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Rethinking Mixed Methods Research: Discourse and Application in Qualitative & Quantitative Research

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Abstract *The aim of this study is to explain the discourse and differences between research, quantitative research and qualitative research. Qualitative research, based on the philosophy of postpositivism, is used to examine the condition of natural objects with the aim of understanding phenomena. Qualitative research is an intense communication process between the researcher and the phenomenon being studied. Quantitative research, which is based on the philosophy of positivism, is used to study a specific population or sample, collect data using research instruments, and then analyze the data quantitatively or statistically to test a predetermined hypothesis. Quantitative research and qualitative research differ in terms of the criteria, processes, and competencies used.*

Keywords: *Mixed Methodology; Discourse and Application; Qualitative Research; Quantitative Research; Research Methods.*

1 INTRODUCTION

Technology and science develop along with the times (Saputra, L. N. H. A. et al., 2023; Prianto, A. L. et al., 2022). Currently, we can see how human technology is becoming more sophisticated and science is becoming more widespread (Malik, I. et al., 2023; Prianto, A. L. et al., 2021). In medicine, more and more new diseases are being discovered accompanied by new treatment techniques. Likewise in other fields, such as education. The development of knowledge about learning is the reason why more and more people are trying to use innovative learning models to make learning better (Kurniasih, D. et al., 2023). The development of science and technology is actually based on researchers conducting research (Saputra, L. N. H. A. et al., 2023; Prianto, A. L. et al., 2022; Muhtar, E. A. et al., 2023; Abdillah, A. et al., 2023).

Research is a series of scientific methods for obtaining data with the aim of achieving certain goals for certain uses (Creswell, J. W. et al., 2004; Tashakkori, A., & Creswell, J. W., 2007; Creswell, J. W., 1999). The scientific method means research activities that are based on scientific characteristics, namely rational, empirical and systematic (Creswell, J. W. et al., 2004; Tashakkori, A., & Creswell, J. W., 2007; Creswell, J. W., 1999). The data obtained from the research is observed data which has certain criteria, namely valid. The research objectives are discovery, proof and development. Meanwhile, its use is to understand, solve and anticipate problems (Creswell, J. W. et al., 2004; Tashakkori, A., & Creswell, J. W., 2007; Creswell, J. W., 1999; Mertens, D. M., 2022).

Broadly speaking, research is divided into two, namely quantitative research and qualitative research (Cleland, J., 2015; Allwood, C. M., 2012; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2010; Mertens, D. M., 2018). However, many people/researchers/prospective researchers still find it difficult to differentiate between these two studies and have difficulty in using them. Therefore, the aim of the study is to explain the

discourse and differences between research, quantitative research and qualitative research, stating the differences between quantitative research and qualitative research. Up to what is the possibility of combining qualitative and quantitative research.

RQ1. What are the definitions of research, qualitative research, and quantitative research?

RQ2. What is the difference between qualitative research and quantitative research?

RQ3. What are the possibilities for combining qualitative research and quantitative research?

Trends of Research Discourse: Definitions of Quantitative and Qualitative Research

Research is scientific work that must be carried out systematically, regularly and in an orderly manner both regarding the procedures and the process of thinking about the material (Creswell, J. W., & Creswell, J. D., 2017; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2010). Research is an effort to find objective truth. This truth can be in the form of the results of problem solving or hypothesis testing and may also be in the form of proof of the existence of something, apart from that it can also be the development of science and technology. Research can also be understood as an effort to connect empirical reality and theory or can also be done to find theory (Creswell, J. W., & Poth, C. N., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022; Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016).

