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## **BEYOND THE QUALITATIVE-QUANTITATIVE DISTINCTION: SOME INNOVATIVE METHODS FOR BUSINESS AND MANAGEMENT RESEARCH**

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### **ABSTRACT**

Focusing upon a number of increasingly popular mixed methods research approaches, this paper provides a brief overview of fully integrated research methods that transcend the quantitative-qualitative divide. It aims to introduce the reader to a range of complex and sophisticated mixed method designs that have been successfully applied in business and management research. It provides insight into the potential benefits of mixed methods and, more specifically, is of particular value to qualitative researchers with an interest in exploring innovative and productive mixed methods. In addressing integrated mixed methods, and applications in business and management research, the discussion signposts how these methods allow for qualitative analysis that is systematic, formal, rigorous and procedurally replicable. Further, it identifies how integrated mixed methods can make it possible to achieve intensity and richness associated with qualitative research when dealing with more than a handful of cases.

**Keywords:** qualitative and quantitative research; innovative

## INTRODUCTION

Mixed methods research has the potential to provide new insights into, and enhanced understanding of, phenomena being investigated. As an intellectual and practical synthesis of qualitative and quantitative research, mixed methods research can be a powerful means of gaining highly informative, exhaustive, balanced and useful research results (Johnson, Onwuegbuzie, & Turner, 2007). It can provide rich data, lead to new lines of thinking, and by intentionally engaging multiple perspectives and presenting a greater diversity of views, mixed methods research can be inclusive, pluralistic and complementary (Maxwell & Loomis, 2003). Further, as argued by many in the mixed methods research movement, it offers a means by which one can act more ethically in research by mixing methods in order to represent a plurality of interests, voices and perspectives (Greene & 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 a need-based approach to research methods and concept selection (Bazeley, 2003; Denscombe, 2008; Maxcy, 2003). That noted, there is growing debate around the view 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 (Bergman, 2008).

While there are many advocates of mixed methods research, others such as Denzin and Lincoln (2005), and even more so Howe (2004), are rather critical of mixed methods approaches arguing that qualitative and quantitative paradigms cannot and should not be mixed. Differences in grounding philosophical knowledge assumptions are also held up as key reasons for incompatibility between qualitative and quantitative research methods. This incompatibility thesis is partly based on claims that mixed methods designs are direct descendants of classical experimentalism, and that there is a presumed methodological hierarchy with quantitative methods on the top. Even the practise of doing mixed research has been seen by some authors like Giddings (2006, p. 195) as a cover for continuing hegemony of positivism or postpositivism.

According to Hesse-Biber (2010, p. 457) the practice of mixed methods research ‘has leaned towards a more positivistic methodological orientation’. In analysing more than two hundred articles using mixed methods Bryman (2006) noted the dominance of the quantitative approaches within the mixed method research designs. Similarly Molina-Azorin (2011) reported that in a sample of one hundred and thirty articles published in management research and used the mixed methods designs, around 80% had the quantitative part as the dominant one. Therefore, some authors publishing in *Qualitative Inquiry* and *Qualitative Research*, such as Mason (2006) and Bryman (2006), as well as Creswell, Shope, Plano Clark & O’Green (2006) called for a more prominent role of qualitative research in mixed methods research. They have argued that qualitative research can extend the logic of quantitative explanation and give voice to different perspectives. Also, this ‘qualitatively driven’ mixed method research design holds strong potential for enhancing our capacity for social explanation and generalisation (Mason, 2006, p. 10).

While we do not wish to revisit ‘the paradigm wars’ or write at any length on a dichotomy between quantitative and qualitative research, we do wish to note that we do not accept the incompatibility thesis, nor do we accept the assumption that qualitative research is given secondary status in mixed methods inquiry. Further, following Fielding and Schreier (2001), we accepted that there are different levels of integrating qualitative and quantitative research methods, from the data gathering and data analysis to the entire research process. In our view Fielding and Schreier (2001) also offer a useful framework for thinking about mixed methods research, and that is to identify two main approaches to mixed methods: a basic approach of blending of qualitative and quantitative data analysis; and, a more advanced approach that creates inherently integrated the quantitative and qualitative parts.

