The Application of Mixed Methods in Organisational Research: A Literature Review

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Abstract: Mixed methods research (the combined use of quantitative and qualitative methods in the same study) is becoming an increasingly popular approach in the discipline fields of sociology, psychology, education and health sciences. Calls for the integration of quantitative and qualitative research methods have been advanced in these fields. A key feature of mixed methods research is its methodological pluralism, which frequently results in research which provides broader perspectives than those offered by monomethod designs. The overall purpose and central premise of mixed methods is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems and complex phenomena than either approach alone. Despite calls for the combined use of quantitative and qualitative research in business and management studies, the use of mixed methods in business and management has seldom been studied. The purpose of this paper is to review the application of mixed methods research within organisational research. The study reported in this paper identifies the use of mixed methods in three organisational journals for the period 2003 to 2009: the *Strategic Management Journal*, *Journal of Organizational Behavior* and *Organizational Research Methods*. The landmark Tashakkori and Teddlie (2003) *Handbook of mixed methods in social and behavioral research,* played a pivotal role in providing both the visibility and credibility of mixed methods as a third methodological movement and since the publication of this seminal work the mixed methods movement has rapidly gained popularity. Business and management researchers need to be made aware of the growing use and acceptance of mixed methods research across business and organisational journals. This paper examines the main characteristics of mixed methods studies identified in the sample in terms of purposes and designs, and posits suggestions on the application of mixed methodologies.

Keywords: mixed methods research, strategic management, organizational behaviour, quantitative methods, qualitative methods

1. Introduction

Mixed methods research (the combined use of quantitative and qualitative methods in the same study) is becoming an increasingly popular approach in the discipline fields of sociology, psychology, education and health sciences. Calls for the integration of quantitative and qualitative research methods have been advanced in these fields (Greene, Caracelli and Graham, 1989; O'Cathain, 2009; Tashakkori and Teddlie 2003). The overall purpose and central premise of mixed methods is that the use of quantitative and qualitative approaches in combination may provide a better understanding of research problems and complex phenomena than either approach alone (Creswell and Plano Clark, 2007).

Despite calls for the combined use of quantitative and qualitative research in management and organisational studies (Currall and Towler, 2003), the use of mixed methods in business and management has seldom been studied. The present study focuses on two main areas that represent micro and macro management research domains: organizational behavior and organizational strategy. These areas are the two largest divisions within the Academy of Management. Regarding research methods, scholars in both fields employ qualitative and quantitative methods, but the use of quantitative approaches dominate both strategy (Phelan, Ferreira and Salvador, 2002) and organizational behavior (Greenberg, 2007). Calls for methodological diversity and the use and integration of quantitative and qualitative research methods have been carried out in organizational behavior (Greenberg, 2007) and in strategy (Boyd, Gove and Hitt, 2005). Moreover, mixed methods research may play an important role not only in encouraging the use of a diversity of methods in these fields but also in bridging the micro and macro domains.

The purpose of this paper is to review the application of mixed methods research within organisational and management research. The study reported in this paper identifies the use of mixed methods in the leading journals in these two organisational fields: the *Strategic Management Journal* (SMJ) and the *Journal of Organizational Behavior* (JOB). In addition, *Organizational Research Methods* (ORM) is

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also examined. Management and organisational researchers need to be made aware of the growing use and acceptance of mixed methods research within these fields. This paper examines the main characteristics of mixed methods studies (purposes and designs) and posits suggestions on the application of mixed methodologies.

The paper is organised as follows. First, several important aspects of mixed methods research are examined (definitions, applications, barriers and benefits). Subsequently, the methodology employed, including the sample selection and search strategies for identifying the mixed methods studies, is described. This is followed by a discussion of the main characteristics of the articles that have been identified as mixed methods studies. The paper concludes with suggestions on the application of mixed methods research in management and possible future research directions.

