

Mixed methods research practices among Filipino and foreign authors

Ana Helena R. Lovitos

Professional Schools, University of Mindanao, Davao City, Philippines

Dondon Parohinog

Language Institute, Bangkok University, Bangkok, Thailand

Abstract

Mixed Methods Research (MMR) has been employed for years by researchers from all levels in the academe. Researchers following this design generate data from multiple sources. However, some problematic notions about MMR emerged from data collection and analysis. In the same argument, studies following a mixed methods design utilize multiple data sources without clear justification on how each data source complements the other. This study conducted parallel analyses of articles that employed a mixed methods research design that was published in international journals. Several articles were analyzed through content analysis. It focused on creating a tabular and numerical representation of mixed methods practices following a Mixed Methods Data Analysis (MMDA) framework, classifying research into four categories: concurrent, embedded, explanatory, and exploratory MMR. This framework enabled the researchers to create a comprehensive MMR practice by examining the design implementation. The analyses from different purposes and orientations yielded comparable but different results.

1. Introduction

Combining quantitative and qualitative approaches (Alexander, 2021) - mixed methods research design acknowledges each contribution to a research project. Mixed Methods Research (MMR) corroborates findings gained from each approach and informs one method. However, the central aim of this study is to understand the position of mixed methods research as regards data collection and analysis. Much criticism over the practice of mixed methods research came into being when the concept was approached from different perspectives, namely, questionnaires, interviews, or focus groups without one informing the other. Morgan (1998) argued that researchers in the health industry were hopeful about understanding the complexity of factors that influence health. The stumbling block to the success is attributed to two factors: technical problems in combining these traditions and conflict between paradigms. The same can be seen in a predominantly quantitative world of psychology. Frost and Shaw (2015) echoed the same sentiments citing irreconcilable epistemological differences between traditions. Criticisms about MMR are unlikely specific to health and psychology, but they are also found in social science disciplines. The researchers examined selected mixed methods articles published by Filipino and foreign authors in this paper. The general purpose of this paper is to establish the patterns of implementing Mixed-Methods Research (MMR) design in research across disciplines. Knowing where MMR sits in different sections of the article provides comprehensive guidelines for future researchers on maximizing the potential of MMR in their projects.

1.1 Research questions

1.1.1 What are the common approaches to mixed methods research employed by Filipino and foreign authors? Does mixing lie in the data sources or the analysis?

1.1.2 How are mixed methods employed in research among Filipino and foreign authors?

2. Literature review

2.1 *Historical view of mixed methods design*

Mixed methods design uses quantitative and qualitative data to better understand a research problem. It is also applied when one type of research (qualitative or quantitative) is insufficient to address the research problem or answer the research questions (Creswell et al., 2003). In addition, mixed methods research designs involve collecting quantitative and qualitative data and integrating the two primary methods in one or several phases of the investigative process (Creswell, 2008; Dornyei, 2007).

Johnson and Onwuegbuzie (2004, as cited in Watson Todd, 2012) purport that a quantitative research design that employs rating scale surveys and experiments centers around a positivist philosophy to verify research objectives. They contend that while the 'quant – qual' distinction perhaps dominated social science research in the twentieth century, their dichotomous relationship became a source of disputes among researchers in the last twenty years or so. The purpose is to redefine the dichotomy as a continuum with Mixed Methods Research (MMR) forming a bridge between the two extremes.

Qualitative research is the type of educational research that investigates the participants' views. It answers broad, general questions; collects data consisting mainly of words or text from participants; describes the analysis of these words for themes; and conducts the inquiry in a subjective and biased manner. It generally involves listening to the participants' voices and subjects the data to analytic induction (e.g., finding common themes) and is more exploratory in nature (Creswell, 2012).

Meanwhile, quantitative research is a type of educational research in which the researcher decides what to study; asks specific, narrow questions; collects quantifiable data from many participants; analyzes these numbers using statistics; conducts an unbiased inquiry. It generally attempts to quantify variables of interest and questions must be measurable (Fischler, 2014). Generally, mixed methods research designs such as convergent parallel, explanatory sequential, exploratory and embedded have the following components: (a) the overall content aim, (b) the type of mixed methods design, (c) the forms of data collection that will be used (very general), (d) the data collection site(s) and (e) the reason for collecting both forms of data.