This paper does not elaborate on the relative importance of quantitative and qualitative components or how they are sequenced in the context of mixed research methods (for such a discussion, see, for example: Morse, 2003; Onwuegbuzie, Slate, Leech & Collins, 2009), rather, it focuses on the full integration of qualitative and quantitative approaches. Such integration can occur on a number of levels and can allow for both

hermeneutical and statistical analyses. At this point, it must be noted that this paper is written from the perspective of a qualitative researcher seeking to explore some innovative and stimulating ways of combining qualitative and quantitative research methods. We have developed this article as a straightforward and condensed overview of fully integrated research methods that transcend the quantitative-qualitative divide. The aim was to introduce the reader to complex and sophisticated mixed methods research designs and their application in business and management research. We strongly believe there is a need to draw greater attention to the merits and variety of fully intergraded research methods and provide an account of some key methods in a brief paper.

The paper starts by outlining two approaches of integrating quantitative and qualitative methods of data analysis- Kuzkartz's (1995) the case-oriented quantification and hermeneutic-classificatory content analysis (Roller, Mathes & Eckert, 1995). Initially these two methods started from the integration of quantitative techniques into the analysis of qualitative data. However some authors like Bos and Tarnai (1999), Kern, Sachs & Rühl (2007) also refer to these as the methods which fully combine qualitative and quantitative approaches to data gathering and analysis but also to the logic of inquiry and integration of the data. This view is also strongly articulated by some authors from German and Dutch speaking areas and publishing in *FQS: Sozialforschung* (see Fielding & Schreier, 2001). The paper then moves towards presenting some fully integrated research methods where 'qualitative and quantitative aspects are intermingled at almost every point' (Ellingsen, Størksen & Stephens, 2010, p. 406). These are - Qualitative Comparative Analysis, Even-Structure Analysis and Q methodology. The papers describe the main features of these methods and their applications to management and business research.

## **QUALITATIVELY DRIVEN MIXED METHODS RESEARCH**

There is an increasing tendency among researchers to include a much larger volume of unstructured data than has traditionally been used in qualitative analysis (Bazeley, 2004, p. 146). There is also a growing trend around the quantification of the qualitative

research (Sale, Lohfeld & Brazil, 2002). The ‘quantitizing’ of data (Johnson & Christensen, 2004; Tashakkori & Teddlie, 2003) frequently involves converting qualitative data into numerical codes that can be quantified and analysed statistically. Others, such as Mason (2006), have noted a ‘mixing of methods in a qualitatively driven way’ where hermeneutic methods that aim at the understanding of the meaning of texts are combined with techniques for the reduction and standardisation of information contained in large amounts of textual data through qualitative coding being converted into quantitative variables which can be further analysed statistically.

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 further support these tendencies of ‘quantifying’. Such developments allow for qualitative analysis that is systematic, formal, rigorous and procedurally replicable, and, very importantly, it becomes possible to achieve a richness and intensity commonly associated with qualitative research while dealing with more than a handful of cases.

### **Insert Figure 1 here**

Figure 1 shows some approaches to full integration of data analysis and research methods used in business and management research. The figure points a reader to scholars/authorities in a particular method and its applications to business and management research.

#### **Case-oriented quantification**

This method, developed by Udo Kuckartz and associates from Humboldt University in Berlin (Kuckartz, 1995), and very recently further clarified in terms of its theoretical background (Colins, Broekeart, Vandavelde & van Hove, 2008), is appropriate for qualitative research dealing explicitly with a large number of individual cases and using semi-structured interviews. The basic idea is to integrate quantitative techniques within the analysis of the qualitative data. Generally, within the social sciences the case study

approach refers to as an intensive analysis of a single instance of phenomenon being investigated (Yin, 2003) where many features of a few cases are thoroughly examined. Case-oriented quantification allows for achieving that intensity of analysis while examining a much larger 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. In the next stage of the data analysis, formalised methods of comparison, such as cluster analysis and correspondence analysis, are applied to generate an empirically-based typology of the phenomenon explored.