2. Mixed methods research

2.1 Definition

A monomethod study uses only one type of method, one quantitative or one qualitative. In general, in a quantitative study, the data is in numerical form and this information is analyzed using quantitative data analysis techniques. In a qualitative study, the information, which is mainly in textual form, is analyzed employing qualitative data analysis techniques. Drawing an initial distinction between monomethod research and multiple methods research may be helpful to determine what is understood as 'mixed methods'. A multiple methods study uses more than one method. Moreover, a differentiation can be made within multiple method designs between multimethod research (multiple qualitative *or* quantitative methods) and mixed methods research (integration of quantitative *and* qualitative methods) (Creswell and Plano Clark, 2007).

Several definitions exist for mixed methods research. Greene, Caracelli and Graham (1989) defined mixed methods research designs as those that include at least one quantitative method (designed to collect numbers) and one qualitative method (designed to collect words). Tashakkori and Teddlie (1998) refer to mixed methods studies as those that combine the qualitative and quantitative approaches into the research methodology of a single study. Johnson and Onwuegbuzie (2004) indicated that mixed methods research is the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study. In this paper, the following definition supplied by Plano Clark (2005) is applied in this study: mixed methods research is research that combines qualitative and quantitative data collection and data analysis within a single study.

2.2 Is the application of mixed methods research possible?

Several debates or "wars" (Datta, 1994) have raged in the social sciences regarding the superiority of one or the other of the two major social science paradigms: the positivist approach and the constructivist orientation. Along with superiority, another important aspect examined in those debates has been the idea of incommensurability and incompatibility, which means that qualitative and quantitative approaches could/should not be used in the context of the same study. This idea is based on the fact that there are quite different epistemological and ontological assumptions that underpin different paradigms and methods. The organising idea of a continuum, with hard positivism at one end and constructionism at the other, can be used to point out the main epistemological and ontological assumptions. A hard positivism ontology asserts that an objective reality is out there to be found and epistemologically this can be done with knowable degrees of certainty using objectively-correct scientific methods (Long, White, Friedman and Brazeal, 2000). The result is certain knowledge, and concepts such as reliability, validity and statistical significance are used carefully in good hard-positivist research with the purpose of describing some part of reality with certainty. A softer version of positivism also infers that objective reality exists, but epistemologically suggests that techniques to uncover the world produce probabilistic and ultimately uncertain understandings. Constructionism has a relativist ontology, that is, each person has his or her own reality. Epistemologically, the achievement of objectivity is rejected, and emphasis is placed on individual understanding of particular viewpoints.

The positivist paradigm underlies what are called quantitative methods, while the constructivist paradigm is more related to qualitative methods (Howe, 1988). Therefore, the debate between these paradigms has also been called the qualitative-quantitative debate (Reichardt and Rallis, 1994). In

this debate, many purist researchers were very stringent not only in their defense of their own methodological positions but also in their attack on the position of the "other side". Both sets of purists view their paradigms as the ideal for research, and, implicitly if not explicitly, they advocate the incompatibility thesis (Howe, 1988), which posits that qualitative and quantitative research paradigms cannot and should not be mixed, and then compatibility between quantitative and qualitative methods is impossible due to the incompatibility of the paradigms underlying the methods. This led to a dichotomy between these two paradigms and between these two general groups of methods. From this paradigmatic viewpoint, to accept the combination and mix of different approaches and methods is misleading as these methodologies are derived from fundamentally different epistemological positions and are therefore incommensurable.