Many other terms/names are used for quantitative and qualitative research. Quantitative and qualitative methods are often paired with the names traditional methods and new methods, positivistic methods and postpositivistic methods, scientific methods and artistic methods,

confirmation methods and discovery methods (Creswell, J. W., & Poth, C. N., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022; Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016). The following is an explanation of quantitative research (see Table 1):

Table 1. General Explanation of Quantitative Research Methods

No	Known Quantitative Methods	Quantitative Methods According to Experts
1	Quantitative methods are also known as traditional methods because this method has been used for a long time so it has become a tradition as a method for research.	Quantitative methods can be interpreted as research methods based on the philosophy of positivism which are used to research certain populations or samples. Sampling techniques are generally carried out randomly, data collection uses research instruments, and data analysis is quantitative/statistical with the aim of testing predetermined hypotheses (Cleland, J., 2015; Creswell, J. W., & Creswell, J. D., 2017).
2	The Quantitative Method uses a positivistic paradigm because it is based on the philosophy of positivism, namely viewing symptoms/phenomena as classifiable, fixed, concrete, and measurable and the relationship between symptoms shows cause and effect.	Quantitative methods are studies that are positioned as value-free, strictly applying the principles of objectivity which are obtained through the use of instruments whose validity and reliability have been tested (Allwood, C. M., 2012; Creswell, J. W., & Creswell, J. D., 2017).
3	The Quantitative Method is a scientific/scientific method because it meets scientific principles, namely concrete, empirical, objective, measurable, rational and systematic.	
4	Quantitative methods are discovery methods because various new science and technology can be discovered and developed. Qualitative methods are often referred to as: a. The method is new because its popularity has not been around for long; b. Postpositivistic method because it is based on the philosophy of postpositivism which views a symptom/phenomenon as something complete, complex, dynamic, full of meaning and the relationship between symptoms is interactive; c. Artistic method because the research process is more artistic and less patterned; d. The method is interpretive because it is more concerned with the interpretation of data found in the field.	

Source: Processed by the author, 2023

As explained in Table 1, quantitative research is a research method based on the philosophy of positivism, used to research certain populations or samples, collecting data using research instruments, and quantitative/statistical data analysis, with the aim of testing predetermined hypotheses. Meanwhile, qualitative research is explained as follows (see Table 2).

Table 2. General Explanation of Qualitative Research Methods

No	Known Quantitative Methods	Quantitative Methods According to Experts
1	The qualitative method aims to explain a phenomenon in depth and is done by collecting data in as much depth as possible.	Qualitative method is a scientific research that aims to understand a phenomenon in a natural social context by prioritizing a process of in-depth communication interaction between the researcher and the phenomenon being studied (Moleong, L. J., 2014; Creswell, J. W., & Poth, C. N., 2016; Creswell, J. W., & Creswell, J. D., 2017).
2	Qualitative methods prioritize observing phenomena and researching more into the substance of the meaning of these phenomena.	Qualitative methods are naturalistic research because this research is carried out in natural settings (Creswell, J. W., & Poth, C. N., 2016; Allwood, C. M., 2012; Creswell, J. W., & Creswell, J. D., 2017).
3	Qualitative methods utilize existing theories as explanatory material, and end up with a "theory".	
4	Qualitative methods are also intended to be able to describe mechanisms, models, systems and patterns that cannot be explained numerically/statistically.	

Sumber: Diolah oleh penulis, 2023

As explained in Table 2, qualitative research is a method or method of research that emphasizes analytics and exploration in its interpretation. It can be said to be a method that focuses on in-depth observation. Therefore, the use of qualitative methods in research can produce a more comprehensive study of a phenomenon. Qualitative research that pays attention to humanism or individual humans and human behavior is a response to the awareness that all the consequences of human actions are influenced by the internal aspects of the individual. These internal aspects include beliefs, political views, and social background of the individual concerned (Mertens, D. M., 2018; Mertens, D. M.,

2022; Creswell, J. W., & Poth, C. N., 2016; Allwood, C. M., 2012; Creswell, J. W. , & Creswell, J. D., 2017).

Differences and Process of Quantitative & Qualitative Research

Axiom Difference

The differences between the axioms of qualitative and quantitative research include the axioms of reality, the relationship between the researcher and those studied, the relationship of variables, the possibility of generalization, and the role of values (Creswell, J. W., & Poth, C. N., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022; Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016). This difference can be seen in Table 3.

Table 3. Axiomatic Differences Between Qualitative and Quantitative Methods

Basic Axioms	Quantitative	Qualitative
The nature of reality	Classifiable, concrete, observable, and measurable.	Multiple, holistic, dynamic, the result of construction and understanding.
Researcher's relationship with those being researched.	Independent, to build objectivity.	Interactive with data sources to obtain meaning.
Variable relationships	Cause and effect (causal).	Reciprocal/interactive.
Possible generalization.	Tends to make generalizations.	Transferability (only possible within context and time).
The Role of Values.	Tends to be value-free.	Bound by the values brought by researchers and data sources.