There are several observations about the use of mixed methods design. First, it may be considered trendy but, at times, problematic. Researchers must realize that doing mixed methods design is not merely a data collection concern, particularly the gathering of quantitative and qualitative data. Instead, it is used to develop another objective, framework or method through the analysis emerging from the combined data. The second is the derivation of the mixed methods design. The mixed method design is observed by collecting quantitative data which is performed first before the analysis. Then, the analysis results become the basis for the collection of qualitative data. The implication is that quantitative results inform the qualitative data. The third observation lies in data collection from various sources (Creswell, 2012; Fischler, 2014).

Furthermore, many researchers have not yet practiced the real essence of MMR design. There should be a precise integration of the analysis of results in the other aspects, such as gathering data for triangulation and other similar purposes. For example, a researcher may have an open-ended question in the survey questionnaire. The fourth observation is that there have been instances of unifying specific terms to mixed methods. Researchers must endeavor to find a unified or fused term that substantiates the real meaning of MMR design. The final observation is on the role of research purpose in the mixed methods design (Creswell, 2012; Fischler, 2014).

MMR is deemed appropriate in the validation and corroboration of results despite the observations mentioned. The reason can be attributed to the researcher's ability to use one method to inform another. In addition, MM may be employed provided that the purpose of the research is one of the following: a) to examine the research question from different aspects; b) to elucidate or simplify unexpected findings and potential contradictions; c) to particularize or expound results from other methods or d) to generalize outcomes from qualitative studies (Creswell, 2012; Fischler, 2014). It is also important to note that generalization is only possible when substantial data are collected from a large population/sample. The findings from the data analysis will be used to formulate another objective, framework or method.

2.2 Some criticisms of MMR

A mixed-methods study involves collecting and analyzing both quantitative and qualitative data – those that are collected concurrently or sequentially - in a single study (Creswell, 2009; Morse & Niehaus, 2009). It includes integrating data at one or more stages in the research process. Once the researcher has identified that the research problem calls for a mixed methods approach, the next step is to choose a research design that best addresses the problem. Each preliminary design has its history, purpose, considerations, philosophical assumptions and strengths. Researchers must recognize that mixed methods designs can be fixed or emergent.

In conducting a mixed methods study, Creswell (2009) identified several controversies regarding the use of MMR design. These controversies include the changing and expanding definitions of MMR, the questionable use of quantitative and qualitative descriptors and whether MMR is a new approach. The latter controversy drives the interest in MMR. It also keeps the debate going to find answers to the relationship between MMR and post-positivism. There remain topics or ongoing discussions such as the fixed discourse in MMR, adoption of bilingual language for its term, confusing design possibilities for MMR procedures, misappropriating designs and procedures from other research approaches, and the added value of mixed methods research.

Several typologies illustrate the complexity inherent in the conduct of MMR. However, a persuasive and robust mixed methods design addresses the decision level of the integration, priority, timing and mixing. Timing refers to pacing and implementation. It pertains to the temporal relationship of quantitative and qualitative designs within a study. Timing may be non-sequential, concurrent, sequential (quantitative first) or sequential (qualitative first) (Creswell, 2009).

2.3 Designing mixed methods research

A researcher may consider four processes (Bazeley, 2009; Creswell, 2009). Firstly, weighing also referred to as priority, is of relative importance in choosing a research design to answer a particular research question. It may be that the priority is quantitative over qualitative or vice versa. It could also be equal weighting which means that both are equally important. Secondly, mixing is the process of merging the two data sets. It is the interrelating, combining or integrating of quantitative and qualitative data. It also refers to the 'when' and 'how' mixing occurs.

There are three processes of mixing, namely connecting, integrating and embedding. Connecting relates to analyzing one set of data to collect the second set of data. It can be mixed during data collection or interpretation. Integrating uses a particular framework (theoretical or program) to bind together the data sets. It is mixing or merging during data analysis. Embedding is the insertion of one form of data within a larger design or procedure. Likewise, it is mixing at the level of design or theoretical framework. The different data sets can be triangulated to improve the inquiries by bringing multidimensional research strategies to research questions about lived experiences and individual realities (Bryman, 2007). For instance, to understand the lived experiences of women and oppressed groups, Hesse-Biber and Griffin (2015) explored different approaches (quantitative and qualitative) that feminist researchers employ. They found several social issues affecting women and discovered that different research methods might answer feminist research questions.