However, there have been numerous calls and attempts in the social sciences to make peace between the two major paradigmatic positions. "Pacifists" have appeared who state that qualitative and quantitative methods are compatible. Reichardt and Cook (1979) countered the incompatibility thesis based on the paradigm-method fit by suggesting that different philosophical paradigms and methods are compatible. Moreover, these authors argued that paradigms and methods are not inherently linked. Mir and Watson (2000) pointed out that a researcher who is anchored in constructivist methodology may employ a variety of methods including statistical analysis, just as a researcher employing a realist methodology may use qualitative research. Thus, research methods are more independent of epistemological and ontological assumptions than is sometimes supposed (Bryman and Bell, 2007). In addition, some researchers try to find philosophical assumptions that form the foundation for conducting mixed methods research. From this point of view, it can be pointed out two positions: the use of multiple worldviews and the use of a single paradigm or worldview (Creswell and Creswell, 2005). Regarding the first position, Greene and Caracelli (1997) advance a "dialectical" perspective in which researchers use multiple worldviews. This perspective maintains that mixed methods research may be viewed strictly as a "method", thus allowing researchers to use any number of philosophical foundations for its justification and use. The second position is related to the best paradigm issue. The key question is what philosophical paradigm is the best foundation for mixed methods research. Many authors advocate for a pragmatism worldview for mixed methods (Cherryholmes, 1992). Pragmatism advances multiple pluralistic approaches to knowing, using "what works", a focus on the research questions as important with all types of methods to follow to answer the questions, and a rejection of a forced choice between postpositivism and constructivism. Thus, a major tenet of pragmatism is that quantitative and qualitative methods are compatible.

2.3 Barriers and benefits of mixed methods research

Mixed methods research is not intrinsically superior to research that relies on a single method. An important consideration prior to designing and conducting a mixed methods study is whether mixed methods, as compared to monomethod designs, best addresses the research problem and the research question(s).

Moreover, there are important barriers to conducting a mixed methods study. Creswell and Plano Clark (2007) pointed out that conducting mixed methods research is not easy. Mixed methods studies are a challenge because they are perceived as requiring more work and financial resources, and they take more time. Increased time demands arise from the time it takes to implement both aspects of the study (Niglas, 2004). In addition, mixed methods research also requires that researchers develop a broader set of skills that span both the quantitative and the qualitative. Another barrier is related to the challenges of publishing mixed methods studies (Plano Clark, 2005; Bryman, 2007). The challenges generally arise from existing constraints such as word and page limits in journals.

In spite of these barriers, mixed methods research is carried out and published. Several authors have examined the utility and advantages of this approach. Regarding the main benefits, the overall purpose and central premise of mixed methods studies is that the use of quantitative and qualitative approaches in combination may provide a better understanding of research problems and complex phenomena than either approach alone (Creswell and Plano Clark, 2007). Better understanding can be obtained, for example, by triangulating one set of results with another and thereby enhancing the validity of inferences. In fact, the concept of triangulation of methods was the intellectual wedge that eventually broke the methodological hegemony of the monomethod purists (Tashakkori and Teddlie, 1998). Jick (1979) discussed triangulation in terms of the weaknesses of one method being offset by the strengths of another. It is often stressed that different methods have different weaknesses and strengths, and therefore the main effect that triangulation can offer is to overcome the weaknesses of

any single method. Thus, if we use several different methods for investigating the phenomenon of our interest, and the results provide mutual confirmation, we can be more confident that our results are valid (Niglas, 2004).

Other purposes, reasons or rationales for combining qualitative and quantitative methods can also be pointed out. These purposes may be considered as benefits and advantages of mixed methods research. Greene, Caracelli and Graham (1989) stated four additional purposes along with triangulation: complementarity (seeking elaboration, illustration, enhancement, and clarification of the results from one method with the findings from the other method), development (when the researcher uses the results from one method to help develop or inform the use of the other method), initiation (discovering paradoxes and contradictions that lead to the research questions being reframed), and expansion (seeking to extend the breadth and range of inquiry by using different methods for different inquiry components).

With respect to these main purposes, other authors indicated a wider range of reasons. For example, Collins, Onwuegbuzie and Sutton (2006) provided a comprehensive list of reasons or purposes for conducting mixed methods research, and each of these purposes was grouped under one of the four main rationales: participant enrichment, instrument fidelity, treatment integrity, and significance enhancement. Bryman and Bell (2007) also presented a variety of purposes in mixed methods research: triangulation, qualitative research facilitates quantitative research, quantitative research facilitates qualitative research, analysis of static and processual features, qualitative research may facilitate the interpretation of the relationship between the variables, and analysis of different aspects of a phenomenon.