Source: Processed by various sources, 2023

a. The nature of reality

In viewing reality, symptoms or objects studied, there are differences between qualitative and quantitative methods. As has been stated, in quantitative methods which are based on the philosophy of positivism, reality is seen as something concrete, observable, with the five senses, can be categorized according to type, shape, color and behavior, does not change, can be measured and verified. Thus, in quantitative research, researchers can determine only a few variables from the object under study, and can create instruments to measure them (Creswell, J. W., &

Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

In qualitative research which is based on postpositivism philosophy or interpretive paradigm, a reality or object cannot be seen partially and broken down into several variables. Qualitative research views objects as dynamic, the result of thought construction and interpretation of observed phenomena, holistically because every aspect of the object has a unity that cannot be separated. Like examining the performance of a car, quantitative researchers can examine just the engine or body, but qualitative researchers will examine all components and their relationships with each other. As well as performance when the car is running (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

b. Possible generalization.

In general, quantitative research places more emphasis on breadth of information (not depth), so this method is suitable for populations with limited variables. Next, the data studied is sample data taken from the population using probability sampling (random) techniques. Based on the data from the sample, the researcher then makes generalizations (sample conclusions are applied to the population from which the sample was taken) (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Mertens, D. M. , & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

Qualitative research does not generalize but emphasizes the depth of information so that it reaches the level of meaning. As has been stated, meaning is the data behind what appears. Even though qualitative research does not make generalizations, it does not mean that the results of qualitative research cannot be applied elsewhere. Generalization in qualitative research is called transferability, in Indonesian it is called

transferability. This means that the results of qualitative research can be transferred or applied in other places, if the conditions in other places are not much different from the research place (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

c. The Role of Values.

In conducting data collection, qualitative researchers have interactions between data researchers and data sources. In this interaction, both researchers and data sources have different backgrounds, views, beliefs, values, interests, and perceptions, so in data collection, analysis and making reports they will be bound by their respective values (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

In quantitative research, because research does not interact with data sources, it will be limited by the values brought by researchers and data sources. Because they want to be value-free, researchers keep their distance from the data source, so that the data obtained is objective (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016;).

Table 4. Criteria/Characteristics of Qualitative and Quantitative Research

No	Qualitative	Quantitative
1	Scientific Background: in a natural setting/object or in the context of a whole (Bailey, L. F., 2014; Black, N., 1994; Creswell, J. W., 1999).	Scientific Background: in a representative population or sample (Allwood, C. M., 2012; Cleland, J., 2015; Creswell, J. W., 1999).
2	Humans as tools (instruments): the researcher himself or with the help of others is the main data collection tool. This is because if you use non-human tools it will be very impossible to make adjustments to the realities in the field (Creswell, J. W., & Poth, C. N., 2016).	The instrument complies with standards and has been tested for validity (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016).

3	Inductive data analysis, where facts found in the field are constructed into theories/concepts (Creswell, J. W., & Poth, C. N., 2016; Moleong, L. J., 2004; Miles, M. B. et al., 2014).	Deductive data analysis, where to answer the problem formulation, concepts or theories are used so that hypotheses can be formulated. The hypothesis was then tested through field data collection and then tested with descriptive and inferential statistics (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016).
4	Give more importance to the process than the results because the relationship between the parts studied will be much clearer (Creswell, J. W., & Poth, C. N., 2016).	Give more importance to products (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016).
5	Conclusions place more emphasis on meaning/transferability (Creswell, J. W., & Poth, C. N., 2016).	Conclusions from the sample are generalized to the population (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016).

