# The Optimization Management of Combination Research Methods in Improving the Quality of Writing Research Reports

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***Abstract***

*Management in writing research reports is a crucial activity for a researcher who wants to publish his research results. The research method is a method used to get results and discussion of research. In this study, the research method was used to explain the characteristics of quantitative, combination and qualitative methods with as many as 12 (twelve) points, and literature studies on the definition of 4 (four). The core of this study discusses management of the philosophical foundation of combination research, the characteristics of quantitative, qualitative and combination methods. Then discussed also the definition of combination methods, the nature of the combination method, variations of combination methods, combination research methods models: combination model or sequential explanatory design, combination model or sequential exploratory design, combination model or concurrent triangulation design and model combination method or concurrent embedded design. By doing this research, it is hoped that it can add insight to the authors of research reports regarding the management of combination research methods.*

***Keywords****: Management, Combined Research Methods, Writing, Research Reports.*

## 1. Introduction

The combined research methods or mixed research methods, are research methods that are based on the philosophy of pragmatism (a combination of positivism and pospositivism). According to Creswell and Sugiyono [1-2], pragmatism philosophy holds that the philosophy of pragmatism does not see that the world is not an absolute unity. With this view, researchers combine to see the world or reality from various approaches in collecting, managing and analyzing data, and not just with one type of approach, pragmatism philosophy is not only guided by a philosophical foundation in looking at reality, but using a combination of philosophical foundations namely philosophy quantitative and qualitative research, pragmatism is a basic view, or philosophy that is related to an action, situation and effect rather than cause (as in the philosophy of positivism) [3]. Pragmatism is related to an application of how to work and how to solve problems [4]. When associated with the method, the researcher can use all possible methods to understand the problem, thus the combination researcher views the philosophy of pragmatism opening the door to various research methods, various differences in looking at the world or reality, and various assumptions, so differences can occur in data collection and analysis, researchers individually have the freedom for management to choose the method to be used for research, thus researchers are free to choose the best methods,

techniques, and procedures for research so they can achieve the intended goals and objectives [5].

Based on this, it can be stated here that pragmatism philosophy views the world or reality as not an absolute or absolute unity, not only using a philosophical system in looking at reality. Thus the social situation can be holistic (postpositivism) but can also be classified (positivism) [6]. With such a situation, combination researchers can conduct research management with qualitative and quantitative methods together [7].

Thus combination research methods can be interpreted as research methods based on philosophical instruments (a combination of instruments and postpositivism) used to examine natural and artificial object conditions (laboratories) where researchers can as instruments and use instruments for measurement, management of data collection techniques can using tests, questionnaires and triangulation (combined), data analysis is inductive (qualitative), and deductive (quantitative), and the results of combination research can be to understand the meaning of and make generalizations [8-10].

Pragmatically and practically quantitative and qualitative research methods can be used as research methods. So far there have been thoughts that quantitative and qualitative methods cannot be combined. As stated by Thomas D. Cook and Charles Reichardt (1978) qualitative and quantitative methods will never be used together, because both methods have different paradigms and the differences are mutually exclusive, so that in research only one method can be chosen.

Susan Stainback (1988) says that each method can be used to complement other methods, if the research is carried out in the same location, but with different aims and objectives. This research method combines or combines quantitative research methods and qualitative methods to be used together in a research management activity, so that more comprehensive, valid, reliable and objective data can be obtained [11]. Creswell states that the combination method is a research approach that combines or links quantitative and qualitative research methods [1].

Tashakkori and Creswell in Donna M. Mertens, provides mixed methods definition as a research method, where the researcher collects and analyzes data, integrates findings, and draws inferential conclusions using two qualitative and quantitative research approaches or methods in one study. Combination methods are used for management to answer research questions on a project or research activity [12-13].

Combined research methods will be useful if quantitative methods or qualitative methods individually are not accurate enough to be used to understand research problems, or by using qualitative and qualitative methods in combination will be able to get the best understanding (when compared to one method) [14] . Through the management of critical studies and experience in the practice of using various field research methods, it turns out that the two research methods can be combined.

