

Mixed Research Paradigm: A Parsimonious Approach!

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In this century, the horizon of scientific research is increasingly moving towards interdisciplinary, multidisciplinary, multifaceted, as well as dynamic which has challenged researchers to be proficient. Particularly, it has become more critical for the novice researchers to understand different research paradigms used by the frontiers while communicating, collaborating, and improvising new research methodologies. As there is no single research paradigm which has claimed as a most promising approach for obtaining scientific knowledge; hence, a competing methodology is created: as a mix research paradigm. Mixed research paradigm is an intellectual and practical synthesis based on qualitative and quantitative research; it is accepted as the third research paradigm (along with qualitative and quantitative research) and offers as a powerful choice that often provides the most informative, complete, balanced, and useful research results.¹

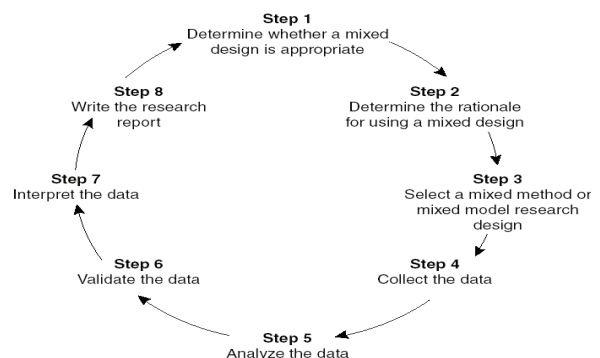
This mixed research paradigm has its most modern model²: consists of philosophical assumptions (methodology) as well as methods of inquiry; as a methodology – it has philosophical assumptions that guide for the collection and analysis of data; and as a method - it focuses on collecting and analyzing data in a single study or series of studies. As this mixed research paradigm encompasses both the features of conventional qualitative as well as quantitative research methods and utilizes methodologies with respect to their underlying research questions, rather than preconceived prejudice related to the specific paradigm.³

This mixed research paradigm is accepted as a complement to conventional qualitative and quantitative research paradigm, and known by many terminology: mixed method, multiple methods, multiple or mixed approaches, integrated methods, mixed models, multiple models, qualitative plus quantitative approach, combined qualitative and quantitative methods etc. This research paradigm can be adopted either in a single study at different phases in optimizing the strengths of each approach and counteract their limitations. In practice mixed research paradigm is divided as mixed method (inclusion of quantitative phase and qualitative phase in overall research design) and mixed model (mixing quantitative and qualitative approach within and across the stages of the research process).

In order to develop effective mixed research design, researchers need to be bilingual in quantitative research paradigm as well as qualitative research paradigm. Likewise in any other research processes, mixed research also starts with one or more research question(s) and adopts a cyclical, recursive, and interactional process. Recursion can take place within a single study or across related studies by informing future research and leading to new/reformulated research purposes and questions. Research questions also provide indications for setting boundaries and choosing research design including sampling scheme and type of instruments to be used as well as the data analysis techniques.

In this regards, mixed researchers have identified some purposes for using mixed research paradigm⁴- (a) for triangulating of results obtained from different methods: convergence, corroboration, correspondence; (b) as a complementary step for clarification of results from one method with the result from the other; (c) to expand the development of research process based on the results from other methods; (d) for the initiating the results obtained from other methods for the discovery of new perspectives, and (d) for expansion of the implications of the study by using different methods for different inquiry components. Actually, there are eight general steps in the mixed research process.⁵ These steps are nonlinear, so can follow in different orders depending on what particular needs and concerns emerge during a particular research study (refer diagram 1).

Diagram 1 Research Process in Mixed Research Paradigm



Steps of Mixed Research Paradigm:

1. Make sure whether a mixed research design is appropriate for your study and answers the set research question(s) that you have posed.
2. Specify the rationale for using a mixed research design which can help you to understand the issue in better way.
3. Identify the best mixed research design based on the research question(s) that you have formulated.
4. Collect the data based on the identified variables in different phases.
5. Analyze the data by adopting suitable quantitative as well as qualitative data analysis techniques.
6. Validate the data by adopting different ways for establishing validity and reliability strategies which can be different in quantitative and qualitative methods.
7. Interpretation of the findings starts simultaneously during the data collection in qualitative style; while for quantitative phase it can start after the field work.
8. In the mixed research, research report can be started during data collection rather than waiting until the end, because finding need to be integrated during reporting the mixed research report.

