VERTAISARVIOITU
KOLLEGIALT GRANSKAD
PEER-REVIEWED
www.tsv.fi/tunnus

What drives the choices of mixed methods in higher education research?

Yuzhuo Cai

Introduction

In the last 15—20 years, the mixed methods approach has gained a central place in social science research, thanks to its introduction and promotion by a few researchers, such as Creswell, Plano Clark, Gutmann, and Hanson (2003) and Tashakkori and Teddlie (2003). In 2007, the *Journal of Mixed Methods Research* was established, and within 10 years, it has become one of the most influential journals in the social sciences. In higher education studies, mixed methods has tended to become increasingly popular as well (Papadimitriou, Ivankova & Hurtado 2013). However, it has continued to present challenges in terms of how to justify and ensure the validity or quality of a mixed methods study in social sciences in general (Teddlie & Tashakkori 2009), particularly in higher education research (Papadimitriou et al. 2013). In response, Papadimitriou et al. (2013) sought to draw lessons by analysing two examples of higher education studies. Their main conclusion was that when conducting mixed methods research in higher education, one must follow methodological conventions of both qualitative and quantitative research as well as specific procedures of mixed methods design. They also suggest that

in seeking to publish mixed methods research, researchers must make explicit the value-added of using mix methods so that the journal editors and reviewers can easily justify the quality of their research. Their inferences are important, but when it comes to the practice of conducting mixed methods, there are high demands on more comprehensive and concrete suggestions regarding how to do it, particularly in the field of higher education research. Above all, it is essential to know when and why one needs to choose mixed methods.

The research methodology literature tends to suggest a correspondence between the research question and the methodological design (Newman & Benz 1998a). In particular, the research question is more important in mixed methods research (Creswell 2003; Johnson & Onwuegbuzie 2004), in that, it determines whether a mixture of methods is suitable (Curral & Towler 2003, 521; Teddlie & Tashakkori 2006) and what specific designs should be chosen (Onwuegbuzie & Leech 2006).

The position that research questions guide decisions about research methods and research designs has been challenged. For instance, drawing on interviews with 20 mixed methods researchers as well as analyses of some mixed methods studies, Bryman (2007) asserts that there is a dilemma between the textbook account and practical research. While textbooks mainly provide a normative position, researchers are more ambivalent about the role of research questions in connection with research methods. Bryman found that some researchers adopt mixed methods for practical or tactical purposes. Moreover, Newman et al. (2003) argue that while the research question is important, it is not sufficient to determine methodology. They stress the importance of research purpose in determining research design. As they put it:

> *Without having one's purpose (or purposes) clarified, and without time to reflect on that purpose, one cannot have a question that will directly dictate the research methodology. ... The research question alone will not produce links to methods unless the question is thought through seriously, as well as iteratively, and becomes reflective of purpose.* (Newman et al. 2003, 168)

The methodological debates imply an ambiguity regarding what drives the choice of mixed methods design. To contribute to the discussions on the topic, in this chapter, I analyse my own experience of conducting mixed methods research in the field of higher education studies and compare this with discussions in the mixed methods literature. My analysis is intended to answer the question: What factors actually drive the choice of using mixed methods?

The remainder of the chapter is structured as follows. First, it introduces the mixed methods approach and then discusses possible influencing factors on the choice of using mixed methods, as indicated by the mixed methods literature. Next, using these factors as a benchmark, I review what actually affected my choice of mixed methods in my doctoral research as an illustration. At the end, I draw some conclusions regarding what drives the choice of mixed methods in higher education research and suggest some important avenues for future research.

Mixed methods

Traditionally, qualitative and quantitative methodological approaches have largely been used on separate tracks in social science research, despite the rich acknowledgement of the drawbacks of such a methodological bifurcation. Most quantitative research is confirmatory, involving theory verification, whereas much qualitative research is exploratory, involving theory generation or discovery. However, the phenomena to be explored are often too complicated to be tackled within the singularity of either a qualitative or quantitative approach. Thus, an emerging methodology, mixed methods, has become increasingly popular.