2.4 The application of mixed methods research

Two main factors that help researchers to design and conduct a mixed methods study are implementation of data collection and priority (Morse 1991; Morgan 1998; Tashakkori and Teddlie 1998; Creswell 2003). Implementation of data collection refers to the sequence that the researcher uses to collect both quantitative and qualitative data. The options consist of gathering the information at the same time (concurrent, simultaneous or parallel design) or introducing the information in phases (sequential or two-phase design). By concurrently gathering both the forms of data, the researcher seeks to compare them with the search for congruent findings. When the data are introduced in phases, either the qualitative or the quantitative approach may be gathered first, but the sequence relates to the objectives being sought by the researcher. Thus, when qualitative data collection precedes the quantitative data collection, the intent is to first explore the problem under study and then follow up on this exploration with quantitative data that are amenable to studying a large sample so that results might be inferred to a population. Alternatively, when quantitative data precede the qualitative data, the intent is to test the variables with a large sample and then carry out a more in-depth exploration of a few cases during the qualitative phase.

Regarding priority, mixed methods researchers can give equal priority to both quantitative and qualitative research, or emphasize more on qualitative or quantitative parts. This emphasis may result from research questions, practical constraints for data collection, the need to understand one form of data before proceeding to the next or the audience preference. Mixed methods designs can therefore be divided into equivalent status designs (the researcher conducts the study using both the quantitative and qualitative approaches equally to understand the phenomenon under study) and dominant-less dominant studies or nested designs (the researcher conducts the study within a single dominant paradigm with a small component of the overall study drawn from an alternative design).

These two dimensions and their possible combinations can lead to the establishment of several designs which are represented using the notation proposed by Morse (1991). In her system, the main or dominant method appears in capital letters (QUAN, QUAL) whereas the complementary method is given in lowercase letters (quan, qual). The notation "+" is used to indicate a simultaneous design, and the arrow "→" stands for sequential design. Thus, the following four groups and nine types of mixed methods designs can exist using these two dimensions (Johnson and Onwuegbuzie 2004):

- I- Equivalent status/simultaneous design: QUAL+QUAN.
- II- Equivalent status/sequential designs: QUAL→QUAN; QUAN→QUAL.
- III- Dominant/simultaneous designs: QUAL+quan; QUAN+qual.

- IV- Dominant/sequential designs: qual→QUAN; QUAL→quan; quan→QUAL; QUAN→qual.

3. Methods

A review of the use of mixed methods in the SMJ, JOB and ORM over a seven year period (2003-2009) was carried out. The beginning of this time period aligns with the publication of two very important works signifying the growing emergence of mixed methods as a methodological movement in its own right. In 2003 Tashakkori and Teddlie's (2003) landmark *Handbook of mixed methods in social and behavioral research* was published, which played a pivotal role in providing both visibility and credibility to the field of mixed methods. In the same year, Creswell's seminal book on research design across the three approaches (qualitative, quantitative and mixed methods) was also published (Creswell, 2003). This time period is recent, giving us the opportunity to see how research designs are applied in current settings. Moreover, the time period spans seven years, providing a long enough interval representing research within these fields.

An important aspect related to identification and prevalence of mixed methods articles is the search strategy used. In this study, we have utilised two main search strategies: an electronic online word search and a manual search. The rationale behind this decision was to investigate the use of mixed methods terminology and nomenclature within the empirical studies employing a mixture of both qualitative and quantitative methods in a single study. Teddlie and Tashakkori (2003, p. 8) state that 'the development of a nomenclature that is distinctly associated with mixed methods is both extremely important and overdue'.

The online searches were conducted through the SMJ and JOB website (Wiley InterScience database) and the ORM journal website (SAGE publishing). This electronic search strategy utilised the following phrases: "mixed methods", "mixed method", "multi-methods" and "multi-method". The searches were filtered for the following sections of the articles: title; abstract; keywords and; full text for ORM and for the SMJ and JOB the searches were through the following sections: title; keywords and; abstract/full text. Each article identified in the searches was checked to determine what context the search words were being utilised for (e.g., the application of a mixed methods research design; book review; description of other studies being discussed, methodological discussion).