While designing mixed research, the researchers need to present criteria for selecting mixed research designs and describe the rationale for its use⁶ and need to consider specific points while integrating multi-methodologies: level of mixing (fully mixed or partially mixed), time orientation (two paradigms use concurrently or sequentially); in addition to the research objectives, type of data operations, type of analysis, and type of inferences made. In most of the mixed research, sample can be selected by means of both probability and non-probability techniques (purposive, convenience); however, sampling designs are much more complex than in monomethod studies because the former involves at least one extra level of sampling⁷

While selecting the sampling design, two steps are interactive and recursive so need to be specified earlier: the time orientation of the components (concurrently or sequentially), and the relationship of the qualitative and quantitative samples (identical versus parallel, nested versus multilevel).⁸ Moreover, mixed researchers need to describe all sample size considerations made for the quantitative phase as well as for qualitative phases, and it also provides detail information about the data collection instruments used for both the qualitative and quantitative phase.⁹ Particularly in case of quantitative phase, detail

information should include regarding data collection tool, if standardized structure instrument is used, the person/agency/developer of the instrument; the format of the instruments; when, how, and why they are being administered; the context and focus of data collection; the duration of data collection; and information about the quality of the data has to be mentioned clearly¹⁰

Unlike in monomethod research, in mixed research paradigm multi-methodology, multiple strategies and multiple tools are often used to explore variables from diverse respondents in order to obtain multiple perspectives. Moreover, mixed researchers often use complementary tools and strategies for data collection¹¹: open and closed-ended items with one or more sets of questionnaires; combination of interviewing and focus group discussion; standardized closed ended pre-designed tests along with open ended interviews; standardized tests and less structured/exploratory observation (participatory and non-participatory); documents analysis with nonnumeric and numeric archived data along with open/closed ended questions are often used.

Likewise while analyzing data, mixed researchers need to follow certain steps for better explanation and interpretation of the findings¹²: data reduction (reducing the dimensionality of the qualitative data and quantitative data), data display describing the data (both quantitative as well as qualitative) pictorially (graphs, charts, networks, matrices, lists, venn diagrams, and photographs), data transformation: quantitative data presented in tables and graphs are converted into qualitative data in terms of narrative description; data correlation (qualitative data being correlated with quantified data and vice versa), data consolidation (qualitative and quantitative data are combined to create new/consolidated data sets), data comparison (involves comparing data from the qualitative and quantitative data sources), and data integration (both qualitative and quantitative data are integrated into either a coherent whole (meta-inferences) or two separate sets of coherent wholes.

In case of qualitative phase, soon after the data collection, collected data are transcribed for analysis in reference to other methods of data collection. The interpreted simultaneously from the initial stage of field work and data interpretation continues throughout the research study along with data validation. There are certain strategies which can be adopted during data interpretation, such as reflexivity (self-awareness and critical self-reflection related to potential biases) and negative-case sampling (attempting to locate and examine cases that disconfirm your expectations and tentative explanations).

Similarly, mixed researchers need to explain how

categories are formed, the grounds on which one could justify the existence of a given set of categories; source of the name used to identify a given category, and at what point during the research process the categories will be specified. Hence, mixed researchers need to describe all verification procedures used: elements of legitimation for the qualitative component of mixed research at the data collection, data analysis, and data interpretation steps of the study.

Furthermore in mixed research, the qualitative data are analyzed with constant comparison analysis, keywords-in-context, word count; content analysis, domain analysis, taxonomic analysis, and componential analysis; which need to be described in detail whether any threats to trustworthiness, credibility, dependability, authenticity, verification, plausibility, applicability, conformability, and/or transferability of data.¹³ The users of mixed research paradigm also use the technique of quantizing (converting qualitative data into quantitative form), or qualitzing (converting quantitative data into qualitative form) for obtaining better explanation of the phenomena/issue. The data interpretation continues throughout research study. Data interpretation and data validation go side by side as far as possible by using certain strategies: reflexivity (self-awareness and critical self-reflection), and negative-case sampling (examine cases that disconfirm expectations and tentative explanations).