Source: Processed by various sources, 2023

Criteria and characteristics in qualitative and quantitative research according to experts (Creswell, J. W., & Poth, C. N., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022; Creswell, J. W. , & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016) are: Qualitative research has characteristics, namely: (a) Qualitative research has a natural setting as a direct data source and the researcher is the key instrument; (b) Qualitative research is descriptive. The data collected is in the form of words, not numbers; (c) Qualitative research is more concerned with processes than just product results; (d) Qualitative research tends to analyze its data inductively; (e) "Meaning" is critical to a qualitative approach (Creswell, J. W., & Poth, C. N., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022). Meanwhile, Quantitative research is: (a) Using deductive thinking patterns (rational – empirical or top-down), which seeks to understand a phenomenon by using general concepts to explain specific phenomena; (b) The logic used is positivistic logic and avoids things that are subjective; (c) The research process follows planned procedures; (d) The aim of quantitative research is to develop nomothetic science, namely science that attempts to create laws from their generalizations; (e) The subjects

studied, the data collected, and the data sources needed, as well as the data collection tools used in accordance with what was previously planned; (f) Data collection is carried out through measurements using objective and standard tools; (g) Involves number crunching or data quantification; (h) The researcher places himself separately from the research object, in the sense that he is not emotionally involved with the research subject; (i) Data analysis is carried out after all data has been collected; (j) In data analysis, researchers are required to understand statistical techniques; and (k) Research results in the form of generalizations and predictions, regardless of the context of time and situation (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016).

Research Process of Qualitative and Quantitative Research

In principle, research is to answer problems. Problems are deviations from what should be with what is happening. The difference between qualitative and quantitative research methods can also be seen in the research process. The process in quantitative research methods is linear and quantitative is secondary. As shown in Figure 1./