The third level of data integration may be posited explicitly or implicitly. Data derived from various sources are hardly considered explicit mixing but a collection of multiple methods (Creswell & Plano Clark, 2011). Explicit integration occurs at the level of data analysis. At this time, different sets of data from quantitative and qualitative methods are given which have corresponding levels of weighting, timing and mixing. Creswell and Plano Clark explicated four primary mixed methods design choices from these decisions. These designs were based on research purposes explained in detail in the article by the authors. Table 1 summarizes the types of design and the level of mixing that can also be read in the article of Creswell and Plano Clark.

2.3.1 Triangulation design

Triangulations are common when dealing with data collected from multiple methods. It is done purposely to collect different but complementary data on a single topic (Morse, 1991). The direct comparison and contrast of quantitative and qualitative data and findings serve various purposes, such as validation and expansion of quantitative results to qualitative data (Creswell & Plano Clark, 2011). Unlike other designs, triangulation is quite rarely sequential. Instead, it is implemented in the same timeframe and carries the exact weighting at the analysis stage. A more detailed discussion on triangulation is written by Jick (1979), Brewer and Hunter (1989), Green et al. (1989) and Morse (1991).

2.3.2 The embedded design

Embedded design is advantageous when research questions require different answers. Investigating cause and effects, for example, requires a highly quantitative method of gathering data. In embedding a qualitative design, open-ended questions may be integrated into the instrument. Caracelli and Greene (1997) explained that an embedded design is done when a researcher embeds qualitative data in a quantitative methodology or vice versa. However, one supplements the other in the overall design.

2.3.3 The explanatory design

Explanatory design gathers qualitative data built from the initial results of the quantitative method in a two-phase sequential design. Likewise, Morse (1991) explained that explanatory design is suitable when a study requires another data set to explain significant results. The data collection phases of an explanatory design put more weight on the quantitative design being the first method to be implemented. The two variants of explanatory design, according to Creswell and Plano Clark (2011), are the follow-up explanations model (the purpose of gathering qualitative data is to explain the results of the primary method) and the participant-selection model (to determine the appropriacy of the participants).

2.3.4 The exploratory design

The exploratory design is quite the opposite of the explanatory design in terms of the initial data gathering method. In explanatory design, quantitative precedes qualitative method while exploratory design works the other way around. Green et al. (1989) stated that the results of the first method would help develop the succeeding methods. In this case, neither framework, theory, nor instruments are available to the researchers. Exploratory design can also generalize different results (Morse, 1991) or test an emergent theory (Morgan, 1998).

Table 1. Four major design types

Design Type	Variants	Timing	Weighting	Mixing	Notation
Triangulation	<ul style="list-style-type: none"> • Convergence • Data transformation • Validating quantitative data • Multilevel 	Concurrent: quantitative and qualitative at the same time	Usually equal	Merging of data during the interpretation or analysis	QUAN + QUAL
Embedded	<ul style="list-style-type: none"> • Embedded experimental • Embedded correlational 	Concurrent or sequential	Unequal	Embedding one type of data within a larger design using the other type of data	QUAL (quan)
Explanatory	<ul style="list-style-type: none"> • Follow-up explanations • Participant selection 	Sequential: Quantitative followed by qualitative	Usually quantitative	Connecting the data between the two phases	QUAN → qual
Exploratory	<ul style="list-style-type: none"> • Instrument development • Taxonomy development 	Sequential: Qualitative followed by quantitative	Usually qualitative	Connect the data between the two phases	QUAL → quan

3. Method

3.1 The data

The data used in this study were taken from twenty research articles authored and published by Filipino and foreign authors. The research articles were randomly selected from reputable journals such as the Sage Journals of Mixed Methods Research (<https://journals.sagepub.com/home/mmr>), Asian Journals of Asian Language Studies and Journal of Arts, Science and Commerce. The articles subjected to analysis employed mixed methods research through quantitative and qualitative data collection methodologies. These data collection instruments included interviews and questionnaires, performance tests and observations, questionnaires and follow-ups, focus group discussions, document analysis, performance tests, and interviews with selected participants.

3.1 Research design

This study aimed to investigate Filipino and foreign researchers' mixed methods research design. It determined the incorporation of qualitative components into a study and the ways mixed methods design were developed from one phase to another. The researchers analyzed the employment of mixed method design in the articles under investigation. Notably, they explored whether the qualitative approach was initially used to serve as the basis for adopting a particular framework of a quantitative study. It was done purposely to obtain more detailed information.