When describing the quantitative phase, mixed researchers should describe the process of statistical analyses (descriptive as well inferential statistics) that are going to use in linking them to the research problem, purpose, question(s), and/or hypotheses. In addition, mixed researchers should provide the name of the technique used to analyze the quantitative as well as qualitative data. For a comprehensive, indepth description of data analysis, software also can be used to analyze the quantitative and qualitative data should be disclosed (Statistical Analysis Software – SAS; Statistical Package Social Science- SPSS; Epidemiological Package; NVIVO; Ethnograph Software, QUAL Pack etc).

The mixed research users need to mention different sources and ways of collecting data collection techniques and methods that are used to reveal significance of the findings; particularly, while making inferences, researchers should clarify the importance of the quantitative findings: statistical significance, practical significance, clinical significance, and economic significance. For statistically non-significant findings, a post hoc power analysis can be performed and need to discuss the extent of the effect of low statistical power in the outcome of the study.

The findings of mixed research report can start during data collection rather than waiting until the end, and need to remember the nature of the writing style, structure, tone, influenced by the anticipated audience etc. A well written report should be exceedingly description of all steps of the mixed research process and should explain the context in which the mixed research study took place. Detail explanation should be presented to explain how the quantitative and qualitative findings relate to each other. There should be clear explanation at what point the mixing of two research paradigm took place; and need to mention the findings by triangulating the quantitative as well as qualitative parts to reveal the worthiness of the implementation of the mixed research paradigm.

Similarly, the mixed research report should reflect the highest standards of ethical practice both with respect to human participation and with respect to the execution of professional conduct and judgment in research; and researchers need to explain how ethical considerations are addressed in the study, including the following: informed consent of the participants, confidentiality agreements between the participants and the researchers, incentives given for participation, funding sources, potential conflicts of interest, and biases related to problems, contexts as well as evidence of institutional/ethical review board. In the same way, mixed researchers should specify study approval preferable in accordance with an institutional review board either in the report or in the cover letter submitted to the editor, and should write their report in such a way that they communicate the practical significance for policy, including limitations and the extent generalizability of the findings; and must mention the type and process of mixing and need to report the materialization of mixing during discussion of the results.

The proponents of mixed research paradigm have intensifying the scope of mixed research paradigm; it is being implemented by many researchers in their scientific studies and they also have facilitated in the advancement of its concepts in the scientific research communities.¹⁴ However, users of mixed research need to be aware regarding the constraints of the mixed research paradigm, as it is also essential to know the problems while implementing it. It is rather difficult for the users of monomethod research, because it is complex to implement by a single researcher to carry out both qualitative phase and quantitative phase at a time, especially when two or more approaches are expected to be used concurrently. Similarly paradigmatic challenges such as high economic cost (than monomethod); time consuming (prolong data collection period and data analyze, triangulate the findings;

difficulty in mixing the findings of qualitatively data with quantitative data, interpreting the conflicting results); as well as the users of mixed research have to be skillful at handling multimethod/multiple methodologies, including recognizing why and how to mix them appropriately.

As mixed research paradigm adopts an eclectic approach to answer the complex research questions by encompassing comprehensive, pluralistic, and complementary steps depending on the type of research question and research integration, it is considered as an extensive and creative form of research which comprises wider combinations. It is confirmed by many researchers that by using an integrated mixed methodology, a synergistic effect can be obtained to overcome the weaknesses of another method. As mixed research paradigm enhances the generalizability of the results in a wider perspective by adding the statistical verifications as well, the findings obtained from different strategies by adopting multiple approaches and methods are likely to result in complementary strengths and nonoverlapping weaknesses than the monomethod studies. Moreover, the findings obtained from multiple perspectives are reconfirmed across different approaches so that higher confidence can be given for integrated conclusion. Furthermore, mixed research paradigm also adds insights and understanding of the identified issue in holistic perspectives that might be missed when only a monomethod is used.

Hence, by considering the intrinsic worth of the mixed research paradigm, one can proclaim that it is a parsimonious research methodology applicable for perusing higher academic aspirations for enhancing quality research outcomes verified from multiple perspectives.

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