Mixed methods research is a research design (or methodology) in which a researcher collects, analyses and mixes (integrates or connects) both quantitative and qualitative data in a single study or a multiphase programme of inquiry (Creswell 2005, 510). The attempt to incorporate both qualitative and quantitative methods into a mixed methods study is always a challenge. An extensive body of literature on research methodology sharply divides the two

methods according to their philosophical beliefs between interpretivism and post-positivism. Quantitative studies emphasise the measurement and analysis of causal relationships between variables, often associated with population generalisation. Qualitative methods allow for the articulation of many truths in meaningful social actions, stressing how social experiences are created and given meanings (Denzin & Lincoln 2003, 13). Despite the dichotomy between qualitative and quantitative research strategies, "the two philosophies are neither mutually exclusive (i.e. one need not totally commit to either one or the other) nor interchangeable (i.e. one cannot merge methodologies with no concern for underlying assumptions)" (Newman & Benz 1998a, xi). It follows that studies at the operational level are located on different points of a continuum between qualitative and quantitative.

This is consistent with Creswell's (2003, 4) vision that while traditional paradigms of social science research exist on two opposing stances, requiring either quantitative or qualitative approaches, "the situation today is less quantitative *versus* qualitative and more how research practices lie somewhere between on a continuum between the two". This means that the mixed methods approach is located in the realm of pragmatism in the middle of the continuum between interpretivism and post-positivism. For pragmatists, understanding the problem is more important than being committed to any one system of methodological philosophy (p. 12). By mixing both qualitative and quantitative methods, it offers the best chance for answering many important and complex research questions (Johnson & Onwuegbuzie 2004). The rationale for using mixed methods "is grounded in the fact that neither quantitative nor qualitative methods are sufficient, by themselves, to capture the trends and details of a situation" (Ivankova, Creswell & Stick 2006, 3).

Despite the lack of a clear definition of what exactly are mixed research questions, it has been commonly agreed that mixed methods studies answer questions that embed both qualitative and quantitative inquires (Creswell 2003, 114). Qualitative research questions often begin with the words "what", "how" and "why" in relation to discovering/exploring a process, describing experiences or understanding a phenomenon that has not been

well understood (Creswell 2003, 106; Griffiths 1996, 27; Onwuegbuzie & Leech 2006, 482). While qualitative research questions are characterised as "open-ended, evolving, and non-directional" (Creswell 1998, 99), quantitative research questions are specific in nature, either descriptive, comparative or relationship oriented (Onwuegbuzie & Leech 2006, 480). In the last two categories (comparative or relationship oriented), research questions are often formulated in the form of hypotheses, predicting relations among variables (Creswell 2003, 108). In short, qualitative studies are usually exploratory, while quantitative ones tend to be explanatory.

The advantages of using mixed methods for social science research have been argued and evidenced by a number of researchers (Creswell 2003; Miles & Huberman 1994, Chapter 3; Newman & Benz 1998b; Tashakkori & Teddlie 2003). Among these, the convergent view is that the two methods are complementary and compatible. For instance, Newman and Benz (1998b) illustrate that the strength of mixed methods is based on their self-correcting feedback loops (Figure 1).

There are different ways of combining or mixing qualitative and quantitative research. The mixed methods literature presents a variety of typologies of mixed methods designs (Creswell 2003; Johnson & Onwuegbuzie 2004; Leech & Onwuegbuzie 2009; Onwuegbuzie, Slate, Leech & Collins 2007; Tashakkori

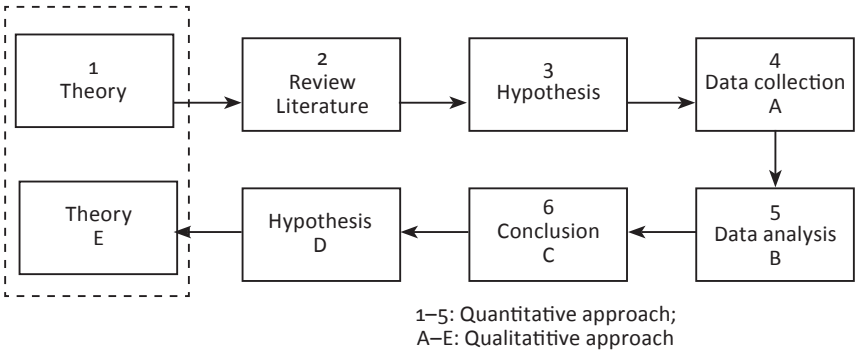

Figure 1. The structure of social science research
Source: Adapted from Newman and Benz (1998b, 21)

& Teddlie 1998; Tashakkori & Teddlie 2003; Teddlie & Tashakkori 2006). For instance, in Tashakkori and Teddlie's (1998, 160–166) typology, three dimensions are used: the nature of the research (confirmatory/exploratory), data collection and operation (qualitative/quantitative), and data analysis (statistical/qualitative). For Johnson and Onwuegbuzie (2004, 20), a mixed methods design is determined by two primary decisions by the researcher: "(a) whether one wants to operate largely dominant paradigm or not, and (b) whether one wants to conduct the phases concurrently or sequentially".

