

Validity, reliability,
verification, authority,
and trustworthiness
of research



Rigorous research is formulated out of the concept that a research study must be objective, reliable, valid, precise, and meaningful. Commonly used in social and behavioral studies, many researchers use rigor to avoid mistakes in research works through following a strict set of objective procedures associated with this type of research methodology. It was developed so that a research study is conducted conscientiously, explicitly, and judiciously in order to come up with the best evidence in making decisions regarding the problem stated in the study.

Colin Feltham and Ian Horton stated that rigorous research designs “ include technologies such as the randomized controlled trial, the systematic review, and meta-analysis” (p. 203). On the other hand, Chris Argyris emphasized the underlying assumptions for conducting rigorous research such as (1) it is an ideal state which one can only approximate; and, (2) it is able to define unambiguously [the] problem and relevant variables (Argyris, p. 440).

Out of these assumption, one can definitely assume that the research is valid, reliable, probable, and verifiable, which in sum, rigorous. Rigorous Research in Qualitative Research Design Rigorousness is said to be more important in qualitative type of research because it has the tendency to rely on opinion and personal bias. Norman Denzin and Yvonna Lincoln cited, “ Positivists further allege that the so-called new experimental qualitative researchers write fiction, not science, and that these researchers have no way of verifying their truth statements” (p.).

For this reason that Denzin and Lincoln emphasized that qualitative study must employ empirical methods to gain objectivity. The authors defined

qualitative research as “ the world of lived experience ... where individual belief and action intersect with culture” (Denzin & Lincoln, p. 8). This is then rejected by positivists but highly accepted by post-structuralists. Because of this, The Scientifically Based Research (SBR) movement initialized the use of rigorous methodology in order to get a more reliable and valid treatment of data (Denzin & Lincoln, p.).

The authors also added that to employ rigor, the methodology requires the use of well-defined causal models and independent and dependent variables where a researcher can scrutinize the causal models in the “ context of randomized controlled experiments which allows for replication and generalization of their results” (p. 9). Likewise, under qualitative research, specifically for case study, the researcher gathers descriptive materials which will be tested using experimental methods.

In addition, as suggested by Denzin and Lincoln, in obtaining results using qualitative research, researchers “ must learn to think outside the box... they must apply their imaginations and find new ways to define such terms as randomized design, causal model, policy studies, and public science” (cited Cannella & Lincoln, p. 9). This only suggests that qualitative research is a mix of descriptive and experimental design, in which the data are treated scientifically to get an objective result.

For instance, a research conducted in an organization may use rigorous designs in case the problem tackles industrial applications wherein experiments are required to treat the data such as in the case of causal inference. However, the principles of rigorous research design are not always

applicable to certain problems related to social and behavioral studies or case studies where the real world of organization and its characteristics are mostly hard to define and that the possibility of accessing larger information is quite limited especially if mathematical tool is not required to resolve a social problem.

In this case, descriptive research is more effective than rigorous methods. Rigorous since it is a combination of experimental method may not always effective to highly descriptive studies; because the applicability of the design is the one being questioned although in the process of theory construction, rigorous approach may be helpful. It means that rigorous design allows the management to create or establish a theory that is applicable to a certain group; however, this may not be useful in the dynamic study of that group, which is descriptive.

Usually, qualitative data presents the problem and its solution through text, photographs, videos, and sound recordings. Rigorous Research in Quantitative Research Design In the quantitative research a methodological decision are typically made up front. The researcher use research questions to figure out the purpose of the study. The research questions should be an interrogative statement which seeks an answer and they should be commonly used in social science research particularly in survey studies.

The rigorous research in quantitative studies includes hypothesis which are predictions about the relationship among variables. John W. Creswell (2003) pointed out that these variables are “ numeric estimates of population values based on data collected from samples” (Creswell, p. 108). These

hypotheses questions according to Creswell are often based on theories that the researcher seeks to test and are used in experiments in which researcher compare groups. To employ rigorous design to quantitative type of research is very effective.

One of the examples is an educational problem where experiment or quasi-experiment is part of the research design. Another example is a behavioral study that focuses on “ self-esteem scale” which can be effectively measured through quantitative approach. A quantitative research study employs deductive use of theory in which the researcher aims to verify a theory rather than developing it. Creswell cited that in quantitative research study, the researcher “ advances a theory, collects data to test it, and reflects on the confirmation or disconfirmation of the theory by the results” (p. 25). The theory then becomes a framework for the entire study which according to Creswell, an organizing model for the research question or hypotheses and for the data collection procedure.

Joe L. Kincheloe stressed that rigorous research in quantitative study “ reduces the subjective influences and minimizes the ways in which information might be interpreted” (p. 161). Because rigorous research methodology employed very strict set of objective procedures it has been considered that rigorous quantitative research is the only way to avoid mistakes in research.

Thus, the validity of research using rigorous research methodology is guaranteed despite of the impact of globalization in the way scholars’ seek to new questions, the nature of data, how it is best collected and analyzed,

and the very goodness of the knowledge created and answers generated. Thus, a rigorous quantitative research requires analytical tool of mathematical to ensure objectivity and reliability of the study; data are gathered through survey questionnaires and are treated using statistical analyses.

Techniques are carefully determined from the selection of study population, the standard and highly tested questionnaire or instrument to be used for the respondents, to the selection of statistical formulas. Generally, quantitative research is highly recommended by most researchers because it provides clear answers to question that cannot be answered directly. The methodology often consists of sets of information that are studied to show any connection to the main problem. This is very systematic since factors are carefully analyzed to see their association.