## 2. Research Method

To understand the use of quantitative, qualitative and combination methods, the characteristics of the three methods must be understood first [15]. These characteristics complement the characteristics of these methods in chapter 5. Johnson and Cristensen explain the characteristics of the three methods as follows:

**Table 1. Characteristics of Quantitative, Combined and Qualitative Methods**

| No | Characteristics | Quantitative | Combination | Qualitative |
|---|---|---|---|---|

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| | | | | |
|---|---|---|---|---|
| 1 | Scientific method | Confirmatory or top down. The researcher test hypotheses and theory with data | Confirmatory and exploratory | Exploratory or bottom up. The researcher generate new hypotheses and grounded theory from data collected during fieldwork |
| 2 | View of human behavior | Behavior is regular and predictable | Behavior is somewhat predictable | Behavior is fluid dynamic, situasional, social, contextual, and personal |
| 3 | Most common research objective | Describe, explain, predictive | Multiple objective | Explore, discover, construct and describe |
| 4 | Focus | Narrow-angle lens, testing specific hypotheses | Multilens focus | Wide-angle and deep angle lens, examining the breath and depth of phenomena to clear most about them |
| 5 | Interest | General law | Connect the local and general | Local, particular groups and people |
| 6 | Nature of observation | Attempt to study behavior under controlled condition<br>Attempt to isolate the causal effect of single variable | Study behavior in more then one context, perspective, or condition | Study behavior in natural environments<br>Study the context in which behavior occurs<br>Study multiple factors as they operate together in nature setting |
| 7 | Nature of reality | Objective (different observers agree on what is observed) | Common sense realism and pragmatic view of world | Subjective, personal, and socially construct |
| 8 | Form of data collect | Collect quantitative data based on precise measurement using structural and validated data collection instrument | Multiple form | Collect qualitative data such as in depth interview, participant observation, field notes, and open-ended questions.<br>The researcher is the primary data collection instrument |

| | | | | |
|---|---|---|---|---|
| 9 | Nature of data | Variables | Mixture of variables, word and image | Word, image, and categories |
| 10 | Data analysis | Identify statistical relationship | Quantitative and qualitative combination | Search for pattern, themes, and holistic features |
| 11 | Result | Generable finding providing representative of objective outsider viewpoints | Provision of insider and outsider viewpoints | Particularistic of finding providing representation of insider viewpoints Present multiple perspectives |
| 12 | Form of final report | Statistical report (e.g with correction, comparisons of means, and reporting of statistical significance of finding) | Mixing of number and narrative | Narrative report with contextual description and direct quotations from research participant |

Because mixed methods research or combinations are relatively new in the humanities social sciences, research needs management in presenting basic definitions and brief descriptions in proposals [16]. Following this, some things that need to be explained are related to the nature of the combination research method in the research proposal.

1. Explain chronologically and briefly the history of the development of mixed methods. Some sources identify that this research stems from multitraid-multimethod psychology and matrix Campbell and Fiske (1959) who are interested in converging and crystallizing quantitative data sources. However, there are also those who claim that this mixed method is driven by the desire to develop different methodologies in research.
2. Define mixed methods research, for example, by including definitions that focus on combining two methods (qualitative and quantitative) in one study. Also explain why researchers should use mixed methods design management (for example, to expand the discussion by applying two methods at once; to use an integrative approach to be able to gain a better understanding; or to test the results of research from different approaches).
3. Write down the challenges you face when applying mixed methods research. These challenges can be in the form of extensive data collection, the intensive nature of the analysis of text and numbers, and the demand for in-depth knowledge of both quantitative and qualitative forms of research..

## 3. Results and Analysis

Johnson and Cristensen provide definitions of mixed research methods as follows. "Research that involves the mixing of quantitative approach". Research that combines quantitative and qualitative approaches. Furthermore Creswell (2009) provides a definition of mixed methods research: "the approach to inquiry that combines or is associated with both qualitative quantitative forms of research. It involves philosophical assumptions that use quantitative and qualitative approaches, and the combination of both approached in a study. A combination research method is an approach in research that combines or connects between

quantitative and qualitative research methods [17]. It includes a philosophical foundation, the use of qualitative and quantitative approaches, and combines both approaches in research.

Creswell stated that, this method is often referred to as the multimethod method (using multi methods), convergence (two methods to one), integrated (integration of two methods), and combine (combination of two methods) [1]. Furthermore Johnson and Cristensen stated that "mixed research is also commonly called mixed methods research, but we use the simple term mixed research". Mixed research, usually called mixed research, is simpler called mixed research or combination research [18].

Combination research method is a research method that combines or combines quantitative methods and qualitative methods to be used together in a research activity, so that more comprehensive, valid, reliable and objective data can be obtained [19]. Comprehensive data is complete data which is a combination of quantitative and qualitative data. Valid data is data that has a high degree of accuracy between data that actually occurs with data that can be reported by researchers [20]. Through a combination of two methods, the data obtained from the study will be more valid, because the data that is correct cannot be validated by qualitative methods or vice versa. Reliable data is data that is consistent over time, and from person to person [21].