### **Hermeneutic-classificatory content analysis**

Recent developments in mixed forms of content analysis that allow for a quantification and statistical analysis of the qualitative data have been summarised by Bos and Tarnai (1999). However, given that most of the authors working in this area continue to publish only in German, most of these empirical content analyses combining quantitative and qualitative approaches are unknown to the wider (non-German speaking) academic audience. Edeltraud Roller and associates from the Free University in Berlin (Roller, Mathes & Eckert, 1995) are an exception and their hermeneutic-classificatory content analysis is more widely known and has been applied, for example, to a comparative case study of corporate responsibility in the context of the Swiss telecommunications industry (Kern, Sachs & Rühli, 2007). Roller et al (1995, p. 167) consider hermeneutic-classificatory content analysis as a synthetic method combining principles of quantitative and qualitative research. Being embedded within a hermeneutic tradition (Schwandt, 2001), the focus is on a detailed study of the text and connections among its parts, and a detailed reading or examination of the text where the researcher discovers meaning embedded within the text. While ‘getting inside’ the text the researcher attempts to first understand it as a whole and only then seeks to develop a

deep understanding of how its parts relate to the whole. In using this method, a large amount of information that is embedded within texts is reduced through a process of formal coding and the creation of a conceptual network of categories. Relevant information contained in text segments is transformed into a quantitative data matrix which is then statistically analysed to determine the frequency distribution of certain codes or code patterns. As such, this approach allows for the analysis of large amount of text without overlooking their inherent complexity.

### **Qualitative Comparative Analysis (QCA): Boolean algebra and fuzzy sets**

Qualitative Comparative Analysis (QCA), and more recently fuzzy sets developed by Ragin (1987; 2000), build on case study knowledge to provide a basis for rigorous causal analysis which identifies the necessary and sufficient conditions for an outcome to occur. Charles Ragin proposed a relatively new method for the formalisation and extension of the comparative case-study approach and conceptualised it as ‘a middle road’ between qualitative and quantitative research (Ragin, 1987). 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 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 methods to quantitative research methods.

QCA is essentially case-oriented comparative research that provides a ‘systematic’ and holistic analysis of a moderate number of cases. Indeed, most applications have included between fifteen and seventy cases (Marx, 2010; Krivokapic-Skoko, 2001). The method builds on the strengths of explanatory and interpretive research by primarily bringing the 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 generate comparisons. Here the dialogue between theory and evidence is well structured. Starting from theoretical

arguments that determine the minimum set of case attributes, QCA proceeds by simplifying the complexity of the evidence in a systematic, stepwise manner. In using QCA, cases are transformed into unique combinations of selected causal conditions and associated outcomes, and these are then compared and interpreted holistically focusing on their attributes. Therefore, 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 also accepts that more than one configuration of causal variables may generate the same outcome. Accordingly, QCA locates different paths to the emergence of an outcome and therefore enables the analyst to classify the outcomes based on different configurations of the causal variables. Apart from deriving the patterns of causal factors leading towards the emergence of outcomes, QCA also identifies the causal conditions related to the ‘negative outcomes’, that is, to the absence of the phenomena of interest.

Being based on Boolean algebra, the algebra of logic and sets, the QCA method systematises and transforms empirical evidence into algebraic forms suitable for a data reduction process and represents the attributes of the cases into presence-absence dichotomies. These dichotomies are then included in a truth table - a raw data matrix which comprises causal conditions and outcomes across the cases - as a tool for data reduction while maintaining the integrity of each case. Each row in a truth table represents either a logically possible or an empirically observed configuration of attributes - causal and outcome conditions. The truth table is completed when all the cases and codes on the causal and outcome conditions are displayed using binary mathematical forms. This matrix of binary data is then subjected to a procedure of Boolean minimisation. The procedure involves comparing groups of cases based on the presence/absence of the outcome conditions and the presence/absence of the selected causal conditions. These logical combinations, as represented in Boolean primitive equations, are compared with each other and are then logically simplified (Ragin, 1987).