In collecting numeric and text data, the analysis was extended to discover the priority and sequence in applying the mixed methods research designs. The purpose was to examine whether quantitative and qualitative data are of equal weight or one outweighs the other. In terms of sequence, the study endeavored to determine whether the authors collected both quantitative and qualitative data simultaneously, gathered quantitative data first; followed by qualitative data, or the other way around.

Table 2. Implementation of mixed methods design (Creswell et al., 2003)

Notation	Weighting	Mixing	Theorizing
Non-Sequential Concurrent	Quantitative	Connecting	Explicit
Sequential Quantitative-First	Qualitative	Integrating	Implicit
Sequential Qualitative-First		Embedding	

3.2 Content analysis

This study analyzed some of the critical characteristics of mixed methods designs of the published articles written by Filipino and foreign authors. This study conducted a content analysis to provide a systematic and objective means to make valid inferences from verbal, visual or written data to describe and quantify specific phenomena (Downe-Wamboldt, 1992). Krippendorff (1980) defined content analysis as a replicable and valid method for making inferences from observed communications. The analysis includes looking at the rationale, test findings of the first phase and explanation of the results. This investigation was aimed at providing a complete understanding of either quantitative or qualitative methods. Part of the analysis was discerning the critical decisions in choosing a mixed methods study, the level of interaction between the quantitative and qualitative strands, prioritizing of the strands, the timing of the strands and the process of mixing the strands. The framework for analysis was based on the matrix of Creswell et al. (2003) in the implementation of mixed methods design. In addition, the analyses also involved the mixed methods research design purposes when the MMR was used, including the design strengths and challenges.

5. Results

Consistent with the purpose and the research problem, a sequential MMR design was employed. Content analysis of previously published articles was done to examine mixed methods practices among Filipino and foreign authors. The results of the analysis were presented quantitatively first, then explained qualitatively. The execution of document analysis resulted in the discovery of the standard practices of Filipino and foreign authors in their employment of mixed methods research. The results are presented in the succeeding sections based on Creswell's framework.

5.1 Mixed methods practice by Filipino and foreign authors

Table 3. Timing in data integration

Authors	Concurrent %	Sequential quant first %	Sequential qual first %
Filipino	0	70	30
Foreign	20	20	60

As to timing, Filipino authors used 70 % timing for sequential qualitative first and 30% timing for sequential quantitative first. However, for the foreign writers, 60 % timing was applied to sequential qualitative first and then both sequential quantitative first and concurrent, resulting in 20 % timing, respectively. Timing can be related to what Morgan (1998) called two fundamental decisions. Priority decisions pair a principal and complementary methods in investigating a phenomenon. Sequence decision determines whether the complementary method is implemented before or after the principal method. Acosta and Acosta (2017) exemplified the use of principal and complementary methods in investigating the readiness of Higher Educational Institutions (HEIs) in the implementation of K to 12 Curricula. The qualitative method is built from the findings of the principal quantitative method. Implementing these two data collection methods points back to the complementarity of numerical and textual data. The authors devised a quantitative method to study the factors that influence readiness such as faculty-related and preparation plan variables. The findings revealed that they selected participants who would answer the open-ended questionnaires and interviews. A detailed presentation of the study is presented in Figure 1 below.

Figure 1. The diagram of mixed methods research by Acosta and Acosta (2017)