More recently, Leech and Onwuegbuzie (2009) sought to create an integrated three-dimensional typology of mixed methods designs based on an extensive review of the mixed methods literature: (a) level of mixing (partially mixed versus fully mixed); (b) time orientation (concurrent versus sequential) and (c) emphasis of approaches (equal status versus dominant status). Their typology is not very different from the more commonly used scheme proposed by Creswell et al. (2003), who used four dimensions to categorise mixed methods designs: implementation, priority, integration and theory.

Implementation is similar to "time orientation" in Leech and Onwuegbuzie (2009) and refers to whether researchers collect quantitative and qualitative data in different phases (sequentially) or at the same time (concurrently). Concurrent procedures are often used by researchers who are attempting to obtain a comprehensive analysis of the research problem, including concurrent triangulation, concurrent nested and concurrent transformative. In sequential procedures, the researcher seeks to elaborate or expand the findings of one method with another. The sequential strategy includes three models: sequential explanatory, sequential exploratory and sequential transformative.

The priority accorded either the qualitative or quantitative approach is similar to Leech and Onwuegbuzie's (2009) concept of "emphasis of approaches", which pertains to whether greater priority is given to the quantitative or qualitative approach, especially in terms of data analysis. Priority can also be expressed as dominance. Priority for one type of data or the other depends on the researcher's interests, reader expectations or the nature of the investigation (e.g. inductive or deductive). In mixed methods studies, there

are three possibilities: the quantitative approach is prioritised; the qualitative approach is prioritised; both quantitative and qualitative approaches have equal priority.

Integration refers to the stages in the research process involving the mixing or integration of the quantitative and qualitative methods, ranging from the stage of addressing research purposes or research questions to that of analysing or interpreting data. This is very much in line on a continuum of the "level of mixing" described by Leech and Onwuegbuzie (2009), on which mixed methods research falls from "not mixed" (i.e. mono-method designs) at one end of the continuum to "fully mixed" at the other end. Partially mixed method designs are located between the two ends. They further elaborate that mixed methods research involves mixing both quantitative and qualitative research within one or more of the following four stages of the research process: 1) formulation of the research objective, 2) data collection, 3) data analysis and 4) inference. Similarly, for Creswell et al. (2003, 220), "integration might occur within the research questions (e.g., both quantitative and qualitative questions are presented), within data collection (e.g., open-ended questions on a structured instrument), within data collection (e.g., transforming qualitative themes into quantitative items or scales), or in interpretation (e.g., examining the quantitative and qualitative results for convergence of findings)".

Leech and Onwuegbuzie's (2009) typology does not include the dimension of the theoretical perspective suggested by Creswell (2003). According to Creswell et al. (2003), the use of a theoretical lens in mixed methods research may be explicit or implicit. Explicit use of a theoretical perspective refers to situations in which theories have a direct and strong impact on the questions to be asked, the subjects and participants to be studied, the data to be collected and the preference of conclusions. The studies in this kind are value-based and action-oriented and have an advocacy purpose. This is called the transformative model in mixed methods research, whereby researchers use a theoretical lens as an overarching perspective that embraces both qualitative and quantitative data.

Factors affecting the choice of mixed methods

The literature suggests three factors that affect the choices of mixed methods. These are research questions, research purposes, practical reasons and beliefs in research paradigms.

Types of mixed research questions

Research questions can be formulated on the basis of theories, past research, previous experience or the practical need to make data-driven decisions in a work environment. "Thus, they serve as signposts for the reader, foreshadowing the specific details of the study" (Onwuegbuzie & Leech 2006, 478). Mixed methodologists believe that mixed methods are suitable for certain kinds of research questions (Creswell 2003; Tashakkori & Teddlie 2003), and especially for complex research questions (Plano Clark 2005).

Onwuegbuzie and Leech (2006) made an initial attempt to develop a framework linking mixed methods research questions and mixed methods designs. They categorised five types of mixed methods research questions: 1) mixed methods research questions for descriptive research designs, 2) mixed methods research questions for causal-comparative research designs, 3) mixed methods research questions for experimental research designs, 4) mixed methods research questions for qualitative comparative designs and 5) the most compatible mixed methods research questions. Their study is inspiring, as it not only corroborates the argument that research questions drive the methods used (Newman & Benz 1998a; Tashakkori & Teddlie 1998), but it also tasks researchers to establish relations between mixed methods research questions and mixed methods designs.