By using a combination method, the reliability of the data will be improved, because the reliability of data that cannot be tested with quantitative methods can be tested by qualitative methods or vice versa [22]. The objective data of the opponent is subjective data. So objective data if the data is agreed upon by many people. By using a combination method, the data obtained by qualitative methods that are subjective can be increased objectivity in a wider sample with quantitative methods [2]. Newman & Benz in Creswell stated that quantitative and qualitative research methods cannot be seen as two research methods that are dichotomous and contradict each other, but are a complementary method [1]. This method is located on a continuum line, on the left end of the quantitative method, the right end of the qualitative method (or vice versa) and between the two is the combination research method. The combination method does not have to be in the middle, but it can, more heavily be quantitative or qualitative.

Through critical study and experience of practices using various field research methods, it turns out that both research methods can be combined, managed or combined [23]. By combining the two research methods, quantitative research methods can complement the shortcomings in quantitative research methods. But by using a combination method, the research process requires a relatively long time, and research must understand the characteristics of each method and be able to combine it for use in a study.

Creswell stated that A Mixed method design is useful for quantitative and qualitative approach to research, a good understanding of research and providing a best understanding. Combined research methods will be useful if quantitative methods or qualitative methods individually are not accurate enough to be used to understand research problems, or with management using quantitative and qualitative methods in combination will be able to get the best understanding (compared to one method) [24].

By combining quantitative and qualitative methods for research, variations arise in the combination method. Johnson and Cristensen stated that, the combination method variation is an interaction between two aspects, namely Time Order Decision (time combining) and Paradigm Emphasis Decision (predominance of weight combination methods). The Time Order Decision includes two aspects, namely concurrent (combination mixed) and sequential (sequential combination), while the aspects of Paradigm Emphasis Decision includes aspects of Dominant Status (weight is not equal) and Equal Status (equal weight).

Combination research methods can be divided into two, namely the design or sequential model (sequential combination), and concurrent models (mixed combinations). Sequential models can be divided into two, namely sequential explanatory models and sequential exploratory (sequence of discoveries). Concurrent models (mixed) there are two, namely, the concurrent triangulation model (a mixture of quantitative and qualitative balanced) and concurrent embedded (a mixture of quantitative and qualitative unbalanced).

### 3.1 The Combined Research Method Models

There are several typologies that research can use for management to choose the type of model or mixed method strategy that will be used in the research. Creswell and Plano Clark identify 12 (twelve) systems of classification of mixed methods research strategies that are based on different domains, such as evaluation, public health care, wisdom and educational research, and social and behavioral research [25]. In these classifications, each strategy has different terms, although there are a number of substantial and similar overlapping things in the designs.

Before discussing management strategies or combined research models, it is important to consider in advance a number of important aspects in designing procedures for mixed methods research. These aspects include: timing (time), weighting (weight), mixing (mixing), and theorizing (theorizing).

### 3.1.1 Timing

The researcher must consider the time in collecting qualitative and quantitative data: whether the data will be collected in stages (sequential) or directly collected at one time (concurrent). When data is collected in stages, researchers need to determine what data will be collected first: whether quantitative data or qualitative data. This depends on the initial goal of the researcher. When qualitative data is first collected, it means that the aim is to explore the topic of research by observing the participants at the research site.

After that, the researcher extends his understanding through the second, quantitative stage, in which data is collected from a large number of participants (which is usually considered a research sample). When data is collected concurrently, it means both qualitative data and quantitative data are collected at once at a time, and the implementation takes place simultaneously. In some research project management, it is sometimes ineffective to collect data gradually over a long period of time (for example, in health sciences where doctors do not have much time to collect data in the field). In this case, when researchers are in the research location, collecting qualitative and quantitative data at one time is often more effective than collecting it in stages.

### 3.1.2 Weighting

The second factor that needs to be considered in management designing mixed method procedures is the weight or priority given between quantitative and qualitative methods. In some studies, this weight can be balanced, but in some other studies, this weight can be more severe than one method than the other. Priority in one method depends on the management of the interests of the researcher, the desire of the reader (such as the faculty, professional organizations), and what the researcher wants to prioritize. In a more practical framework, the weight in this mixed method research can be considered through several things, including: whether qualitative data or quantitative data will be prioritized first, the extent of treatment of each of the two types of data, or whether the inductive approach (eg, building themes in qualitative) or deductive approaches (such as, testing a theory) that will be prioritized. Sometimes, researchers do deliberately prioritize one type of data for a particular study, such as in experimental experiments.