In addition, a manual search was used for the SMJ and JOB. Thus, all articles published in SMJ (n=498) and JOB (n=373) from 2003 to 2009 were read and reviewed. Bryman (2006) points out that the electronic search strategy may provide a biased sample of mixed methods studies in the sense that by no means all authors of articles reporting mixed methods research foreground the fact that the findings reported derive from a combination of quantitative and qualitative research, or do not do so in terms of the key words that drove the online search strategy. Moreover, apart from identifying mixed methods studies, the manual search strategy can be used to classify the articles in two main groups, non-empirical and empirical articles, and, additionally, the group of empirical studies can be further divided into three types: quantitative, qualitative and mixed methods articles.

A sequential mixed methods study with two stages was undertaken to identify mixed methods articles and determine their main characteristics. In the first phase, a qualitative stage was used in the manual search strategy for the purpose of determining whether each article represented a non-empirical, quantitative, qualitative or mixed methods study. This content analysis involved using all information presented in each article (title, abstract, keywords, introduction, literature review, methods, results, discussion and conclusions). This initial data collection created individual tables by journal and by year, listing the journal title, year, volume and issue number, number of total articles, number of non-empirical articles, number of quantitative articles, number of qualitative articles and number of mixed methods articles. These tables were aggregated across journals. In addition, the mixed methods articles identified were re-examined through a content analysis and coded according to two main dimensions: priority (equal or dominant status of the quantitative and qualitative parts) and implementation of data collection (simultaneous or sequential). The main mixed methods purposes were also determined. In the second phase, descriptive statistics were used for the quantitative analysis for prevalence, providing numbers, sums and percentages by type of article (non-empirical, quantitative, qualitative and mixed methods articles) and by journal. In addition, regarding the mixed methods articles, numbers and percentages by type of priority (equal or dominant status), type of implementation (simultaneous or sequential) and purpose were also provided.

4. Results

4.1 Strategic Management Journal

The electronic search utilising the "mixed method(s)" and "multi-method(s)" phrases identified 10 articles in the SMJ for 2003-2009. Upon closer examination, 9 of the SMJ identified articles were classified as QUAN studies and 1 was conceptual. Therefore, this electronic search strategy did not identify any empirical mixed methods studies.

Through the manual search, the 498 articles published were read. Table 1 shows the prevalence frequencies of each type of article by year.

Table 1: Types of articles in the *Strategic Management Journal* (2003-2009)

Year	Total number of articles	Number of non-empirical articles	Empirical articles			
			Total number of empirical articles	Number of quantitative articles	Number of qualitative articles	Number of mixed articles
2003	78	12	66	54	6	6
2004	67	4	63	51	2	10
2005	70	9	61	47	0	14
2006	63	7	56	43	2	11
2007	73	9	64	53	5	6
2008	76	6	70	64	1	5
2009	71	6	65	53	0	12
Total	498	53	445	365	16	64

As can be seen in Table 1, the SMJ is dominated by quantitative articles (365 articles, 73.3%) The second type of article in importance is non-empirical articles (53 articles, 10.6%), and the number of mixed methods studies (64 articles, 12.9%) is higher than the number of qualitative articles (16 studies, 3.2%).

One way to organise and describe the 64 mixed methods articles published in the SMJ is to examine the designs and the purposes of these studies. Through a content analysis, identification of the main characteristics of the mixed methods articles published in the *SMJ* has been carried out (see Table 2). The most common purpose was development (82.8%), followed by complementarity (9.4%), expansion (4.7%) and triangulation (3.1%). Regarding implementation of data collection, sequential implementation was the most common implementation pattern used in the mixed methods articles published in the SMJ (61 articles, 95.3%). In these sequential articles, the first part in most studies was the qualitative one (54 studies). Finally, the most common type of priority was different priority of the quantitative and qualitative parts (53 articles, 82.8%). Moreover, in these 53 articles, the dominant part was the quantitative one.