Nevertheless, the framework established by Onwuegbuzie and Leech (2006) remains largely ambiguous. On one hand, the descriptions of these types of research questions are on a general and abstract level, despite the provision of a number of exampling questions. On the other hand, the categories of the mixed methods designs used in their framework need to be benchmarked

with reference to other similar typologies developed elsewhere (for example: Creswell 2003; Tashakkori & Teddlie 1998; Teddlie & Tashakkori 2006).

Research purpose and mixed methods designs

Newman et al. (2003) argue that the research question alone is not sufficient to determine the methodology. Rather, "by considering the question and purpose iteratively, one can eventually get to a design or set of designs that more clearly reflect the intention of the question" (p. 168). By research purpose, they mean the reasons for conducting a study. Nine general research purposes can be categorised (p. 185):

1) Predict: using all the things we known in this knowledge "base" to explain a field and what might yet unfold in the future
2) Add to the knowledge base: organising all the things we know into a "base" of knowledge
3) Have a personal, social, institutional and/or organisational impact: struggling with the complex environments we experience, particularly when we know that some things we know and experience are not just, fair and in keeping with our ethical or professional purpose
4) Measure change: measuring what happens when we change things
5) Understand complex phenomena: understanding what things we now experience and know
6) Test new ideas: testing these new things
7) Generate new ideas: Discovering some new things
8) Inform constituencies: telling what things we know to those who need to know them
9) Examine the past: what things we already know from the past

This typology of research purpose can serve as a valuable tool for researchers to initiate proper research questions and to identify appropriate research methods. In particular, research purposes 2, 3, 5 and 6 (sometimes in combination), due to their complex nature, may lead to mixed methods approaches.

A universal discourse and practical reasons for conducting mixed methods

In his study—which was based on interviews with 20 social scientists with experience of mixed methods research and a review of some mixed methods publications—Bryman (2007) distinguishes between a particularistic discourse and a universal discourse. A particularistic discourse implies that research questions guide decisions about research design and research methods. A universal discourse entails the views that "mixed-methods research will tend to provide better outcomes more or less regardless of the aims of the research" (p. 8). In many cases, it is the universal discourse that underlies researchers' decisions regarding the use of mixed methods. He also found that some researchers conduct research by simply using the methods with which they are familiar, not necessarily with recourse to the specific research questions, while some adopt mixed methods for some practical or tactical purposes, such as "to secure funding, to get research published or to gain the attention of policy makers" (p. 14).

Pragmatist research paradigms and mixed methods

Creswell (2003) developed a research design framework (Figure 2), which is very useful for researchers in terms of locating their studies in methodological settings. Between post-positivism and interpretivist paradigms lies that of pragmatism. For pragmatists, understanding the problem is more important than being committed to any one system of methodological philosophy. As

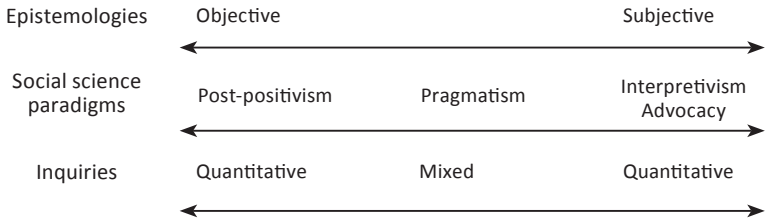

Figure 2. Framework of research design
(Adapted from Creswell 2003)

such, they tend to use multiple methods of data collection, techniques and procedures of research that meet their needs and purposes (Creswell 2003).

Therefore, following pragmatism, the question here is not whether the two methods can be linked in a study design; the directive is that it should be done. This somehow echoes the universal discourse, suggesting that mixed methods may have universal suitability, "supported with little or no reference to research questions" (Bryman 2007, 18). Bryman has observed that "the normative view of the relationship between research questions and research methods may be an account about how the research process should operate, but it is not necessarily an account of how it operates in practice" Bryman (2007, 18).

Exemplifying the choice of mixed methods in higher education research

In this section, I analyse the factors that affected my choice of mixed methods in my doctoral research, using as my reference framework the discussions in the literature mentioned above. Before that, I briefly introduce my study, titled *Academic Staff Integration in Post-Merger Chinese Higher Education Institutions* (Cai 2007).

