

Postmodern Openings

ISSN: 2068 – 0236 (print), ISSN: 2069 – 9387 (electronic)

Coverd in: Index Copernicus, Ideas RePeC, EconPapers, Socionet,
Ulrich Pro Quest, Cabel, SSRN, Appreciative Inquiry Commons,
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Postmodern Openings, 2012, Volume 3, Issue 4, December, pp: 137-151

The online version of this article can be found at:

<http://postmodernopenings.com>

Published by:

Lumen Publishing House

On behalf of:

Lumen Research Center in Social and Humanistic Sciences

Mixed Method Research: An Overview

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Abstract

This article gives a general overview of mixed method research. In mixed method, the researchers combine both qualitative and quantitative approaches in a single research project. The article first attempts to define mixed method research. Then it gives a comparison of qualitative and quantitative approaches. It also introduces the well-known controversy among the researchers: which of these approaches is superior? By explaining this controversy, the article identifies the need for mixed method research. Lastly, the article describes the process of mixed method research.

Keywords:

mixed method, research, qualitative approaches, quantitative approaches

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Introduction:

These days, mixed method research has gained acceptance and popularity in social sciences. This type of research has evolved in response to the controversies related to the superiority of qualitative and quantitative approaches over each other. Mixed method research unite *‘theoretical and/or technical aspects of quantitative and qualitative research within a particular study’* (Rocco et al, 2003:19). After the qualitative and the quantitative approaches, mixed method research is considered as the third methodological movement (Borrego, Douglas, Amelink, 2009; Teddlie, Tashakkori, 2003). Both qualitative and quantitative approaches have their own advantages and limitations. There are some advantages of qualitative research that cannot be gained by applying quantitative approaches. Just like that there are some unique advantages of quantitative research that are missing in the qualitative approaches. In most cases, similar type of generalization of result is also not possible in these two methods. Mixed method research strives for combining each other’s advantages and thus replacing the weakness of one method with the help of the strength of the other. Moreover, the findings of one method can be compared (and in many cases, substantiated) with the findings derived from the application of the other method. Thus the acceptability of the research results increases. Some definitions of mixed method research can be found in Table 1:

Table 1: Definitions of Mixed Method Research given by Different Authors

Author(s)	Definition
Creswell et all, (2003: 212)	A mixed methods study involves the collection or analysis of both quantitative and/or qualitative data in a single study in which data are collected concurrently or sequentially, are given a priority, and involve the integration of the data at one or more stages in the process of research.
Bloor and Wood (2006:116): Used the term multiple methods	The combining of different methods within the same study design. The purpose of such a combination may be additive, with different methods addressing different sub-topics (often sequentially), or interactive, with the same sub-topic being

	approached from different angles.
Denscombe (2007: 107)	The term ‘mixed methods’ applies to research that combines alternative approaches within a single research project. It refers to a research strategy that crosses the boundaries of conventional paradigms of research by deliberately combining methods drawn from different traditions within different underlying assumptions. At its simplest, a mixed method strategy is one that uses both qualitative and quantitative methods.
Rocco et al. (2003: 19)	Mixed method research is characterized as research that contains elements of both qualitative and quantitative approaches.

Rocco et al (2003) mentioned that:

“More than 40 years ago, quantitative researchers Campbell and Fiske (1959) suggested mixing methods to accurately measure a psychological trait. Their call for multiple methods ‘to ensure that the variance was reflected in the trait and not in the method’ (Creswell, 1994: 174) later expanded into what Denzin (1978) dubbed ‘triangulation’”.

Denscombe (2007: 108) identified three crucial features of mixed method research. First, it uses both quantitative and qualitative methods in a single research project. Second, it uses triangulation. Triangulation involves viewing something from more than one perspective (Denscombe, 2007). Third, it is problem driven. It focuses on different philosophical traditions in order to create a practical value of the research findings.

As it has a greater focus in practical problems, over the years, mixed method research became very popular among the researchers of various disciplines. These days, many social scientists are applying mixed research methods in their researches on diverse issues. These diversities can be noticed from the following examples:

- Borrego et al (2009) identified the need for mixed method research in *engineering education*.
- Rocco et al (2003) discussed on the application of mixed method research in *organizational systems*.