### 3.1.3 Mixing

Mixing data or in a broader sense, mixing the problem statement, philosophy and interpretation of research) is not an easy job considering the qualitative data consists of texts and images, while quantitative data consists of numbers. There are two questions that need to be asked in this case: When do researchers have to mix in mixed methods research? And how is this mixing process? The first question is easier to answer than the second question. Mixing two types of data can be done in several stages: the data collection stage, the data analysis stage, the interpretation stage, or even in all three stages at once. For proposal makers who use this mixed method, they need to explain and present in their proposals when the mixing process occurs.

How is data mixed? This is one of the main concerns among recent research methodologists [25]. Mixing means that qualitative and quantitative data are actually merged in

one end of continuum, kept separate in the other end of continuum, or combined in several other ways. These two data can be written separately, but both remain implicitly connected to each other. For example, in a two-stage project that begins with a quantitative stage, analysis of data and results can be used to identify the participants gathered at a later stage, namely at the stage of qualitative data collection. In this situation, both quantitative data and qualitative data are interconnected (connecting) with each other during the research stages. This connection is illustrated by quantitative and qualitative research connected during data analysis in the first stage and data collection in the second stage.

In other projects, researchers can conclude quantitative and qualitative data concurrently and integrate their second database by transforming qualitative themes into numbers that can be calculated (statistically) and compare the results of these calculations with descriptive quantitative data. In this case, mixing means combining two databases by integrating whole quantitative data with qualitative data.

In the latest project scenario, researchers may be more likely to collect one type of data (say quantitative) that is supported by another type of data (say qualitative) that he already had before. In this case, the researcher does not combine two different types of data and does not connect two different research stages. Instead, he is actually embedding a type of secondary data (qualitative) into the type of primary data (quantitative) in one study. Secondary databases play a supporting role in this study.

The last factor that needs to be considered by a researcher in designing a mixed method procedure is what theoretical perspective will be the basis for the whole process or stage of research. This perspective can be in the form of theories originating from the social sciences (such as adoption theory, leadership theory, attribution theory) or other broader theoretical perspectives, such as advocacy or participatory (eg, gender, race, class). All researchers bring theories into their research, and these theories are written explicitly in mixed methods research, but can also be written implicitly, not even mentioned at all.

Here, we will focus on the use of explicit theories. In mixed methods research, theory usually appears at the beginning of the study to form the proposed problem formulation, who participates in the research, how the data is collected, and the implications expected from the research (usually for change and advocacy). Each theory generally provides a whole perspective that can be applied in all mixed methods research strategies. Mertens, for example. He presents an interesting discussion about how the perspective of transformation forms the stages of mixed methods research.

Sequential model. Creswell (2009) suggests that the combination method of sequential models is as follows: Sequential Mixed Methods procedures are those in which the researcher is as close to elaborate on or on finding methods with other methods. The combination method of sequential models is a research procedure in which researchers develop research results from one method with another method. This method is said to be sequential, because the use of methods is combined sequentially. If the first order uses quantitative methods, and the second measure uses qualitative, then the method is called a combination of sequential explanatory models and if the first order uses qualitative methods and the second order uses quantitative methods, then the method is called the combination method of sequential exploratory research methods.

In sequential explanatory terms, Creswell (2009) states that the research method in combination with a sequential explanatory model is characterized by data collection and analysis of quantitative data in the first stage, and followed by the collection and analysis of qualitative data in the second stage, to strengthen the results of quantitative research conducted on the first stage.

Sequential Exploratory Design. This method is the same as the sequential explanatory method, only reversed, where in this method the initial stage uses qualitative methods and the next stage uses quantitative methods. The weight of the method in the first stage method is qualitative method and then it is equipped with quantitative methods. The combination of the two methods of data is the connecting (connecting) results of the first stage of research (the results of qualitative research) and the next stage (the results of quantitative research). The disadvantage of this method is that research management requires more time, effort and cost.

Sequential explanatory design is called confirmatory methods, which are more of a top-down or theory-testing approach to research. What is meant by top-down or theory-testing, is a quantitative research that generally aims to test hypotheses with facts in the field, while explanatory methods are bottom-up or theory generation to research. What is meant by bottom-up or theory generation to research, is a qualitative method that generally aims to produce hypotheses or theories.

Sequential Transformative Strategy. Quantitative method or combination of Creswell's Sequential Transformative Design model states [1]: The sequential transformative strategy is a two-phase project with a theoretical lens (gender, race, social science) overlaying the sequential procedures. It too has initial phases (either quantitative or qualitative) followed by a second phase (either qualitative or quantitative) that builds on either phase. The theoretical lens is introduced in the introduction to a proposal, a directional research question form aimed at exploring a problem. This model is carried out in two stages guided by lens theory (gender, race, social science) in each research procedure. The first stage can use quantitative or qualitative methods and proceed to the next stage with qualitative or quantitative methods. Lens theory is presented in the introduction section of the research proposal to guide the formulation of research questions to explore problems.