The PhD research

The aim of my dissertation was to discover the factors affecting academic staff integration in post-merger Chinese higher education institutions, especially the cultural dimension of that integration. The case study institution is a provincial university in China, which was formed in the mid-1990s through the amalgamation of three institutions; they were located in the same city and offered similar programmes in teacher education and training. Two of them were similar in terms of academic strength and organisational age and had programmes leading to both undergraduate and postgraduate qualifications. The third was a much newer institution, offering three-year undergraduate non-degree programmes.

I applied mixed methods in the study, consisting of two parts: one was a pilot study based on analyses of in-depth interviews, and the other was based on statistical analyses of survey questionnaires. The empirical understandings generated from the qualitative pilot investigation, as well as an interpretation of the phenomenon of staff integration within the framework of institutional organisation theory, led to the development of hypotheses concerning the central research problem. The quantitative study of the survey data was used to test the hypotheses.

The results indicated that among a number of possible factors affecting academic staff integration, three have been empirically identified as vital, namely cultural compatibility between the pre-merger institutions, transparency of management and the upgrading of organisational profiles. It was also shown that the type of merger could exert an impact on the success of academic staff integration.

My considerations on choosing a mixed methods research design

My research design was initially planned as a case study. Yin (1994) has summarised five ways of undertaking social science research: experiment, survey, archival analysis, history and case study. The choice of each research strategy depends on the forms of the research question, the control that the investigator exercises over actual behavioural events and the extent of focus on contemporary events (Table 1).

Table 1. Relevant situations for different research strategies
Source: Yin (1994, 6)

Strategy	Form of research question	Requires control over behavioural events	Focus on contemporary events
Experiment	how, why	Yes	yes
Survey	who, what, where, how many, how much	No	yes
Archival analysis	who, what, where, how many, how much	No	yes/no
History	how, why	No	no
Case study	how, why	No	yes

The research question of my doctoral dissertation was: What factors affect academic staff integration in post-merger Chinese higher education institutions? As these factors have neither been clarified by existing knowledge nor by practical experience, the "what" question here, in the first instance, includes an exploratory investigation, which is normally conducted when the existing knowledge on the issue in question is poor, often with an aim to develop pertinent propositions and hypotheses for further inquiry. Indeed, the research question also implies an effort to verify causal relations between the "factors" and their consequences in staff integration, which leads to an explanatory study.

According to Yin (1994), any of the five research strategies can be used to conduct research, depending on the specific situation. My doctoral research focused primarily on contemporary events—mergers. Therefore, experimental and historical strategies may be excluded. Given the fact that few existing documents or studies concerning the problems in question are available, a case study approach seemed to be a suitable choice. As Rossman and Rallis (1988) note, a case study can be used when the researcher seeks to understand the deep meaning of an individual's experiences and how he or she articulates these experiences. Nevertheless, the theoretical bases and previous experiences in mergers elsewhere will shed light on the understanding of the phenomena of a particular case.

Unlike some researchers who prioritise qualitative data in case studies (Gomm, Hammersley & Foster 2000), Yin (1994, 14–15) claims that the case study does not necessary exclusively follow qualitative methods. Rather, case study research can be applied to broad areas of inquiry, including both exploratory qualitative and explanatory quantitative approaches. The choice of a quantitative or qualitative method is dependent on whether a study is looking for causal links or for deep understandings (Newman & Benz 1998b, 2). The research question of my doctoral study involves both.

The question of my PhD research appears to infer a quantitative approach, since it informs a causal relationship in which staff integration can be read as a dependent variable, while the influencing factors are the independent variables. The quantitative nature is likely to lead the research to be conducted

in a deductive way—from theory to hypotheses, then followed by an empirical test. One of the important preconditions of using the quantitative method is the availability of relevant theories. Theories refer to "a set of organically connected propositions that are located at a higher level of abstraction and generalization than empirical reality, and which are derived from empirical patterns and from which empirical forecasts can be derived" (Corbetta 2003, 60). However, there is an absence of well-formulated theories concerning the research problems in this study. Therefore, a qualitative study was applied to help develop the theoretical hypotheses. In order to verify these hypotheses and to specifically identify key factors at work, a quantitative strategy was necessary.