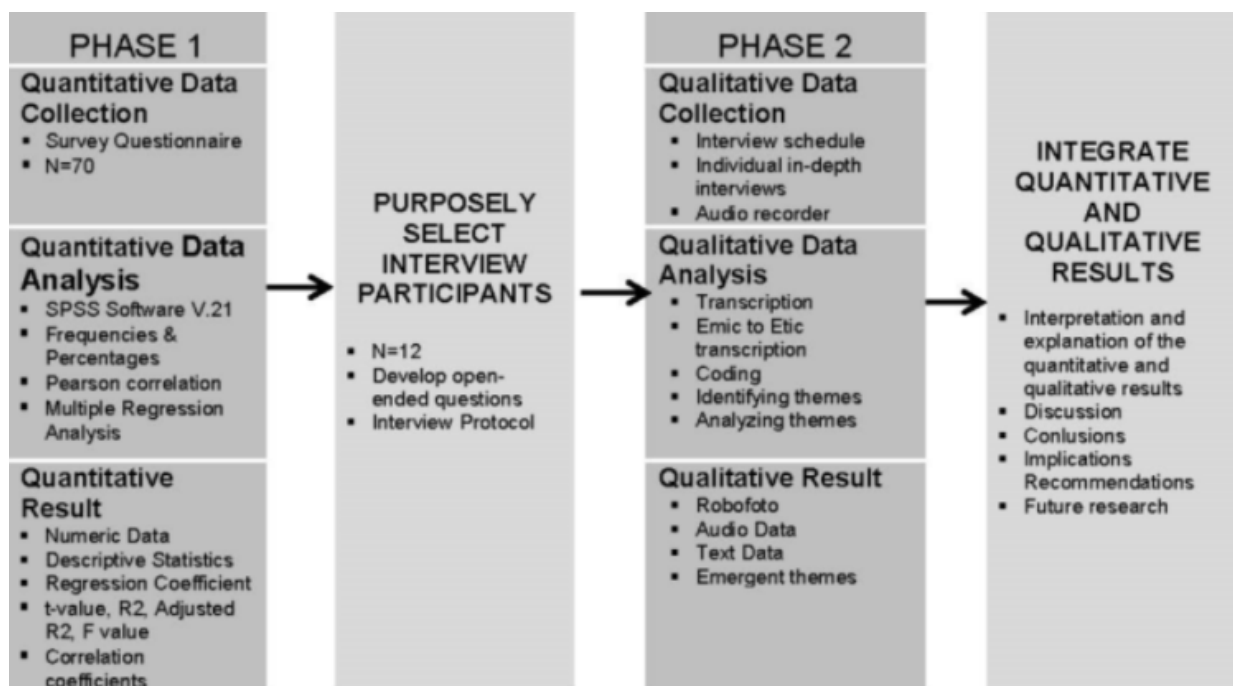


Table 4. Weighting in data integration

Authors	Quantitative %	Qualitative %
Filipino	20	80
Foreign	30	70

Both Filipino and foreign researchers yielded almost similar percentages in method prioritization or weighting in the data integration. As can be seen, 80% of prioritization was on qualitative while 20% for quantitative data by Filipino authors. Foreign authors, on the contrary, placed 70% weight on qualitative data and 30% on quantitative data. In priority decisions, the tendency to give both methods is far-fetched. Morse (1991) saw problematic results that a succeeding method is required to coordinate the results of the two similar methods. The researchers must decide which becomes the principal method to optimize its effectiveness (Morgan, 1998).

In Liu's (2006) investigation of EFL students' level of anxiety, more weight is given to qualitative methods through data sources. They include journals, observations, video recordings and interviews. Although a questionnaire was administered, the research purposes require a more in-depth qualitative method. The data integration had a crucial role in developing this research, especially how the questionnaire results (Foreign Language Classroom Anxiety Scale) have informed the semi-structured interviews for students and teachers. On the contrary, Cirocki and Caparoso's (2016) paper put more weight on the quantitative method, as evidenced by quantitative data sources such as survey questionnaires. They studied attitudes, motivations and beliefs in L2 Reading among the indigenous students in Southern Philippines. Their data were composed of survey questionnaires that were used to examine attitudes, motivation, and beliefs and a semi-structured interview and observations were used to further investigate the results of previously collected data.

Table 5. Mixing in data integration

Authors	Connecting %	Integrating %	Embedding %
Filipino	70	30	0
Foreign	20	10	70

On a similar note, Tashakkori and Teddlie (1998) and Green et al. (1989) emphasized data integration. Mixing data collection processes involves a certain level of data integration. It includes connecting (the analysis of one data leads to the need for another type of data), integrating (explicit integration of two data sets in the analysis or interpretation) and embedding (one form of data set can be embedded in a concurrent data collection). A more detailed definition can be found in Creswell and Plano Clark's (2011) article.