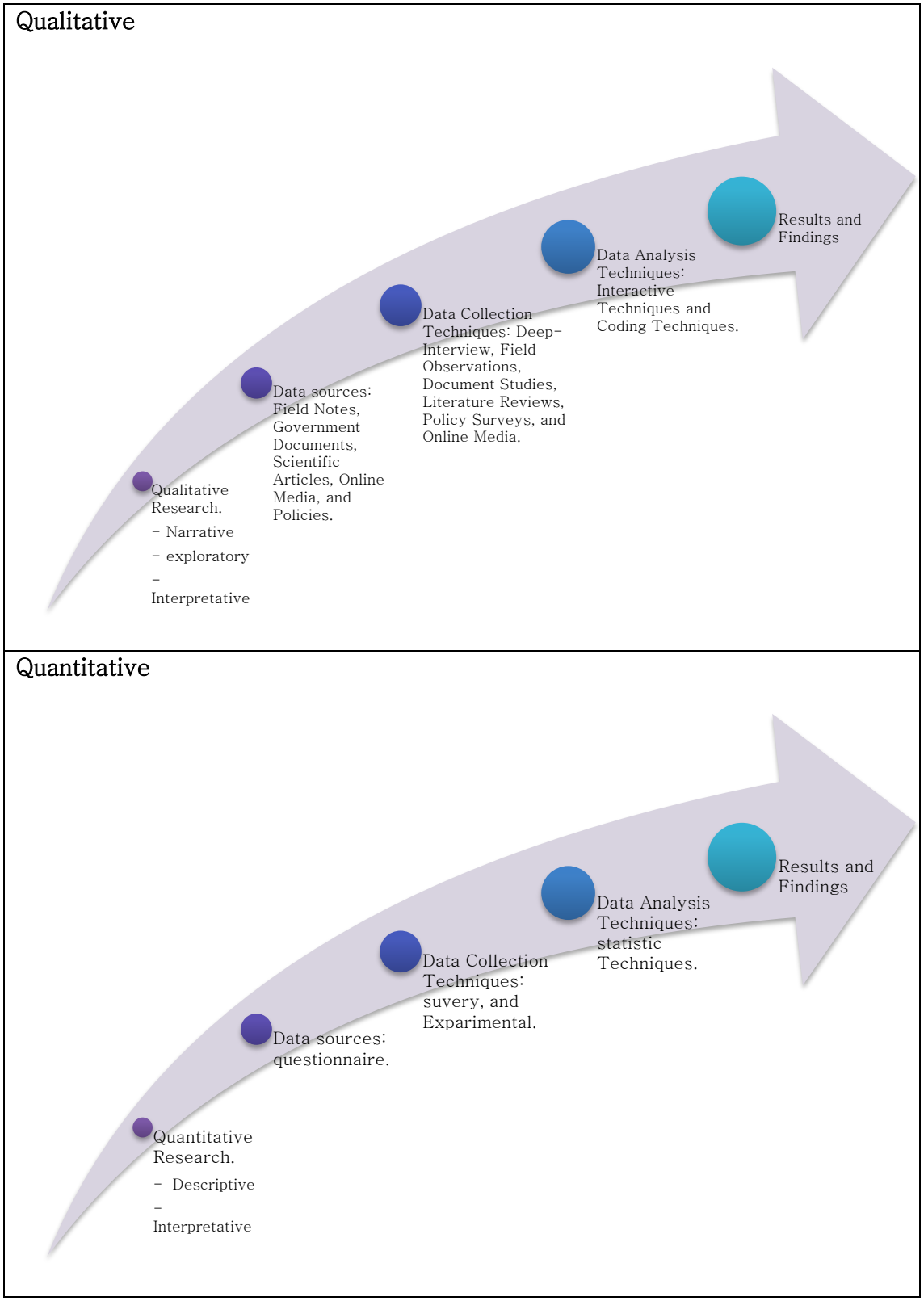

Figure 1. Steps in a qualitative and quantitative research program.

Source: Processed from various sources, 2023

a. Qualitative Research Process

As shown in Figure 1, qualitative research does not yet have a clear problem or desire but can directly enter the object/field. When entering

the object, the researcher certainly still feels unfamiliar with the object. After entering the object, qualitative researchers will see everything that is in that place, which is general. This stage is called the orientation or description stage, with a grand tour question. At this stage the researcher describes what was seen, heard, felt and asked. Namely, he only knows at a glance the information he has obtained (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M. , 2018; Mertens, D. M., 2022).

The qualitative research process in stage 2 is called the reduction/focus stage. At this stage the researcher reduces all the information that was obtained in the first stage. In this reduction process, researchers reduce the data found in stage 1 to focus on certain problems. At this reduction stage the researcher sorts the data by selecting which data is interesting, important, useful and new. Data that is deemed unusable is removed. Based on these considerations, the data was then grouped into various categories which were determined as the research focus. The third stage is the selection stage. At this stage the researcher describes the focus that has been determined in more detail. After researchers carry out in-depth analysis of the data and information obtained, researchers can find themes by constructing the data obtained into new knowledge, hypotheses or knowledge (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012 ; Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

The final result of qualitative research is not just to produce data or information that is difficult to find through quantitative methods, but must also be able to produce meaningful information, even hypotheses or new knowledge that can be used to help overcome problems and improve human life (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012;

Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

The process of obtaining data or information at each stage (narrative, exploratory, reduction, selection) is carried out circularly, repeatedly in various ways and from various sources through interviews or field observations. In the data collection process, 5 stages are carried out, namely: (a) After the researcher enters the research object or often referred to as a social situation, the researcher thinks about what to ask; (b) After thinking and finding what he wanted to ask, the researcher then asked the people he met at that place; (c) Questions are given answers, researchers analyze whether the answers given are right or wrong; (d) If the answer is deemed correct, then a conclusion is drawn; and (e) The researcher corrects the conclusions made, whether they are credible or not. To confirm the conclusions that have been made, the researcher enters the field again, repeating the questions using different methods and sources, but with the same goal. If the conclusion is believed to have high credibility, then the collection is declared complete (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

b. Quantitative Research Process

As shown in Figure 1, quantitative research starts from a preliminary study of the object under study to get to the real problem. Problems cannot be obtained from behind a desk, therefore they must be explored through preliminary studies through empirical facts. To answer a temporary problem formulation (hypothesis), researchers can read theoretical references relevant to the problem and think. Apart from that, relevant previous research findings can also be used as material to provide temporary answers to the formulation of research problems (hypotheses) (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S.,

2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

To test this hypothesis, researchers can choose an appropriate method/strategy/approach/research design. In quantitative research, the research methods that can be used are survey methods, ex-post facto, experiments, evaluation, action research, policy research (in addition to naturalistic and historical methods) (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022). After the appropriate research method is selected, the researcher can develop a research instrument. Instruments are used as data collection tools which can take the form of tests and questionnaires. Data collection is carried out on certain objects in the form of populations or samples. After the data is collected, it is then analyzed to answer the problem formulation and test the hypothesis proposed using certain statistical techniques (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022).