In terms of implementation, Creswell (2003) distinguishes between sequential and concurrent procedures. For this study, sequential procedures were more suitable. The sequential strategy includes three models: sequential explanatory, sequential exploratory and sequential transformative. This study takes a sequential exploratory approach, which is characterised by "an initial phase of qualitative data collection and analysis, which is followed by a phase of quantitative data collection and analysis" (Creswell 2003, 215). The qualitative approach is used to explore issues concerning staff integration in mergers and informs tentative hypotheses. Quantitative methods are used for testing these hypotheses. My study was conducted in two stages, as described in Figure 3.

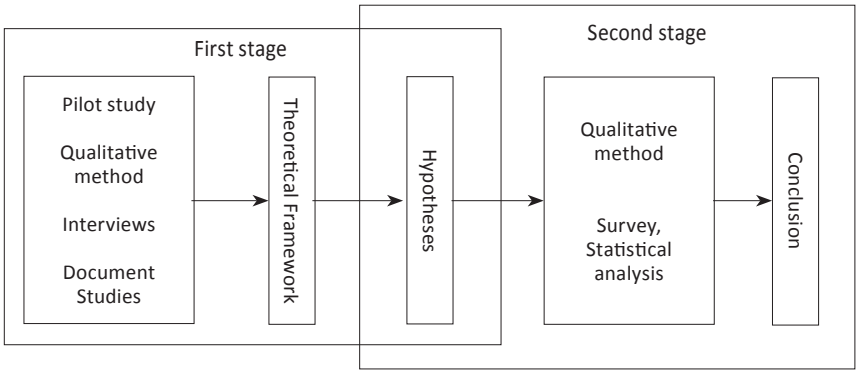

Figure 3. The procedures and methods of the case study

First, a single-case pilot study was conducted. According to Yin (1994, 74), the pilot study is neither a rehearsal nor a pre-test of the final study; rather, it helps "an investigator to develop relevant lines of questions—possibly even providing some conceptual clarification for the research design as well" (1994, 74). The pilot study here serves three purposes: (1) to test the feasibility of research questions and the relevance of the research focus; (2) to develop preliminary hypotheses or propositions and (3) to provide a basis for the research design in the next stages. Primary data are acquired from in-depth interviews, documents and archives.

Based on intuitive and empirical understandings from the qualitative pilot investigation, I sought to interpret the phenomenon of staff integration within the framework of institutional organisation theory, relying heavily on the existing research literature. Yin (1994, 32) has stressed the importance of using a theoretical framework in case study research, whether this is explanatory, descriptive or exploratory: "The use of theory, in doing case studies, not only is an immense aid in defining the appropriate research design and data collection but also becomes the main vehicle for generalising the results of the case study" (p. 32). In this study, the consistency between the empirical findings of the pilot study and the theoretical propositions informed by institutional organisation theory enhanced the validity of the research. Some theoretical hypotheses were developed during this stage.

The next stage of the empirical study was quantitatively oriented. Based on the knowledge obtained from the previous research stages, survey questionnaires were designed and sent to all the academic staff members involved in the mergers of the case study institutions. The analyses of the quantitative data could then be used to test the hypotheses. The conclusion part then analysed and compared both the qualitative and quantitative empirical results and developed comprehensive understandings of the research problem.

Multiple factors underlying the decision to utilise mixed methods

As presented above, my main decision to use mixed methods was guided by insights from the classic methodological literature. In particular, I chose the

mixed methods approach because it was appropriate for the research question in my doctoral study. In this respect, it reflects a particularistic discourse or a conventional view that research questions guide decisions about research design and methods (Bryman 2007).

Besides the research question, my general purpose for conducting my doctoral research was to gain a fuller understanding of a complex phenomenon—academic staff integration in post-merger universities. I chose a specific merger case for investigation because I had gained work experience in one of the three pre-merger institutions and some later experience as an administrator in the provisional Education Commission, which approved the merger and was involved in the process of dealing with a number of post-merger issues. As an observer, I was fully aware of the complexity of the issues regarding academic staff integration and the challenges faced by both the academic staff and managers of the post-merger university in dealing with these issues. To respond to the situation, it was important to generate new knowledge for understanding the issues and to test new ideas. As implied by Newman et al. (2003), such purposes often lead to mixed methods research.

In terms of making decisions about my research design, both my considerations regarding my research question and purpose corroborate general suggestions from the mixed methods literature. Here, I want to stress that my use of mixed methods is part of my case study design. Although case studies have often been considered in the realm of qualitative research (Creswell 1998), Yin (1994) suggests that both qualitative and quantitative approaches can be applied to case studies.

