross-national differences while providing analysis which are context sensitive (Brannen, 2009: pp. 11-12). Most of the methods outlined in this paper combine hermeneutic methods with techniques for reduction and standardisation of information contained in large amount of textual data transforming data for statistical analysis. In terms of future research, some of the aspects of fully integrated mixed methods which need to be further explored is for instance how to qualitatively analyse quantitative data, such as how collected quantitative data are converted into narratives that can be analysed qualitatively.

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