- Risjord, Moloney and Dunbar (2001) discussed on applying mixed method in *nursing research*.
- Gioia (2004) applied mixed research method in finding out *the meaning of work for young adults with schizophrenia*. She applied in-depth interviews and scaled measure in her study.
- Creswell, Fetters and Ivankova (2004) designed mixed method research for the study in *primary care*.
- Johnstone (2004) applied mixed methodology in *health services research*.
- Tashakkori and Teddlie (2006) wrote about the applicability of mixed method research in *social and behavioral sciences*.
- Foss and Ellefsen (2002) applied mixed methods in *nursing research*.

From these examples it becomes clear that mixed method research can be applied to different disciplines like social and behavioral sciences, health care, education, psychology, nursing and others. Over the years, the importance of this method is increasing in the different fields of knowledge. Denscombe (2007: 116) commented that:

“Conventionally, social research has followed one of two broad paths when it comes the style and nature of investigation. Either the research has set out to test hypotheses and check predictions based on theories by conducting ‘confirmatory investigations’. Or, it has aimed to discover things by engaging in ‘exploratory investigations’ which are not based on any firm hypothesis at the beginning. Mixed model research designs break the mould by incorporating both kinds of approaches within the same project”.

The main objective of this article is to provide with a general overview of the mixed method research. In the next section, the article gives a comparison of qualitative and quantitative approaches and discusses on the well-known controversy related to the superiority of qualitative and quantitative research. Lastly, the article focuses on the process and the applicability of mixed method research.

The article is absolutely based on the several published available literature like books, journal articles and discussion papers on mixed method research. The article can be treated as a general reading on mixed method research.

Qualitative or Quantitative Approaches?: The Paradigm War:

In general, research can be done from two approaches: the quantitative approach and the qualitative approach. Among these two, quantitative research has a relatively longer history (Hossain, 2011). According to Cavana, Delahaye and Sekaran (2000), by and large, the positivists focus more on the quantitative research approaches and the qualitative methods are mainly used in the interpretivist paradigm.

The positivist paradigm relies on using precise, objective measures through the use of quantitative data and this paradigm assumes that there is a set of universal laws that can be discovered (Cavana, Delahaye, Sekaran, 2000). Generally, in positivist paradigm, the researchers apply deductive reasoning and hypothesis testing (Puvenesvary et al, 2008: 1). Grix (2004) identified three basic phases of a quantitative research and they are (Puvenesvary et al, 2008: 1):

- Finding variables for concepts,
- Operationalizing them in the study, and,
- Measuring them.

But the interpretivists believe that as every human being does not face and experience the social and the physical realities in the same way, it is more important to identify how people think, react and feel under different contexts (Cavana, Delahaye, Sekaran, 2000). Puvenesvary et al. (2008: 2) mentioned that qualitative research mainly focuses on in-depth inquiry of a relatively small group of respondents and follows inductive strategy for theory generation.

Neuman (2000: 122) differentiated between the qualitative and the quantitative approaches as follows:

“Quantitative researchers are more concerned about issues of design, measurement and, sampling because their deductive approach emphasizes detailed planning prior to data collection and analysis. Qualitative researchers are more concerned about issues of the richness, texture and feeling of raw data because their inductive approach emphasizes developing insights and generalizations out of the data collected”.

The common methods that are used in quantitative researches involve questionnaire, structured interview, structured observation and content analysis (Puvenesvary et al., 2008: 2). The object of analysis is variable. In analyzing the data, quantitative researchers mainly depend on mathematical and statistical tools (Corbetta, 2003: 42). Corbetta mentioned that:

‘In any case, quantitative research always strives to produce hard data; for instance, to assess attitude towards some political personality, respondents might be asked to give the person a score from 1 to 100’.