The comparison concludes with a logically minimal Boolean expression as an output of the analysis. This provides logically minimal configurations or the most parsimonious description of the combinations of causal conditions that produce a given outcome.

QCA has become increasingly popular among social science researchers, and in the area of business and management research it has been applied to the issues including organisational management (Romme, 1995), labour management (Coverdill, Finlay & Martin, 1994) public management (Kithenorm, Beynon & Harrington, 2002), forestry management (Hellström, 1998), as well as to the entrepreneurship literature (Fairweather & Krivokapic-Skoko, 1998; Krivokapic-Skoko, 2001). QCA was also used in policy analyses such as labour policy analysis (Biggert, 1997) and social policy analysis (Amenta & Poulsen, 1996). Romme (1995) developed a model of self-organising processes among top management teams and then used QCA to capture the dynamic complexity of processes at this top level of management within an organisation. As QCA allows for consideration of both systematic and ideographic elements in a single analysis, Coverdill et al (1994) applied this method to the analysis of labour management in an effort to define and compare different labour management strategies in a particular industry. QCA was used to analyse multiple case study evidence of twenty two new land based industries in order to identify necessary and sufficient conditions associated with success and failure of new land based industries in New Zealand (Fairweather & Krivokapic-Skoko, 1998). Finally, QCA was applied to a study of ethnic entrepreneurship in New Zealand agriculture, more specifically the causes of the emergence of ethnic business networks in agricultural settings (Krivokapic-Skoko, 2001).

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 QCA and the new method quickly became quite popular (Pajunen, 2008; Kvist, 2003). The fuzzy-sets allow for continuous coding of variables according to the degree of their association with the qualitative categories of interest. With fuzzy-sets, the values of both independent and dependent variables are

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. As such, fuzzy-sets allow the researcher to introduce greater variety into the analysis.

Some of the fuzzy-set approaches to QCA are highly illuminating, such as comparison of international approaches to resource management (Stokke, 2007) and comparative analysis of the national competitive advantages of Turkish and Greek economies using Porter's well-known model of competitiveness (Özlem, 2004).

### **Event-Structure Analysis (ESA)**

Event Structure Analysis (ESA), 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). ESA is a formal technique of narrative analysis and tracks the temporal ordering and sequencing of actions in order to explain a singular event (Griffin, 1993). This method is considered more rigorous than a case study approach and focuses on the temporal order and sequencing of actions. It provides narrative explanation, 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 & Ragin, 1994). Therefore, ESA is considered highly appropriate for developing a framework for the analysis of the formation processes and organisational changes in general.

The method offers deterministic rather than probabilistic explanations and generally expresses causal relations as complex conjectures of factors and conditions (Griffin & Ragin, 1994). ESA focuses on a single culturally or historically specific event, more

precisely 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 interconnection between the actors. In effect, 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 (Brown, 2000; Griffin, 1993; Griffin & Ragin, 1994).

While ESA was originally developed to study cultural routines (Corsaro and Heise, 1990), it has, for example, since been applied to a study of racial conflicts in the USA (Griffin, 1993) and to labour strikes and causal consequences of labour union campaigns (Brown, 2000). Morse (1998) used ESA to explain the temporal dynamics of an entrepreneurial firm. 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 & Galaskiewicz, 2002a; 2002b). Hager and Galaskiewicz (2002a; 2002b) used ESA to analyse the closure of non-profit organisations based on narratives provided by former board members and administrators of such non-profit organisations. Their approach was to use the narratives to study closure as a process or sequences of events and identify how precipitating events eventually lead to closure of non-profit organisations. They analysed empirical evidence on initial primal events within the web of events described by respondents as they recounted how their organisations closed. Through ESA mapping, Krivokapic-Skoko (2007) identified key patterns and processes of co-operative development and their generative causal mechanisms. In this case, ESA helped pinpoint critical actions and steps in organisational processes.