I am inclined to Yin's position because of my subscription to the research paradigm of pragmatism. Although the quantitative research in my doctoral research partially reflects a positivist paradigm, my study was not intent on making a broader generalisation. Rather, I believe that the meaning of causality can only be interpreted within a specific context. As such, my study finds its root in pragmatism, in the middle of the continuum between positivism and interpretivism.

As mentioned earlier, researchers following the pragmatist paradigm often think that mixed methods are a necessity, which is similar to the he universal discourse. However, based on my own research practice, I do not see the universal and particularistic discourses as mutually exclusive. Regardless of my belief in pragmatism, which is consistent with the universal discourse, my choice of mixed methods in my doctoral research was primarily driven by my research question. Nevertheless, because of my inclination towards pragmatism, I am more likely to raise research questions that are more suitable for mixed methods.

My decision regarding the use of mixed methods was also based on my experience of and confidence in using both qualitative and quantitative methods. Before I started my PhD research, I wrote two master's theses, which respectively applied quantitative and qualitative methods. Thus, I believed that by using mixed methods, I could make use of my strengths. Moreover, I thought that a PhD thesis applying mixed methods could be an advantage in terms of demonstrating my research capacity. Especially in the higher education research communities in Europe, the vast majority of studies are qualitative in nature. My proven skills in using both qualitative and quantitative methods would possibly make my research distinctive. Nevertheless, such practical reasons were secondary to my main considerations following the suggestions of the methodology literature.

Finally, the type of research question I raised was suitable for one specific mixed methods approach, namely a sequential exploratory approach. Other kinds of questions may require different types of mixed methods approaches.

Conclusions

Based on a review of the mixed methodology literature and my own practice of conducting mixed methods research, I can conclude with the following inferences regarding the question: What drives the choice of mixed methods in higher education research? First, the primary drive regarding the choice of mixed methods should follow the doctrine of the methodology textbooks,

which accentuates the fitness between research question/purpose and research design/method. Although there are different types of mixed methods research, a shared feature of most is that the research question entails both exploratory and explanatory inquiries.

Second, researchers' beliefs in research paradigms may be a motive for them to conduct mixed methods research. The literature suggests that if researchers follow a pragmatist paradigm, then they will likely apply mixed methods in their research because it would best achieve the research goal. The paradigm of research pragmatism may also influence researchers to pose certain questions, which by nature require mixed methods to gain a full understating of the truth. As implied by Creswell et al. (2003), mixed methods add special value to research when the methods better serve the research purpose. Regardless of my strong beliefs in pragmatism, I have not always use mixed methods in my research. In many cases, my research tackles qualitative explorations only for practical reasons, though I see my qualitative research as one part of a mixed methods approach, with the expectation that the other part could be done in future studies.

Third, reasons of practicality do affect the choice of research design. Although one may be keen to conduct research by applying a mixed methods approach, one may not be able to simply because of time constraints and resource shortages. Conducting mixed methods research generally takes significantly longer than when a mono-method is employed. When conditions do allow, Bryman (2007) suggests a number of practical reasons to consider mixed methods, such as to be attractive to stakeholders, to have a better chance of getting funding or being published, etc. The use of mixed methods could be a way to make both a researcher and his or her research distinctive in the field of higher education research.

In this chapter, I have engaged in a preliminary effort to explore possible reasons driving researchers' decisions regarding mixed methods. In the higher education literature, there has been very few studies addressing issues relating to the use of mixed methods. It is much rarer to see discussions addressing the reasons behind researchers' decisions regarding mixed methods. I take the

opportunity to call for future research to review and analyse existing higher education studies in the area of mixed methods. It would also be interesting and useful to interview and survey the writers of these studies about what drive their choices of using mixed methods design.

References

Bryman, A. (2007). The research question in social research: What is its role? *International Journal of Social Research Methodology, 10*(1), 5–20.

Cai, Y. (2007). *Academic staff integration in post-merger Chinese higher education institutions*. Tampere: Tampere University Press.

Corbetta, P. (2003). *Social research: Theory, methods and techniques*. London: SAGE Publications.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, Calif.; London: Sage Publications.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, Calif.; London: SAGE Publications.

Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (2nd ed.). Upper Saddle River, N.J.: Pearson/Merrill/Prentice Hall.