Whereas, the qualitative researchers generally use interview, focus group, observation, oral history, ethnography, archival or document analysis (Puvenesvary et al., 2008: 2). The qualitative researchers apply a completely different method in comparison to the quantitative researchers and for them the object of analysis is individual rather than variable (Corbetta, 2003: 44). Corbetta (2003:42) mentioned:

‘Data produced by qualitative research are termed soft, as opposed to hard data mentioned earlier. Thus to return to our previous example, a politician’s popularity may be assessed by recording the various opinions expressed by the respondents; according to the point of view, culture, way of thinking, depth of analysis and mode of expression of each individual, judgment may run from simple and sober to complex and colorful’.

The issue of whether one should use qualitative approach or quantitative approach in a research has been an issue of debate among the researchers for long. This debate is termed as the *Paradigm War* (Tashakkori, Teddlie, 2006). It is because both of these approaches have their own advantages and disadvantages. Qualitative researchers find qualitative research more useful as it is more intensive and thus it can really probe into the problem. The disadvantage of qualitative research is that it cannot deal with a lot of variable and data. Quantitative research is variable based but qualitative research is case based (Corbetta, 2003: 44). Quantitative researchers find quantitative research as more useful because it can deal with a large amount of data and as these are hard data, mathematical and statistical tools can be applied to analyze them. Castellan (2010: 11-12) mentioned that though quantitative research can result in the clarification of a cause and effect relationship, it is unable to

infer meaning beyond the results achieved through statistical analysis. On the other hand, though through qualitative research, a better understanding can be gained, a cause and effect relationship cannot be safely generalized (Castellan, 2010: 12). According to Bryman (1984: 78):

“Qualitative research is deemed to be much more fluid and flexible than quantitative research in that it emphasizes discovering novel or unanticipated findings and the possibility of altering research plans in response to such serendipitous occurrence. This is contrasted sharply with the quantitative methodologist's research design with its emphasis upon fixed measurements, hypothesis (or hunch) testing, and a much less protracted form of fieldwork involvement.”

The use of quantitative method is very common in case of natural sciences. In case of social sciences, this method is used in disciplines like economics and psychology. Quantitative methods are also very popular in business research. Qualitative research is more popular in social sciences like sociology and anthropology (though many researchers in these disciplines also use quantitative research). It is said that the use of qualitative and quantitative research depends on the situation and the research question.

The Need for Mixed Method Research:

It is said that the base of mixed method research is the concept of *pragmatism*. In many cases it is said that pragmatism is the philosophical partner of mixed method (Denscombe, 2007: 116). Pragmatism involves the following core ideas (Denscombe, 2007: 117):

- The success of knowledge depends on its implication in solving the practical problems.
- A single scientific method cannot be treated as the best in order to reach an indisputable knowledge.
- Knowledge can never be absolute or perfect.

Though the debate related to the superiority of the two methods (qualitative and quantitative) continued for long, there was no doubt about the fact that both of these approaches have their own unique advantages. And if these advantages are combined, the disadvantages can be removed. That is why, these days, a different view is getting popularity:

“.....we must not ignore the different assumptions of qualitative and quantitative research approaches and that in fact, we must carefully consider how their divergences are reconciled.” (Clark, 2000: 3).

Up to 1950s, researchers in different disciplines generally believed in monomethod (this period is regarded as the ‘*purist*’ era) and mixed method emerged mainly after 1950s (Tashakkori, Teddlie, 2006). This new tradition got a huge boost in the 1990s. Now, the researchers are trying to utilize the advantages of both the methods (qualitative and quantitative) with the help of mixed method research. In applying a mixed method, the researcher actually wants to combine the quantitative and the qualitative approaches in one research. Barbour (1998) commented that by combining qualitative and quantitative methods, different approaches can be applied at the different stages of a project. In many cases, the researcher can first identify relevant variables through qualitative applying qualitative method and then apply quantitative approach on those variables. Moreover, if a researcher can derive similar findings from both the quantitative and qualitative approaches in the same research, the research findings get greater acceptability and greater generalization becomes possible. Denscombe (2007) mentioned that researchers use mixed method research for any of the following reasons:

