The Significance of Mixed Methods Research in Information Systems Research

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ABSTRACT
This paper discusses the significance of mixed methods research in information systems (IS) research. Mixed methods research allows a more holistic view in studying information systems (IS). It is useful in understanding the information systems world which is both social and natural in nature to present a full picture of the phenomenon. Mixed methods research therefore removes the limitation of the traditional approaches as one approach’s weakness is complemented by the other approach’s strength. The mixed methods research rationale is that no single research approach is sufficient by itself to capture the breadth and depth of complex IS research. This study is guided by the following question: What is the significance of mixed methods in information systems research? This paper therefore argues that mixed methods research provides an escape for IS researchers from the trap of seeing research as a single research design instead of benefiting from the best of both worlds.

Keywords
Philosophy, ontology, epistemology, paradigms, pragmatism, quantitative, qualitative, mixed methods, information systems

INTRODUCTION
Research is important for purposes of knowledge production. The aim of this paper is to discuss the value of mixed methods research. Creswell and Plano Clark (2011) argue that the researcher should articulate the philosophical assumptions that provide the foundation for any research. The philosophical assumptions provide the paradigms that shape the development of a research project. The researcher needs to articulate how different paradigms are going to be integrated in answering the research problem. Creswell et al. (2011) contend that a philosophical framework helps to position and articulate how the design fits with the study. In a similar vein paradigm operate at a broader perspective level, theoretical foundations operate at a narrow perspective in research as a lens taken by the researcher to provide direction for different phases of the research project such as social theory.

The theory provides the framework that guides the nature of questions to be asked and which, ultimately, are going to answered by the study. The choice of data collection - quantitative and qualitative or both - is determined by the theoretical framework. From a study’s perspective, the theory guides the formulation of the questions to be asked in the study and informs the procedures and major variables of the study. The theory also provides a framework for the data collection phase of the research (Caruth, 2013). This paper is organized as follows: section 2 presents the research paradigms, section 3 discusses mixed methods research; section 4 discusses the mixed methods research in information systems, section 5 concludes. The next section discusses the research paradigms.

RESEARCH PARADIGMS
Teddlie and Tahakkori (2009) define paradigm as various philosophical assumptions associated with a point of view in a study. Morgan (2007) note that there are several paradigms which exist simultaneously and compete in a given field. Therefore paradigms differ in terms of their philosophical elements such as ontology, epistemology, axiology, methodology and rhetoric as in highlighted Table 1 below.
Oates (2009) defines positivism as a scientific method inherited from the natural sciences that believes in an ordered and regular world view that can be studied objectively. The positivist approach assumption is that reality exists concretely, can be discovered, is measurable and is independent of the observers (Oates, 2009). Positivist and post-positivist views are more associated with a quantitative research approach whereas interpretivist views are more associated with the qualitative research approach. On one hand, the paradigm debate has been reduced by the emergence of the compatibility thesis which states that mixing quantitative and qualitative methods is acceptable to answer the research problem (Teddle et al., 2009). On the other hand, the incompatibility thesis, which claims that it is difficult to integrate methods from different paradigms, has been discredited by many scholars (Bryman, 2012). The next section discusses mixed methods research.

**MIXED METHODS RESEARCH**

Mixed methods research is a procedure for collecting, analysing and mixing or integrating both quantitative and qualitative data at some stage of the research process within a single study (Creswell et al., 2011). In mixed methods research, the philosophical assumptions guide the research inquiry at a broader level. Mixed methods research helps to resolve the limitation of using a single method design to understand the research problem. The research question, objectives and context...
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Mixed Methods Research Design

The benefits of a mixed methods approach are not always obvious as it serves various purposes in a research inquiry. The researcher’s appreciation of the purposes of the mixed methods approach may be important in understanding the goals and outcomes of the research inquiry. The main purposes of mixed methods research designs are complementary (combination of results), developmental (results from one informs the other), initiation (results questions other results) and expansion (where results extend breadth and range of inquiry). Completeness purpose in mixed methods research provides a holistic view of the phenomenon that cannot be achieved by one approach. Developmental purpose is associated more with a sequential mixed methods approach than a concurrent approach (Teddlie et al., 2009).

The main of the issues to consider in mixed methods approaches are the timing and ordering of the methods in the study (Morse and Niehaus, 2009). The ordering can be simultaneous (same time) or sequential (different periods). Mixed methods research design can be concurrent (each method independent of each other) or sequential (findings from one method or paradigm inform the other) to understand a phenomenon (Ivankova and Stick, 2007). The most common types of mixed methods designs are sequential explanatory, sequential exploratory, concurrent triangulation, sequential transformative, concurrent transformative and concurrent nested design (Morse et al., 2009). The next section discusses mixed methods research in information systems.

MIXED METHODS RESEARCH IN INFORMATION SYSTEMS

Although mixed methods research has received much attention in other disciplines like social science, it has been suggested that IS can also benefit because of its interdisciplinary nature (Warfield, 2010). The interdisciplinary nature of information system means that it includes different disciplines and paradigms making it necessary to use a mixed methods research approach (Peng et al., 2011). The suitability of mixed methods research in IS is based on the fact that some aspects are found in the scientific method which requires quantitative methods and other aspects are associated with social sciences which require qualitative methods (Warfield, 2010).
Traditionally the most common research methods in IS are quantitative and qualitative (Oates, 2009). The two traditional research methods have been found to have limitations to particular IS research situations. While the quantitative method has been found to be economical and efficient in collecting large samples of data, it has weaknesses in investigating social contexts associated with organisations. The qualitative method has been found to be suitable for investigating complex social phenomenon using interviews but has been found to be time-consuming and difficult to use to cover a large group of participants (Peng, et al., 2011). The use of social science theories from other fields such as psychology and organisation behaviour fits well with the IS/IT human element (Venkatesh et al., 2013).

Mixed methods research helps improve the validity of the research through triangulation and convergence of multiple and different sources of information (Venkatesh et al., 2013). Mixed methods research design can make contributions to IS theory and practice where most of the findings remained inconclusive because of the complexity of IS research. Venkatesh et al. (2013) suggest that a substantive theory stance is a valid and powerful paradigmatic position for mixed methods research in IS due to the nature of the field and the need to develop novel theoretical perspectives. The next section presents the conclusion.

CONCLUSION

This paper provided the rationale for using mixed methods research in information system research. This paper argues that the interdisciplinary nature of information systems makes it necessary to use a mixed methods research approach because some aspects of IS discipline are found in the scientific method, which requires quantitative methods, and other aspects are associated with social sciences which requires qualitative methods. In that vein, the diversity and complexity of the IS discipline, makes it necessary to use theories from both social sciences (qualitative) and natural sciences (quantitative) to understand phenomena.

The mixed methods research has, therefore, the potential to add more insight into issues of IS research diversity of application to practice, which is not possible with a single approach. In addition, the use of mixed methods research in IS, adds rigor and validity to the research through triangulation and convergence of multiple and different sources of information. Mixed methods research may therefore be a solution where a single method does not sufficiently provide insight into a complex phenomenon. The contribution of this paper is therefore to highlight the benefits of mixed methods research to information systems as way to emancipate IS researchers who are still trapped and prejudiced by traditional approaches.

REFERENCES


