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Building Theory using Methodological Pluralism in Computational Theory Construction

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Building Theory using Methodological Pluralism in Computational Theory Construction

Research-in-Progress

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ABSTRACT

We propose some guidelines to triangulate qualitative data analysis by extending the computational theory construction approach. Our approach addresses the challenge of methodological pluralism, which combines disparate computational techniques, methods, and lexicons (Miranda et al., 2022). Although previous literature has identified the use of mixed methods in information systems (IS) research (Reis et al., 2022), support of complementary inferences and their validation can be improved. Thus, we propose an iterative process to discover frames (Miranda et al., 2022) in qualitative data, such as social media, transcripts, and articles. We will elucidate the following aspects of computational theory construction research with methodological pluralism: a) Method design and fit, b) Data sampling and wrangling strategy, c) Pattern recognition and convergence, d) Theoretical inferences.

First, we examine the distinctions in employing a methodologically plural approach with qualitative methods. The methodologically plural approach leverages multiple techniques and methods to build theory and provides a multi-level picture for thorough and richer insights. The method design explores the appropriate methodological approaches and lexicons from literature support that suits the data. We provide some guidelines on how researchers can adapt multiple methods in the subsequent analysis phases. Research with temporal analysis needs to construct a timeline or episodic periods, such as, for specific events in a climate movement (e.g., Lee and Bharati, 2022; Vaast et al., 2017). The episodic periods are important to understand the research context, data nuances, and overall focal phenomenon. The qualitative data is analyzed in an automated and systematic approach, as adapted from previous IS research methodologies, such as natural language processing (NLP). Wrangling and cleaning the data appropriately for each method is an important preprocessing phase and a major challenge. In qualitative data analysis, handling noise reduction involves some automated methods.

We plan to illustrate how multiple qualitative analysis techniques, such as NLP, semantic network analysis (SNA), and non-negative matrix factorization (NMF), can be leveraged for diachronic analysis in this process. The analyses assist in the discovery of key topics with topic modeling or word to word co-occurrences graphs with SNA. Using an iterative approach, a comprehensive convergence of the categorization needs to be developed during the iterative analysis phases that involve multiple scholars as well as literature support. Researchers can perform model calculations or apply further statistical analysis on their data. The approach includes robustness and validation checks when analyzing new or existing constructs for contextual understanding of patterns within the data. Lastly, theoretical inferences can be discerned from the data analysis phases.

Keywords

Methodological pluralism, computational theory construction, qualitative analysis, and machine learning.

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