- Improved Accuracy: Researcher’s confidence on the findings of the research increases when findings he/she can check the findings of one method with that of another. According to Greene et al (1989: 259) mixed method research “*seeks convergence, corroboration, correspondence of results from different methods*”.
- A More Complete Picture: A mixed method can give a better and fuller picture of the issue under the study. Data collected from different methods can be complementary to each other.
- Compensating Strengths and Weaknesses: Every method has its own strengths and weaknesses. The weaknesses of one method can be compensated by applying another method that does not suffer from that particular weakness.
- Developing the Analysis: An additional method can be used to produce further data and it can give a better and fuller picture of the issue under study.
- An Aid to Sampling: The information generated from one method can be used as the basis of selecting samples for another

method. Denscombe (2007: 113) gives an example on this issue: “*Sometimes this involves the use of a quantitative pilot study to provide background information that researchers use to guide their selection of the individuals who will participate in subsequent qualitative research involving things like focus groups and interviews*”.

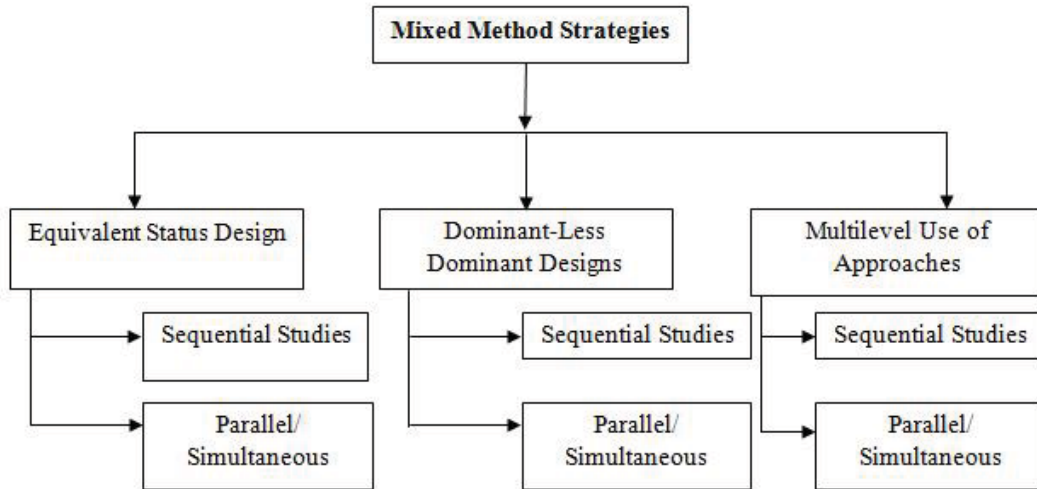
The Process of Mixed Method Research:

Different researchers follow different strategies in applying mixed methods. The basic issue is to combine the quantitative and the qualitative approaches in one research project. The strategy that is applied here is called *triangulation*. According to Creswell and Miller (2000: 126) triangulation is ‘*a validity procedure where researchers search for convergence among multiple and different sources of information to form themes or categories in a study*’. Bryman (1988: 131) mentioned that the social scientists hope to achieve a higher level of confidence in their research findings when they are derived from more than one method of investigation. Generally, in mixed method research, the researchers go for a method triangulation. According to Patton (1990: 465) method triangulation means:

“Comparing data collected through some kind of qualitative methods with data collected through some kind of quantitative methods”.

Denscombe (2007: 114) identified three kinds of mixed method research designs: sequential studies, simultaneous studies and multilevel studies. Tashakkori and Teddlie (2006) also classified these strategies as follows (figure 1):

Figure 1: Strategies of Mixed Method (Prepared from Tashakkori and Teddlie (2006))



These are described as follows:

- ***Equivalent Status Design:*** In this strategy, both qualitative and quantitative approaches get the same importance or equivalent status. This can be done *sequentially*. That means, the researcher can first go for doing a quantitative (QUAN) study and then a qualitative (QUAL) study (symbolically represented as QUAN/QUAL). Or the researcher can first go for a qualitative study and then a quantitative study (symbolically represented as QUAL/QUAN). Equivalent status design can also follow a *parallel* or *simultaneous* strategy. It means both qualitative and quantitative researches can be done at the same time in a simultaneous way (symbolically represented as “QUAL+QUANT” or “QUANT+QUAL”).
- ***Dominant-Less Dominant Designs:*** In this strategy either the qualitative or the quantitative approach gets more importance. Like equivalent status designs it can also be done either through paralleling or sequencing. Sequenced dominant-less dominant designs are symbolically expressed either as QUAL/quan (where the qualitative approach gets more importance than the quantitative) or QUAN/qual (where the quantitative approaches get more importance than the qualitative). In a parallel strategy these designs can take either a QUAL+quan form (where

qualitative approach gets more importance than the quantitative) or a QUAN+qual form (where quantitative approaches get more importance than qualitative).