Table 2: Characteristics of mixed methods studies in the *Strategic Management Journal* (2003-2009)

Purposes	N (%)
Triangulation	2 (3.1%)
Complementarity	6 (9.4%)
Development	53 (82.8%)
Expansion	3 (4.7%)
Implementation	
Simultaneous	3 (4.7%)
Sequential	61 (95.3%)
Priority	
Equivalent status	11 (17.2%)
Dominant	53 (82.8%)

Therefore, the typical mixed methods article in the SMJ is a qual→QUAN study where the main mixed methods purpose is development (see for example Ethiraj, Kale, Krishnan and Singh, 2005). Several aspects of the quantitative part may be improved through the use of a previous qualitative phase. Thus, the qualitative part may help to develop or extend theory, identify the industry-specific

resources and competences as well as the dependent variables and/or improve the measurement instrument of the quantitative phase.

4.2 Journal of Organizational Behavior

In this case, the online search utilising the "mixed method(s)" and "multi-method(s)" phrases identified 13 articles in the JOB for 2003-2009. However, upon closer examination, 10 of the 13 articles were quantitative studies, 2 conceptual and 1 was considered to be a mixed methods study (Challiol and Mignonac, 2005).

Using the manual search which involved reading all the articles published in the JOB from 2003 to 2009 (373 articles), 20 mixed methods studies were identified (5.4%). Table 3 shows the number of articles classified by article type and year. As is the case with the SMJ, the JOB is also dominated by quantitative articles (235 articles, 63%) followed by non-empirical articles (101 articles, 27.1%). Moreover, the number of mixed methods studies is also higher than the number of qualitative articles (17 studies, 4.5%).

Table 3: Types of articles in the *Journal of Organizational Behaviour* (2003-2009)

Year	Total number of articles	Number of non-empirical articles	Empirical articles			
			Total number of empirical articles	Number of quantitative articles	Number of qualitative articles	Number of mixed articles
2003	50	10	40	40	0	0
2004	47	4	43	35	2	6
2005	50	18	32	28	1	3
2006	56	15	41	33	5	3
2007	55	20	35	27	5	3
2008	60	20	40	34	4	2
2009	55	14	41	38	0	3
Total	373	101	272	235	17	20

In order to determine the characteristics of the 20 mixed methods studies, a content analysis was undertaken. Table 4 shows these characteristics with regard to purposes, implementation and priority. In the JOB, the most common purpose was development (45%), followed by complementarity (35%), triangulation (15%) and expansion (5%). Sequential implementation was the most common implementation pattern used in the mixed methods articles identified (15 articles, 75%). In these 15 sequential articles, the first part in most studies was the qualitative one (9 studies). Finally, the most common type of priority was different priority of the quantitative and qualitative parts (12 articles, 60%). Moreover, in these 12 articles, the dominant part was the quantitative one.

Table 4: Characteristics of mixed methods studies in *Journal of Organizational Behavior* (2003-2009)

Purposes	N (%)
Triangulation	3 (15%)
Complementarity	7 (35%)
Development	9 (45%)
Expansion	1 (5%)
Implementation	
Simultaneous	5 (25%)
Sequential	15 (75%)
Priority	
Equivalent status	8 (40%)
Dominant	12 (60%)

4.3 Organizational Research Methods

As stated earlier, in the case of ORM we conducted the electronic search and not the manual search. The online search identified 8 documents, which includes a book reviews and a methodological paper that made mention of mixed methods as a methodology within their respective discussions. Only two articles may be considered as mixed methods empirical studies: Yauch and Steudel (2003) and Pratt (2008).