The conclusion is the final step of a research period in the form of an answer to the problem formulation. Based on the quantitative research process above, it appears that the quantitative research process is linear, where the steps are clear, starting from problem formulation, theorizing, hypothesizing, collecting data, analyzing data, and making conclusions and suggestions (Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012).

Qualitative and Quantitative Use in Research

There is no need to conflict between quantitative and qualitative research methods because they complement each other and each has

advantages and disadvantages. So when using qualitative research methods, it can be seen in the steps in Figure 2.

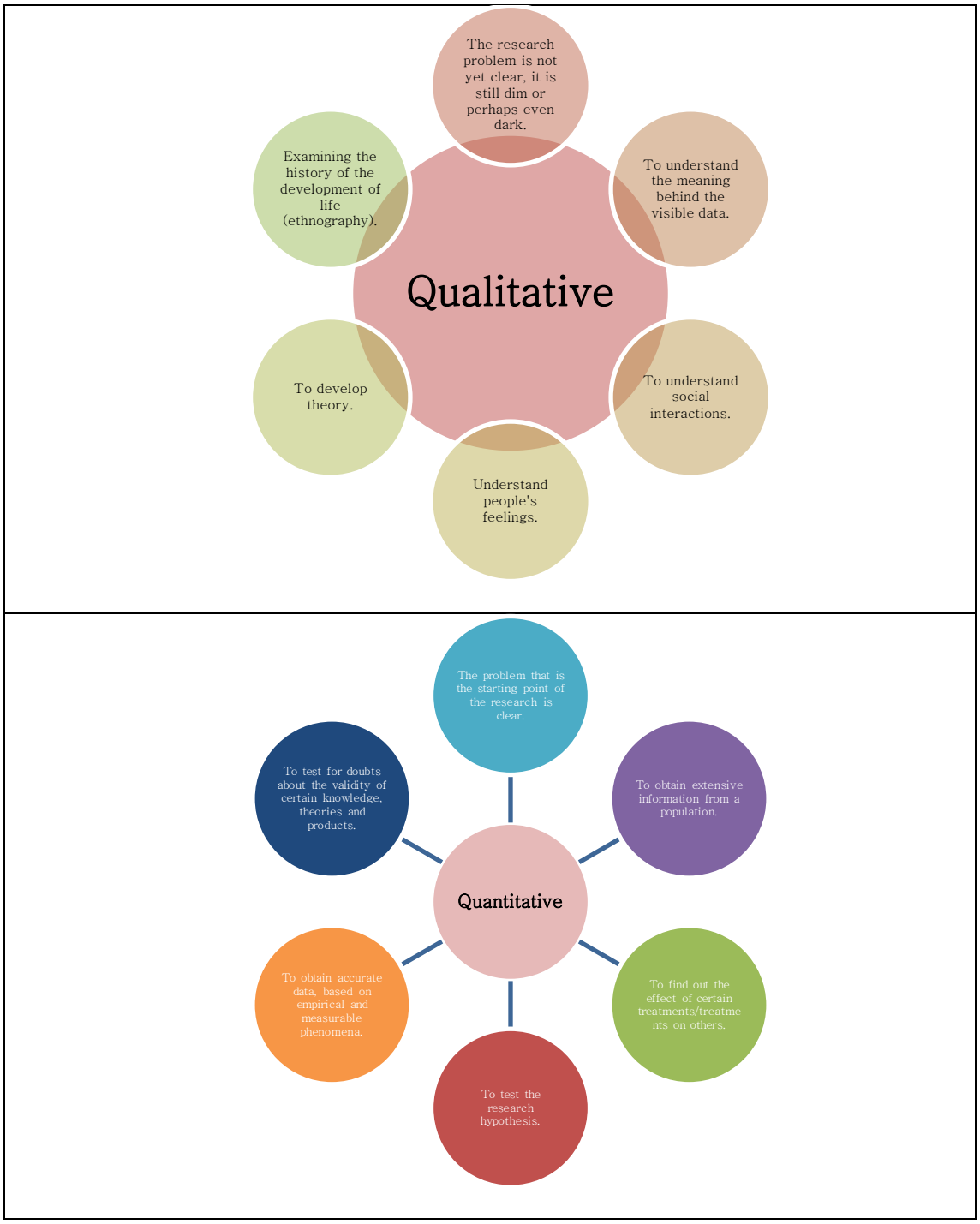

Figure 2. Steps in using qualitative and quantitative research methods.