- ***Multilevel Use of Approaches:*** This represents the use of different approaches in different levels (like micro level and macro level). Denscombe (2007: 114) gives an example of multilevel use of approaches: “...a ‘*multilevel design*’, for example, may use a *QUAL* approach to the study of individual pupils in a classroom (e.g. their feelings and experiences in relation to homework), use a *QUAN* approach to investigate features of whole classes (e.g., truancy rates and exam pass rates), and complement those with a *QUAL* approach looking at the history and environment of the school (e.g. reports by school inspectors, local newspaper articles) ”. These multilevel designs also can be both simultaneous and sequential.

All these three strategies are practiced by the researchers in different fields of knowledge.

The Problems Related to Combining Methods:

Though mixed method research is getting increasing popularity over the years, it is not free of criticisms. Many writers feel that the mixed method research is not feasible or desirable (Bryman, 2008: 604). They believe that the epistemological and ontological commitments of qualitative and quantitative researches are completely different (Bryman, 2008: 604):

“An ethnographer may collect questionnaire data to gain information about a slice of social life that is not amenable to participant observation, but this does not represent an integration of quantitative and qualitative research, because the epistemological positions in which the two methods are grounded constitute irreconcilable views about how social reality should be studied”.

Blaikie (1991) argues that the roots of positivist ontology and interpretivist ontology are not the same. On one hand, the positivists think that the measures used in the researches are unbiased. On the other hand, the interpretivists deal with how reality is viewed. As a result, it can be said that, the findings of these two methods cannot be combined. The QUAL/QUANT combination in a mixed research is actually an oversimplified approach (Denscombe, 2007: 119).

Moreover, Bazeley (2002) commented that ‘*good mixed methods research requires a good working knowledge of the multiple methods being used, their assumptions, analysis procedures and tools, and an ability to understand and interpret results derived from those different methods*’. Researchers may not have the expertise to deal with quantitative and qualitative methods together. Moreover, the readers of the researches may also not have enough idea about both of these approaches.

Writing up of the mixed method research can be problematic. The literature related to different strategies of writing up of mixed method researches is not enough. As a result, new researchers face problems in their write-ups.

There is no doubt that mixed method researches are expensive and in many cases, time consuming. Mixed method research needs to be well-funded. According to Denscombe (2007: 119):

“The combination of phases can extend the time-frame for research design and data collection”.

Moreover, in some cases, the findings generated from the quantitative method may appear to be contradictory with that of the qualitative method. It may create problems in drawing satisfactory conclusion of the research. Denscombe (2007: 120) commented that:

“The mixed method approach, to a large degree, operates on the assumption that findings will coincide and this will be a positive contribution to the research project. If the findings do not coincide, however, the researcher can be faced with a problem”.

Especially in case of PhD or any other kind of dissertation research, where time acts as a constraint, mixed method research may appear to be problematic.

Conclusion:

The main objective of this article was to give a general idea about mixed method research based on the several published available literature. From the discussions it can be summarized that after the qualitative and the quantitative approaches, mixed method research is considered as the third methodological movement. In this approach, the researchers mainly strive for combining both quantitative and qualitative approaches in a single research project. The reason behind this is that both of these approaches have their own advantages and limitations. If these approaches are combined, the advantages of both of these

approaches may complement each other and help in overcoming the limitations of using only one method. Moreover, if the findings of these two approaches are similar, it enhances the acceptability of the research. Though these days mixed method research is getting popularity in the researches of different fields of knowledge, this method also has some limitations. Lack of expertise in doing this kind of research may result in substandard research. This kind of research also demands ample time and money. Write-up of this kind of research also demands a different format and skill. So, proper planning is needed in order to do an acceptable research of this kind.

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