

# Chapter 14

## Experiences in Applying Mixed-Methods Approach in Information Systems Research

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### ABSTRACT

*Mixed-methods research, which comprises both quantitative and qualitative components, is widely perceived as a means to resolve the inherent limitations of traditional single method designs and is thus expected to yield richer and more holistic findings. Despite such distinctive benefits and continuous advocacy from Information Systems (IS) researchers, the use of mixed-methods approaches in the IS field has not been high. This chapter discusses some of the key reasons that led to this low application rate of mixed-methods design in the IS field, ranging from misunderstanding the term with multiple-methods research to practical difficulties for design and implementation. Two previous IS studies are used as examples to illustrate the discussion. The chapter concludes by recommending that in order to apply mixed-methods design successfully, IS researchers need to plan and consider thoroughly how the quantitative and qualitative components (i.e. from data collection to data analysis to reporting of findings) can be genuinely integrated together and supplement one another, in relation to the predefined research questions and the specific research contexts.*

### INTRODUCTION

Research designs and methods adopted by Social Sciences researchers in general, and in the Information Systems (IS) field in particular, can be broadly classified into two main categories,

namely quantitative and qualitative (Jick, 1979; Orlikowski & Baroudi, 1991; Mingers, 2001; Creswell, 2003; Saunders, et al., 2003). However, it is widely understood and recognized that both quantitative and qualitative designs have their own advantages and limitations. For example,

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questionnaire survey, as a typical quantitative method, is a very efficient and economical way for collecting data from a large sample in a wide geographical area at the same time (Bryman, 2004, pp. 133-134). Nonetheless, a questionnaire is arguably a less efficient method to be used in exploratory studies that aim to investigate and explore sophisticated social contexts (Robson, 2002, p. 234). On the other hand, interview as a typical qualitative tool is very useful and efficient in gathering and exploring in-depth human insights and perceptions on complex social phenomena (Saunders, et al., 2003, p. 246; Bryman, 2004, p. 321). Nevertheless, as interviews can very often last more than one hour, it is very time-consuming to carry out interviews with a large group of respondents.

The realization of the inherent limitations of quantitative and qualitative approaches results in the emergence and use of an alternative research design, namely mixed-methods research. Mixed-methods research integrates and combines both quantitative and qualitative methods to investigate the same underlying phenomenon in one single study (Leech & Onwuegbuzie, 2009). This approach is deemed to be efficient in supplementing the weaknesses of single method designs and thus leading to richer findings and higher quality research (Jick, 1979; Mingers, 2001; Creswell, 2003; Fidel, 2008; Leech & Onwuegbuzie, 2009). It has been used as a distinct approach in social sciences research for more than five decades (Campbell & Fiske, 1959; Jick, 1979; Rocco, et al., 2003). In the IS field, a considerable number of researchers have advocated the use of mixed-methods approach since the early 1990s (Galliers, 1991; Lee, 1991; Robey, 1996; Mingers, 2001; Petter & Gallivan, 2004; Fidel, 2008). Curiously, despite strong and continuous support from IS researchers, the actual use of the mixed-methods approach in IS research has not been prevalent. In particular, Mingers (2003) reviewed the IS literature between 1993 and 2000, and found that only 20% of articles published in this period of

time adopted multiple research methods. In a more recent study, Fidel (2008) reviewed 465 articles published in four major journals in Library and Information Science (LIS) during 2005-2006. The study found that only 17% of these LIS articles adopted multiple methods, and only 5% could be considered as 'truly' mixed-methods research (Fidel, 2008). This low application rate of mixed-methods research in the IS field might be caused by a number of issues such as:

- There may exist some misunderstandings among IS researchers about the actual meaning of mixed-methods research (i.e. is 'mixed-methods' the same as 'multiple-methods' design?).
- IS researchers may find it difficult to decide which mixed-methods design would be suitable for a particular study (e.g. what priority or weight should be given to the quantitative and qualitative methods? In what sequence these methods should be conducted?).
- IS researchers may have difficulties in integrating and making sense of quantitative and qualitative components effectively across the entire study.

This chapter provides an in-depth discussion and some practical guidelines related to the above issues. It aims to help IS researchers make more appropriate decisions when designing and implementing mixed-methods research, and thus leading to more rigorous and meaningful findings. We also use two previous IS studies as examples to illustrate the discussion. These two studies adopted mixed-methods designs to investigate respectively ERP post-implementation risks and knowledge leakage risks associated with the design and use of 3D modelling.

The chapter is structured as follows. The next section provides a discussion and clarification on the concept of mixed-methods research, followed by a discussion on various commonly used mixed-

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