## **Q methodology**

Q methodology 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. Interestingly, articles on Q-methodology have been published in both quantitative and qualitative oriented scholarly journals and described as being 'neither entirely quantitative nor qualitative in nature, but a successful combination of the two differing styles of research' (Ray and Montgomery, 2006,p. 3).

The method strengthens conceptual categorization through the quantification of patterned subjectivities using Q-sorts. These Q-sorts are statements that are broadly representative of the discourse on the topic being researched and they enable participants to respond to issues based on their individual experience (Previte, Pini & Mc-Kenzie, 2007). Individual responses captured by Q-sorts are then factor-analysed to identify patterns of subjective perspectives across individuals. 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). Q-methodology was used very successfully in identifying farm management styles (Fairweather & Keating, 1994), and was recently advocated as having considerable potential and benefit within rural research (Previte et al., 2007). The use of Q-methodology to investigate the customer relationship in the context of Dutch banking (de Graaf, 2001) is a rather interesting and innovative application as it focuses on discourse analysis. Another inspiring application has seen the use of photographs in Q methodology to study perceptions of the environment and tourists' experiences in New Zealand (Fairweather & Swaffield, 2002).

Q- methodology has been also combined with fuzzy cognitive mapping (Özesmi & Özesmi, 2004) in environmental and farm management studies (Fairweather, 2010). The use of fuzzy cognitive mapping allows for the development of a qualitative model of a system, something that is especially useful for modelling complex relationships between variables.

## CONCLUDING COMMENTS

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 researchers. Mixed methods can allow for the generation of knowledge that 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. The focus of this paper was on outlining key qualities of these methods and identifying their applications to business and management research. To date, students and researchers have gained their knowledge of these methods from multiple text books or journal articles. This paper has sought to provide a straightforward, and we trust useful, introduction into a range of these methods for researchers contemplating business and management research. As we have noted, the popularity of these integrated methods can be explained by the fact that they are designed to achieve both generalisation and in-depth analysis. They tend to blend the interpretive and the formal analytical approaches, and would allow a researcher to gain something 'additional' from the use of these methods over and above that which would result from using qualitative or quantitative approaches.

The research question, and the appropriateness of particular fully integrated mixed methods to the research question and objectives, is still a matter of primary importance when contemplating the use of mixed methods research. A researcher may consider using Qualitative Comparative Analysis (QCA) for providing causal explanations about the emergence of an outcome and this method appears to be of a substantial utility in research sites with contextual and multiple causal relations. QCA is also suitable for evaluating theoretical propositions, particularly those derived from the composite models. Generally speaking, QCA is considered appropriate for studies where a great deal of information is accumulated relating to a moderate number of cases. In terms of comparative method, QCA identifies similarities among the cases with the same outcome, and differences between cases conforming to different outcomes. If, however, the focus of research is a single, culturally or historically specific event, or more

specifically a narrative of the event, Event-Structure Analysis can provide very powerful casual explanations focusing on the temporal ordering and sequencing of actions. In contrast to QCA, Event-Structure Analysis is more historical than comparative in its approach to causal explanations, and it tends to equate a temporal order of actions with a causal explanation. Q method can be very helpful in exploring the subjective experience of participants, particularly if there is a range of perceptions and experiences across the target population.

Researchers interested in inherently mixed methods can use a range of software applications for data analysis such as the winMAX software program designed to facilitate case-oriented quantification, ETHNO for Event-Structure analysis, FS/QCA for Qualitative Comparative Analysis or PCQ software for Q-methodology.

Critical assessment of the methods outlined in this paper has not been provided as the aim has been to provide a brief overview of methods that are sophisticated highly and complex. Such an assessment was beyond the scope of the discussion presented. Indeed, we actually believe that such a discussion of the advantages and limitations of research methods is best undertaken in the context of a specific empirically based research design. Finally, we acknowledged that the list of hybrid methods outlined above is far from exhaustive, but as noted above, our focus was on those methods which have been utilized by business and management scholars.