Source: Processed from various sources, 2023

As Figure 2 illustrates, qualitative methods are used for different purposes when compared to quantitative methods. The following is stated when qualitative methods are used:

a. If the research problem is not yet clear, it is still dim or perhaps even dark. Qualitative researchers will go straight into the object, explore using grant tour questions so that the problem can be found clearly. Through this research model, researchers will explore an object. It is like someone looking for sources of oil, gold mines and so on.
b. To understand the meaning behind the visible data. Social phenomena often cannot be understood based on what people say and do. Every person's words and actions often have a certain meaning. For example, people who cry, laugh, frown, wink, have certain meanings. It often happens that, according to quantitative research, it is true, but it is actually a question mark according to qualitative research. For example, 99 people said that A was a thief, while one person said no. Maybe this one person is right. According to quantitative research, a husband's love for his wife can be measured by the number of kisses a day. According to qualitative research, the more a husband kisses his wife, the more it becomes a question mark, perhaps he is just pretending. Data to find the meaning of each action is only suitable for research using qualitative methods, using in-depth interview techniques, participant observation, and documentation.
c. To understand social interactions. Complex social interactions can only be unraveled if researchers conduct research using qualitative methods by taking part in, in-depth interviews with these social interactions. In this way, clear relationship patterns will be found.
d. Understand people's feelings. People's feelings are difficult to understand if they are not researched using qualitative methods, with in-depth collection and interview techniques, and observation plays a role in getting a feel for what the person is feeling.
e. To develop theory. Qualitative methods are most suitable for developing theories built through data obtained in the field. Such a theory is built by grounded research. Using qualitative methods, researchers in the initial stage carry out exploration and then carry out in-depth data collection so that hypotheses can be found in the form of

relationships between symptoms. This hypothesis was then verified with more in-depth data collection. If the hypothesis is proven, it will become a thesis or theory.

f. To ensure the correctness of data, Social Data is often difficult to confirm. With qualitative methods, through triangulation/combined data collection techniques (because with certain data collection techniques you cannot find what is being targeted, you can replace other techniques), then the certainty of the data will be more guaranteed. Apart from that, with qualitative methods, the credibility of the data obtained is tested, and the research ends after the data is saturated, so the data will be certain to be obtained. It's like looking for who is the provocateur, so until you find out who the provocateur is, the research cannot be declared complete.

g. Examining the history of the development of life (ethnography). The history of the development of a figure or society's life can be traced through qualitative methods. By using documentary data, in-depth interviews with perpetrators or those deemed to know, the history of a person's life development can be obtained. For example, we will examine the history of the development of the lives of kings in Java, the history of the development of certain societies so that these societies become societies with a high or low work ethic. Research on this development can also be carried out in the agricultural sector, and engineering fields such as researching the performance of cars and the like, by making continuous observations with the help of a camera on the development process of certain flowers, or certain car engines.

Quantitative methods in this study include survey methods and experiments. Quantitative methods are used when:

a. If the problem which is the starting point of the research is clear. Problems are deviations between what should be and what happens, between rules and implementation, between theory and practice, between plans and implementation. In preparing a research proposal, this problem must be demonstrated with data, both data from the research itself and documentation. For example, you will research for your own research or documentation. For example, if you are going to research to

find a pattern of eradicating poverty, then data on poor people as a problem must be shown.

b. If researchers want to get extensive information from a population. Quantitative research methods are suitable for obtaining broad but not in-depth information. If the population is too large, then research can use samples taken from that population.
c. If you want to know the effect of certain treatments on others. For this purpose, the experimental method is most suitable for use. For example, the influence of certain herbal medicines on health levels.
d. If the researcher intends to test the research hypothesis. Research hypotheses can be in the form of descriptive, comparative and associative hypotheses.
e. If researchers want to get accurate data, based on empirical and measurable phenomena. For example, if you want to know the IQ of children from a certain community, you can measure it using an IQ test.
f. If you want to test for doubts about the validity of certain knowledge, theories, and products.