This framework has apparent variability because Filipino writers employed 70% connecting and 30% embedding. However, foreign authors used the opposite, i.e., 70% for data embedding while 20 and 10 % for data connecting and integration, respectively. Among the foreign authors, Bridwell-Michell (2013) practiced data mixing in examining how organizational phenomena from a macro level translate into micro-level specifically to explain how cultural institutions translate into individual attitudes and actions. The case study results were used to develop propositions about institutional logic. These propositions were tested through a survey. This mixing occurred at the data collection level which was different in all articles since mixing may also occur in the analysis stage. Guevarra et al. (2021) followed a multidimensional mixing in data collection and analysis stages. In the analysis stage, the equal mixing of quantitative data and the themes drawn from qualitative data resulted in the Precede-Proceed Model phases.

Table 6. Theorizing in data integration

Authors	Explicit %	Implicit %
Filipino	10	90
Foreign	50	50

Filipino and foreign authors differed considerably in theorizing mixed methods research. As presented in Table 6, theorizing mixed methods research comes in various ways albeit interesting to examine further. The ratio is 10 percent explicit against 90 percent implicit. Among the Filipino authors, the articles written by Acosta and Acosta (2017) and Enriquez (2014) theorized mixed methods design by contrasting, evident in their articles' abstracts. The former explicitly stated the purpose of employing mixed methods in their study, even giving detailed information if the quantitative and qualitative data collection. The latter discussed the research topic and dedicated one sentence to mentioning mixed methods as the research design.

Interestingly, the articles by foreign authors were equally divided in theorizing mixed methods. Alexander et al. (2021), although they never straightforwardly mentioned mixed methods, discussed in detail how qualitative data were collected in real-time during the participants' discussion of the visualized quantitative data. Yoon and Hirvela (2004) employed mixed methods in ESL students' attitudes towards using corpus in teaching L2 writing. Typical for many articles theorizing mixed methods implicitly, the abstracts are heavy on the detailed description of the research focus while the description of the research methodology is secondary.

Both Filipino and foreign authors applied the mixed methods research designs which indicate MMR perspectives in their abstracts. In addition, the methods they employed provided detailed data collection processes. Concurrently, collected data were obtained from various sources using different tools. Furthermore, their data analysis included integrating quantitative results into qualitative data collection or vice versa.

5.2 Employing mixed methods design

The results that addressed the first research question prompted the researchers to examine how mixed methods are discussed in the articles section by analyzing the abstracts and methodology sections. Taking a cue from the guidelines in implementing MM design, they found out that many Filipino authors implicitly discussed mixed methods in the methodology specified in the data collection process. This practice implicates the authors' stance and orientation about mixed methods research. While Filipino authors emphasize the research topics, foreign authors approach their studies with a highly methodological orientation by explicitly discussing how a mixed methods design answers the research questions effectively. Based on the results, foreign authors explicitly discussed MM in the abstracts and offered a deliberate explanation of the processes and stages of using these methods.

The massive gap between the design implementation of mixed methods between Filipino and foreign authors speaks volumes about standard practices in the Philippines. This practice was also influenced by the researchers' orientation and the funding agencies that traditionally require quantitative data and analysis (Creswell & Plano Clark, 2011). Frequently, research is conducted using questionnaires, checklists and other quantitative data-gathering instruments. The gap can also be attributed to the level of awareness among Filipino authors about the varied MM designs and implementation. Further, it can also be associated with Wilkinson and Staley's (2019) problems in reporting mixed methods research. These problems include underdeveloped quantitative and qualitative components in data collection and analysis stages, flawed logic of inquiry, and weak articulation of quantitative or qualitative components.

6. Conclusion and limitation

Filipino authors tend to gather quantitative data first before qualitative data. On the other hand, foreign authors mix the data collection process by integrating the results of one data collection process with the other. The articles have proven that explicit MMR is method-oriented research while implicit MMR is theoretical. Another notable result is that foreign authors used 'embedding' in their data integration. The results imply the perspectives to which Filipino and foreign authors are most inclined. Filipino authors have strong quantitative orientations, as evident in the sequential-quantitative first data collection process. We do not see this practice as problematic. However, researchers need to always be reflexive in their choices of data collection methods. Reflexivity allows an approach dependent on the necessity of the data to be collected. We ascertain the equality of the data collection process and the data itself to provide equal evidence for the analysis. The study's findings confirm the theory of Creswell and his colleagues (2008; 2009; 2012) on mixed methods designs. Nevertheless, generalizing is unlikely because of the limited number of articles subjected to analysis. We are optimistic about conducting a similar study with a broader scope to generalize and build theories revolving around Mixed Methods Research.

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