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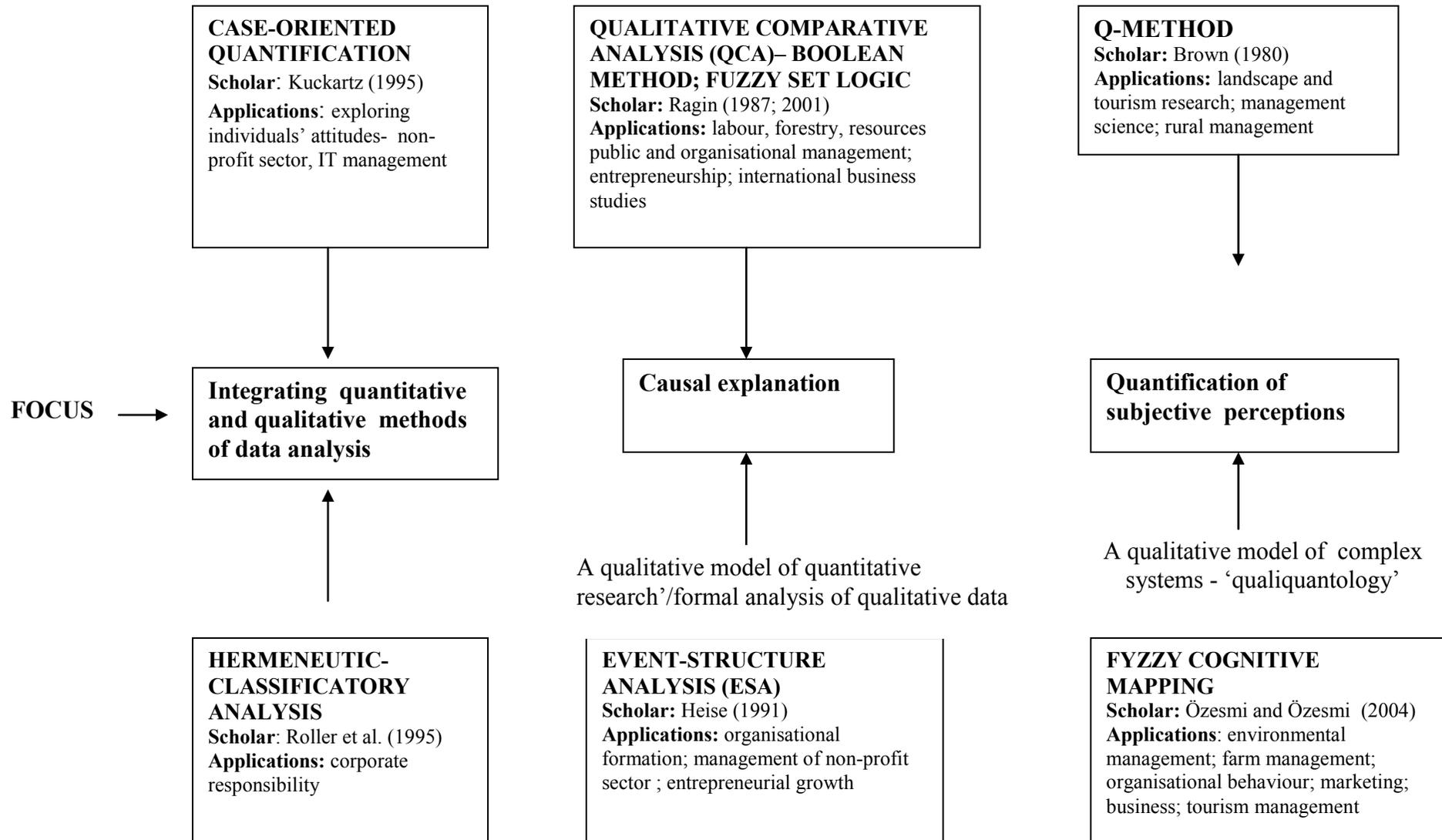
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**Figure 1: Some approaches to full integration of data analysis and research methods used in business and management research**