For example, Yauch and Steudel (2003) is an exemplar of QUAL+quan design. These authors analyzed an important intangible resource, specifically the organizational cultures of two small manufacturers using qualitative and quantitative data. The article described not only how qualitative and quantitative data contributed to the validity of the results through triangulation but also how the qualitative and quantitative research paradigms were used in a complementary fashion to produce a more complete understanding of the organizational cultures. Using methods from both research paradigms enabled a greater understanding of cultural artefacts and behaviors but more important of the underlying cultural values and assumptions. A prospective exploratory case study approach was used to examine the impact of organizational culture on the cellular manufacturing conversion process. The ultimate goal of the research was to identify key cultural factors that had a positive or negative impact on the process of converting form a traditional functional manufacturing system to cellular manufacturing. Cultural assessment of the organizational values, assumptions, and behavioral norms was accomplished through qualitative and quantitative means. Qualitative assessment of culture was accomplished through document review, participant observation and group interviews. The Organizational Culture Inventory, a cultural assessment survey, was used as an additional measure of organizational culture at each company. This study relied most heavily on qualitative data but supplemented it with quantitative survey results.

The different results from the two search strategies brings to light not only the use of mixed methods research in the sample but a strong indication that commonly used mixed methods terminology and nomenclature emerging from the mixed methods movement is not being utilised in these studies.

5. Discussion and conclusions

Creswell and Tashakkori (2007) pointed out that the literature base about mixed methods research may not be well known to individuals in specific fields. To check this issue, the references sections of the mixed methods articles identified were reviewed. Despite the availability of mixed-methods-related books, book chapters and journal articles, studies about this type of research have seldom been found in the references sections of these mixed methods studies. On this evidence it seems likely that the advantages, possibilities, purposes, designs and potential of mixed methods research may be unknown to researchers in these fields. Put differently, mixed methods research is used in organisational and management studies but it may be completely unknown and without recognition that mixed methods research constitutes a specific approach to research. Therefore, although mixed methods research is used in these business fields, these mixed methods studies may not exploit the full potential for mixing methods and researchers are probably not maximizing the extent to which they are using this approach.

Some authors provide guidelines about how to carry out a mixed methods research. Creswell (1999) offers nine steps in conducting a mixed methods study:

- Determine if a mixed methods study is needed to study the problem.
- Consider whether a mixed methods study is feasible.
- Write both qualitative and quantitative research questions.
- Review and decide on the types of data collection.
- Assess the relative weight and implementation strategy for each method.
- Present a visual model.
- Determine how the data will be analysed.
- Assess the criteria for evaluating the study.
- Develop a plan for the study.

Similarly, Teddlie and Tashakkori (2006) provide a seven step process for researchers selecting the best design for their projects:

- The researcher must first determine if his/her research question require a monomethod or mixed methods design.
- The researcher should be aware that are a number of different typologies of mixed methods research designs and should know how to access details regarding them.

- The researcher wants to select the best mixed methods design for his/her particular study and assumes that one of the published typologies includes the right design for the project.
- Typologies may be differentiated by the criteria that are used to distinguish among the research designs within them, and the researcher needs to know those criteria.
- These criteria should be listed by the researcher, who may then select the criteria that are most important for the particular study he/she is designing.
- The researcher then applies the selected criteria to potential designs, ultimately selecting the best research design.
- In some cases, the researcher may have to develop a new mixed methods design, because no one best design exists for his/her research project. Regarding the last step, Teddlie and Tashakkori (2006) point out that mixed methods designs have an opportunistic nature. Thus, in many cases, a mixed methods research study may have a predetermined research design, but new components of the design may evolve as researchers follow up on leads that develop as data are collected and analysed. The point is for the researcher to be creative and not be limited by the existing designs.

Hanson, Creswell, Plano Clark, Petska and Creswell (2005) offer some recommendations for designing, implementing, and reporting a mixed methods study. Thus, they recommend that researchers attend closely to design and implementation issues, particularly to how and when data are collected (e.g., concurrently or sequentially). The study's purpose plays an important role here. They also recommend that researchers familiarize themselves with the analysis and integration strategies used in the published mixed methods studies. Moreover, because mixed methods studies require a working knowledge and understanding of both quantitative and qualitative methods, and because they involve multiple stages of data collection and analysis that frequently extend over long periods of time, they recommend that researchers work in teams. Moreover, in preparing a mixed methods manuscript, they recommend that researchers use the phrase "mixed methods" in the titles of their studies, and that, early on, researchers foreshadow the logic and progression of their studies by stating the study's purpose and research questions in the introduction. Clear, well written purpose statements and research questions that specify the quantitative and qualitative aspects of the study help focus the manuscript. Additionally, these authors recommend that, in the introduction, researchers explicitly state a rationale for mixing quantitative and qualitative methods and data (e.g., to triangulate results, to develop or improve one method with the other, to extend the study's results). Another recommendation is that, in the methods, researchers specify the type of mixed methods research design used.

