Chapter 2
Using Simple and Complex Mixed Methods Research Designs to Understand Research in Information Science

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ABSTRACT

Mixed methods research combines qualitative and quantitative research approaches to describe multiple realities. After identifying a research problem and concluding that it can be comprehensively addressed by collecting quantitative and qualitative data concurrently or in phases, a researcher may choose to either use simple or advanced mixed methods designs. Studies have demonstrated that mixed methods research is not commonplace in library and information science research. The two-eyed seeing principles are given as an example of how indigenous theories and knowledge systems can be combined with Anglo-Saxon philosophical assumptions that dominate the mixed methods research movement to facilitate the production of knowledge that is contextually relevant and useful to the indigenous environment.

INTRODUCTION

Social science research has its roots in the scientific method, the development of which was influenced by three major research methodological waves. The first wave was the quantitative, based on the positivist epistemology, followed by the qualitative, which was driven by interpretivism. The third wave was based on a pluralist worldview resulting from the synthesis of the first and second waves, which set the stage for the emergence of what has been termed the third methodological movement, or third research community (Teddlie et al., 2021). The third methodological wave buried the paradigm wars and ushered in mixed methods research (MMR). Many disciplines are finding MMR attractive because of its power to provide multiple perspectives of reality in a single study, and its ability to offer an explanatory,

exploratory, and confirmatory understanding of a phenomenon in one study, by combining qualitative and quantitative strategies (Molina-Azorin & Fetters, 2016; Ngulube, 2013, 2020a, 2020b; Ngulube & Ngulube, 2015; Teddlie et al., 2021). Furthermore, MMR has the potential to provide a relatively more comprehensive picture than would be obtained from using a mono methodology.

Researchers can develop, explain and validate theory in one study, when using MMR. Its ability to provide superior inferences, by concurrently combining findings from qualitative and quantitative data, is another value-add (Teddlie et al., 2021). The integration of the two datasets provides stronger inferences. MMR is, however, underdeveloped in the developing world (Alatinga & Williams, 2019; Harris, 2021) and in Library and Information Science [LIS] (Fidel, 2008; Granikova et al., 2020; Hayman & Smith, 2020; Ngulube, 2020a; Ngulube & Ukwoma, 2019; Ullaha & Ameen, 2018).

The limited adoption of MMR in LIS may be attributed to the confusion and uncertainty prevailing among researchers, on how to apply the methodology (Morse, 2010), as well as the existence of many variants thereof (Creamer, 2018a; Denscombe, 2008). The existence of numerous variants of MMR has partly led some researchers to find it difficult to distinguish between multimethods and MMR (Ngulube, 2020a).

This chapter contributes to MMR methodological literature in the hope that Information Science scholars may embrace it, to obtain a comprehensive understanding of the complex and multidisciplinary nature of their field. The objectives of this chapter are to

- trace the growth of MMR
- differentiate MMR from multimethods and quasi-MMR
- describe the philosophical stance of MMR
- encourage researchers to think beyond the Anglo-Saxon MMR tradition
- underscore the role of integration in MMR studies
- identify basic and complex MMR approaches, and
- describe sampling and data-analysis techniques in MMR.

The outline of the chapter is structured along these objectives.

GROWTH OF MIXED METHODS RESEARCH

The 1950s to 1980s were the formative years of MMR, followed by a period of debates and controversies lasting up to around 2010, before the ensuing consolidation period (Creswell & Plano Clark, 2018). Its growth began with the emergence and acceptance of multimethods, ushered in by the idea of the multitrait-multimethod matrix of psychological traits, advocated by Campbell and Fiske (1959). Triangulation, which was developed from that concept by Webb et al. (1966) and Denzin (1970), weakened the conflict between positivism (quantitative orientation) and interpretivism (qualitative perspective), and set the stage for the emergence of MMR. Greene et al. (1989) and Creswell (1999) were instrumental in the development of MMR up "to the point where it is a separate methodological orientation with its own worldview, vocabulary, and techniques" (Tashakkori & Teddlie, 2003, p. x).

It is by understanding the evolutionary stages of the methodology, that mixed methods researchers can use mixed methods terminology both contextually and appropriately. For instance, triangulation – a popular MMR design from the 1980s (Greene et al., 1989) – drifted out of the related discourse when

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