Creswell, J. W., Plano Clark, V. L., Gutmann, M. & Hanson, W. (2003). Advanced mixed method research desins. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research*. Thousand Oaks. London. New Delhi: Saga Phblications, 209–240.

Curral, S. C. & Towler, A. J. (2003). Research methods in management and organizational research: Toward integratation of qualitative and quantitative techniques. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research*. Thousand Oaks. London. New Delhi: Saga Phblications, 513–526.

Denzin, N. K. & Lincoln, Y. S. (2003). Introduction: The discipline and practice of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Collecting and interpreting qualitative materials*. Thousand Oaks, London, New Delhi: SAGE Publications, 1–45.

Gomm, R., Hammersley, M. & Foster, P. (2000). *Case study method: Key issues, key texts*. London: SAGE.

Griffiths, F. (1996). Qualitative research: The research questions it can help answer, the methods it uses, the assumptions behind the research questions and what influences the direction of research. *Family Practice, 13*(1), 27–30.

Ivankova, N. V., Creswell, J. W. & Stick, S. L. (2006). Using mixed-methods sequential explanatory design: From theory to practice. *Field Methods, 18*(1), 3–20.

Johnson, R. B. & Onwuegbuzie, A. J. (2004). Mixed methods research: A research paradigm whose time has come. *Educational Reseacher, 33*(7), 14.

Leech, N. & Onwuegbuzie, A. (2009). A typology of mixed methods research designs. *Quality and Quantity, 43*(2), 265–275.

Miles, M. B. & Huberman, A. M. (1994). *An expanded sourcebook: Qualitative data analysis* (2nd ed.). Thousand Oaks, London, New Delhi: SAGE Publications.

Newman, I. & Benz, C. R. (1998a). *Qualitative-quantitative research methodology: Exploring the interactive continuum*. Carbondale: Southern Illinois University Press.

Newman, I. & Benz, C. R. (1998b). *Qualitative-quantitative research methodology: Exploring the interactive continuum*. Carbondale and Edwardsville: Southen Illinois University Press.

Newman, I., Ridenour, C. S., Newman, C. & DeMarco, G. M. P. (2003). A typology of research purposes and its relationship to mixed methods. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research*. Thousand Oaks. London. New Delhi: Sage Publications, 167–188.

Onwuegbuzie, A. J. & Leech, N. L. (2006). Linking research questions to mixed methods data analysis procedures. *The Qualitative Report, 11*(3), 474–498.

Onwuegbuzie, A. J., Slate, J. R., Leech, N. L. & Collins, K. M. T. (2007). Conducting mixed analyses: A general typology. *International Journal of Multiple Research Approaches, 1*(1), 4–17.

Papadimitriou, A., Ivankova, N. & Hurtado, S. (2013). Addressing challenges of conducting quality mixed methods studies in higher education. In J. Huisman & M. Tight (Eds.), *International perspectives on higher education research. Volume 9—Theory and Method in Higher Education Research*. Emerald, 133–153.

Plano Clark, V. L. (2005). *Cross-disciplinary analysis of the use of mixed methods in physics education research, counseling psychology, and primary care*. Doctoral Doctoral dissertation, University of Nebraska-Lincoln. Retrieved from http://digitalcommons.unl.edu/dissertations/AAI3163998

Rossman, G. B. & Rallis, S. F. (1988). *Learning in the field: An introduction to qualitative research*. Thousand Oaks, Calif.: Sage Publications.

Tashakkori, A. & Teddlie, C. (1998). *Mixed methodology: Combining qualitative and quantitative approaches* (Vol. 46). Thousand Oaks, CA: SAGE Publications.

Tashakkori, A. & Teddlie, C. (2003). *Handbook of mixed methods in social & behavioral research*. Thousand Oaks, Calif.; London: SAGE Publications.

Tashakkori, A. & Teddlie, C. (2003). The past and future of mixed methods research: From data triangulation to mixed model designs. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research*. Thousand Oaks. London. New Delhi: Saga Phblications, 671–701.

Teddlie, C. & Tashakkori, A. (2009). *Foundations of mixed methods research: Integrating quantitative and qualitative techniques in the social and behavioral sciences.* Thousand Oaks: SAGE.

Teddlie, C. & Tashakkori, A. (2006). A general typology of research designs featuring mixed methods. *Research in the Schools, 13*(1), 12–28.

Yin, R. K. (1994). *Case study research: Design and methods* (2nd ed.). Thousand Oaks: SAGE Publications.