Creswell and Plano Clark (2010) provide several principles for designing a mixed methods study:

- Recognize that mixed methods designs can be fixed and/or emergent. Fixed mixed methods designs are mixed methods studies where the use of quantitative and qualitative methods is predetermined and planned at the start of the research process, and the procedures are implemented as planned. Emergent mixed methods designs are found in mixed methods studies where the use of mixed methods arises due to issues that develop during the process of conducting the research.
- Identify an approach to design. There are several approaches to design, and researchers can benefit from considering their personal approach to conducting mixed methods studies. These design approaches fall into two categories: typology-based and dynamic.
- Match the design to the research problem, purpose and questions. The importance of the research problem and questions is a key principle of mixed methods research design. This perspective stems from the pragmatic foundations for conducting mixed methods research where the notion of "what works" applies well to selecting the methods that work best to address a study's problem and questions.
- Be explicit about the reasons for mixing methods. Another key principle of mixed methods design is to identify the reason(s) for mixing quantitative and qualitative methods within the study. Combining methods is challenging and should only be undertaken when there is a specific reason to do so. Two frameworks have been provided by Greene, Caracelli and Graham (1989) and Bryman (2006).

In addition, Creswell and Plano Clark (2010) also point out several key decisions in choosing a mixed methods design:

- Determine the level of interaction between the quantitative and qualitative strands.
- Determine the priority of the quantitative and qualitative strands.
- Determine the timing of the quantitative and qualitative strands.
- Determine where and how to mix the quantitative and qualitative strands.

Regarding the conclusions derived from this study, several aspects may be emphasised. First, with regard to the characteristics of the mixed methods articles identified, the most common purpose in strategy and organizational behaviour was development; the most common type of priority was different priority of the quantitative and qualitative parts; and sequential implementation of data collection was the most common implementation pattern used in these fields. Second, the number of mixed methods studies shows great variation year to year and journal to journal, and there is not a clear trend in the publication of mixed methods research in business studies for the journals studied. Third, with regard to the search strategies to identify mixed methods studies, the online search and the manual search provided very different results. As said above, Bryman (2006) pointed out that the electronic search strategy may provide a biased sample of mixed methods studies. It may also indicate the lack of awareness within the management research community of the emerging body of literature and methodological frameworks being developed from within the mixed methods movement. In any case, this electronic search may be further expanded to use a greater range of mixed methods terminology and nomenclature.

We would like to indicate that we agree with the "paradigm of choices" emphasized by Patton (1990). A paradigm of choices rejects methodological orthodoxy in favour of methodological appropriateness as the primary criterion for judging methodological quality. Thus, this paradigm of choices recognizes that different methods are appropriate for different situations. The predominance of more quantitative-based methodological tools in the development of strategy and organisational behaviour research does not mean that these tools are applicable to all research questions. The research question and context should dictate the choice of the appropriate research methods. However, we must also take into account that the knowledge about mixed methods research can stimulate a researcher to better define and analyze innovative problems and research questions in management research. Mixing methods therefore offers enormous potential for exploring new dimensions (Mason, 2006). Hopefully, this review of management empirical studies which have used mixed methods designs along with the ideas offered for the application of mixed methods studies may favour progress on management research.

Finally, with regard to future research, although the current study attempts to extend the knowledge of the application of mixed methods research in management research, much remains to be learned. For example, it would be interesting to analyze the yield from mixed methods studies regarding the added value of these articles, or the contribution to the improvement of several methodological aspects such as validity or construct measurement. Moreover, an analysis of the use and application of mixed methods research in other organisational and management fields would also be interesting and could expand upon the research reported here.

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