Combining Qualitative and Quantitative Methods

Each research method has advantages and disadvantages, therefore the existence of qualitative and quantitative methods does not need to be conflicted because the two methods complement each other in that qualitative methods are suitable for research where the problem is clear, while research using qualitative methods is suitable for research where the problem is still unclear. clear (Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022; Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016 ; Putera, P. B. et al., 2022).

Because the paradigms of the two studies are different, it will be very difficult to use both methods simultaneously. These two methods can be used together or combined, but with the following notes: (a) Can be used together to research the same object, but for different purposes, qualitative methods are used to find hypotheses, while quantitative methods are used to test hypothesis; (b) Used alternately, the first stage

uses qualitative methods so that a hypothesis can be found, then the hypothesis is tested using quantitative methods; and (c) Both methods can be used if the method is clearly understood and has extensive experience in conducting research (Mertens, D. M., & Tarsilla, M., 2016; Mertens, D. M., 2018; Mertens, D. M., 2022; Creswell, J. W., & Creswell, J. D., 2017; Sugiyono, M., 2012; Sugiyono, S., 2016; Putera, P. B. et al., 2022).

Limitations

Although this study outlines the acceleration between qualitative and quantitative research, it should be noted that the limitations of this research can be seen from various weaknesses such as; (1) The weakness of qualitative research is that it tends to be more subjective, thus allowing different results when met with different research and characteristics (Flick, U. et al., 2004; Barnett-Page, E., & Thomas, J., 2009; Putera, P. B. et al., 2022); (2) The weakness of quantitative research is that larger sample size is required for more accurate analysis (Hertzog, M. A., 2008; Mahendran, M. et al., 2022; Putera, P. B. et al., 2022); and (3) the weakness of mixed method research is that it requires greater costs, time and energy (Creswell, J. W., 1999; Allwood, C. M., 2012; Mertens, D. M., & Tarsilla, M., 2016; Tashakkori, A., & Creswell, J. W., 2007; Sugiyono, S., 2016; Putera, P. B. et al., 2022). So that students who can take each research method have their own weaknesses, so choosing the right method and understanding the method used is the key to research success.

Conclusion

The study contributes to providing a deeper understanding for researchers and prospective researchers in understanding the characteristics of quantitative and qualitative research in depth and detail after reading this paper. This is done so that they can understand the research concepts and procedures that must be designed, the data that must be collected, data collection techniques, and so on.

In summary, quantitative and qualitative research differ in the standards, processes, and competencies required to conduct research. Qualitative research requires time to collect data and find a hypothesis, while quantitative research requires time to carry out all procedures correctly and prove the hypothesis. Apart from that, what we highlight in this study is that other important things apart from discussing the differences between qualitative and quantitative that need to be paid attention to by researchers and prospective researchers are (1) The use of qualitative & quantitative research, as in quantitative research it is directed at studying problems. Researchers want to get information about the extent of a population, wanting to test for doubts about validity until the researcher wants to get accurate data. Meanwhile, qualitative research is directed at examining issues of understanding the meaning behind visible data, understanding social interactions, understanding people's feelings, and studying the history of life development (ethnography); (2) The time period in qualitative and quantitative research still has striking differences, such as the difference in qualitative time which tends to be longer and quantitative which tends to be shorter, in addition to the differences in qualitative research instruments using interview transcripts and quantitative research using questionnaires; (3) Competencies that need to be present in qualitative and quantitative research, such as competencies in qualitative research, are emphasized on broader and more sustainable abilities in understanding the problem being researched, while competencies in quantitative research are emphasized on more structured and accurate abilities in seeing the problem. study; and (4) the combination of qualitative and quantitative research pays attention to research problems, and these methodological approaches are seen as complementary, not contradictory.

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