Concurrent model. Concurrent Mixed Methods: procedures are those in which the researcher converges or merges quantitative and qualitative data in a comprehensive analysis of research problems [1]. The mixed model combination method, is a research procedure in which researchers combine quantitative and qualitative data in order to obtain a comprehensive analysis to answer the research problem. If in the sequential type, management merging methods is done sequentially in different times, while in concurrent types are mixed by mixing at the same time. In this case the quantitative method or combination is used to answer one type of problem statement or one type of research question. In this type there are three models, namely: concurrent triangulation strategy; concurrent embedded strategy, and concurrent transformative strategy.

Concurrent Triangulation Strategy. Concurrent Triangulation: strategy in mixed methods is the approach which the researcher collects both quantitative and qualitative data concurrently and then compares the two databases to determine if there is convergence, different or some combination. This model or strategy is the most familiar model among the six models in quantitative methods or mixed methods. In this model the researcher uses quantitative and qualitative methods together, both in data collection and analysis, then compares the data obtained, to then find which data can be combined, and distinguished.

In this model, research is carried out in one stage but using quantitative and qualitative methods together. The weight between the quantitative and qualitative methods used in the study should be balanced, but in practice one method can be higher or lower than the other. Merging data is done on data presentation, interpretation and discussion.

Concurrent Embedded Strategy. Concurrent Embedded: the mixed methods research strategy can be identified by the use of phase collection data, during which both quantitative and qualitative data are collected simultaneously. Unlike the traditional triangulation model, the primary methods of primary methods that provide a supporting role in the procedure (Creswell 2009). The combined research method of embedded models, is a research method that combines the use of quantitative and qualitative research methods simultaneously or together (or vice versa), but the weight of the method is different. In this model there are primary and secondary methods. The primary method is used to obtain the main data, and the secondary method is used to obtain data to support data obtained from the primary method.

Concurrent Transformative Strategy. In this case Creswell states that as with the sequential transformative model, the concurrent transformative approach is used by a specific theoretical perspective as well as the concurrent collection of both quantitative and qualitative data. As in the sequential transformative model, concurrent transformative models are also guided by the perspective theory of both quantitative and qualitative theories. This perspective theory such as: critical theory, advocacy, participatory research, or a conceptual or theoretical framework.

Concurrent transformative method is a combination of triangulation and embedded models. Two methods of data collection are carried out at one stage or phase of research and at the same time. Method weights can be the same and can not be the same. Merging data can be done by merging, connecting or embedding (mixing with the same weight, connecting, and mixing with weights not equal).

## 4. Conclusion

Combined research methods or mixed research methods, are research methods that are based on the philosophy of pragmatism (a combination of positivism and pospositivism). Combined research method is a research method that combines, manages or combines quantitative methods and qualitative methods to be used together in a research activity, so that more comprehensive, valid, reliable and objective data is obtained. Comprehensive data is complete data which is a combination of quantitative and qualitative data. Valid data is data that has a high degree of accuracy between data that actually occurs with data that can be reported by researchers. Reliable data is data that is consistent over time, and from person to person. Combination research methods can be divided into two, namely the design or sequential model (sequential combination), and concurrent models (mixed combinations). Sequential models can be divided into two, namely sequential explanatory models and sequential exploratory (sequence of discoveries). There are two concurrent (mixed) models, namely, the concurrent triangulation model (a mixture of quantitative and qualitative equilibrium) and concurrent embedded (a mixture of quantitative and qualitative imbalances). The combination method of sequential models is a research procedure in which researchers develop research results from one method with another method. If the first order uses quantitative methods, and the second measure uses qualitative, then the method is called a combination of sequential explanatory models and if the first order uses qualitative methods and the second order uses quantitative methods, then the method is called the combination method of sequential exploratory research methods. The Sequential Transformative Strategy model is carried out in two stages guided by lens theory (gender, race, social science) in each research procedure. The first stage can use quantitative or qualitative methods and proceed to the next stage with qualitative or quantitative methods. Lens theory is presented in the introduction section of the research proposal to guide the formulation of research questions to explore problems. The Concurrent Triangulation Strategy model is the most familiar model among the six models in quantitative methods or mixed methods. In this model the researcher uses quantitative and qualitative methods together, both in data collection and analysis, then compares the data obtained, to then find which data can be combined, and distinguished. The Concurrent Embedded Strategy Model, is a research method that combines the use of quantitative and qualitative research methods simultaneously or together (or vice versa), but the weight of the method is different.

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