However, it is also limited in such a way that it fails to exhibit the problem as whole which is contextual. Quantitative approaches present only a small fraction of a reality, which is why; it is limited as to what extent the problem exists. Unlike qualitative, its focus is the importance of the phenomenon on the existing problem or nature of problem. Validity Colin Lankshear and Michele Knobel (2004) define validity of research as referring to “ the extent to which its findings can be generalized to entire populations of all cases” (p. 61).

It means that a certain study of 400 hundred six year old children learning processes will be valid externally only if it is believed its findings can be generalized to all 6 year old children within the population with which this

study is concerned. The concept of validity of research according Lankshear and Knobel were based on the idea that “ physical and social worlds exist in a given way and through the rigorous and expert application of research procedure.

Validity includes both the internal and external in which internal validity “ involves employing sound and rigorous design methodology, using data collection and analysis techniques expertly to obtain accurate findings, and advancing correct interpretations of the study results” (Lankshear & Knobel p. 361). External validity on the other hand refers to the extent to which its findings can be generalized to entire populations or all cases. Validity is one of the concerns of rigorous study where the term is applied to the information that is incurred in the research study.

In particular, validity is observed in the instrument that will be utilized during the data gathering scheme. The validity of the instrument is important as the findings of the study and its conclusion. The validity of the findings is the key to an effective social policy or legislation as recommended in the study.

Validity then, takes place between method and interpretation as one aims to see the truths behind the problems. Rigorousness can also be used to test validity using two arguments according to Denzin and Lincoln through which the concept of method and interpretation are explained.

The first is in the application of method, while the second is human phenomenon (p. 205). The application of method is equally important as the human phenomena since the latter gives light for the interpretation of the problem. Reliability Reliability is mostly used in describing the measurement

procedures in the data gathering steps and the interpretation of it. The instrument or questionnaire is said to be reliable if the questions provide consistent answers from the respondents.

To ensure reliability, it is important that questions are connected and related to the general information needed. The reliability of rigorous research in qualitative and quantitative research design is high as the research procedure involve are not only deductive but it employed very strict set of objective procedure to avoid mistakes and reduce subjective influences. Lankshear and Knovel pointed out that reliability is seen in terms of consistency, stability and replication.

Lankshear and Knovel stated, “ The general ideal of reliability is that if the same thing is done again under the same subjects it will produce the same result” (p. 362). Thus, to insure a study’s internal reliability, it is important to collect one’s data the same way with another person and so on and analyses the data the same way and interprets results of data analysis in the same way. External reliability on the other hand “ is evaluated according to the extent to which it is possible for other researchers to replicate the study in the same or similar settings” (Lankshear & Knobel, p. 362).

Thus, if a researcher is using the same methods, conditions, and so forth, and should obtain the same results as those reflected by previous study, the research study is externally reliable. Lankshear and Knobel noted that reliability can be also tracked by making sure that the instruments one uses are themselves reliable, and that proper time between testing and retesting

“ is chosen so the differences in scores can reasonably be assumed to result from interventions rather extraneous factor” (p. 262).

Verification Among the most important process of scientific research is verification according to Mark F. Bear, Barry W. Connors, and Michael Paradiso (2006) is the “ final step of the scientific process” (Bear, M. Connors, B. & Paradiso, M. p. 16). It means that the observation is sufficiently strong that it can be reproduced by any competent scientist who precisely follows the protocols of the original researcher. Bears, Connors, and Paradiso stressed successful verification means that the observation is accepted as a fact. However, not all observations can be verified, because there are sometimes inaccuracies in the original research.

Bear, Connors and Paradiso explained that failure that failure to verify usually stems from the fact “ that additional variables such as temperature or time of day, contributed to the original result” (p. 16). It means that if the verification result is affirmative, it establishes new fact, but if the result is negative, it suggests new interpretations for the original observation.

Nevertheless, citing the study by Glaser and Strauss (1967) John Brewer (2006) stated that Glaser and Strauss argued that the emphasis on verification of existing theories kept researchers from investigating new problems areas; prevented them from acknowledging the necessarily exploratory nature of much of their work, instead it encouraged the inappropriate use of verificational logic and rhetoric; and discouraged the development and use of systematic empirical procedures for generating as well as testing theories” (Brewer, p. 44). The positivist on the other hand

insisted that a contingent proposition is meaningful if and only if it can be empirically verified.

Dvora Yanow, Peregrine Schwartz-Shea (2006) stated that, in the positivist view, “ any statement that could not be verified by reference to experience constitute to nonsense” (p. 30). Authority Another topic integrated in the research design is the authority of research. Denzin and Lincoln stated that legitimacy and validity of the research is what makes its authority. Citing Kaupapa Maori’s position, stated that “ authority of the text is “ established through recourse to a set of rules concerning knowledge, its production, and representation” (p 128).

According to Denzin and Lincoln, of the tendency that can degrade the authority of the text is when a researcher constructs a set of rules and procedures that lie outside any research project. Denzin and Lincoln stated “ In doing so, researchers might take control over what constitutes legitimacy and validity, that is, what authority is claimed for the text will be removed from the participants” (p. 128). Citing Kaupapa Maori’s view, Denzin and Lincoln stressed that Maori rejects “ outside control over what constitutes the text’s call for authority and truth” (p. 28).

Thus, a research paper can be considered authoritative if it possesses legitimacy and validity of the methodology employed through following a set of rules. Authority therefore serves for the integrity of the paper which is not controlled by external factors such as the participants. The result of the study based on validity and legitimacy of the information provides the

authority that other researchers can rely on for future studies related to the topic. Trustworthiness of research

Trustworthiness of research is very important as it gives greater value to the research process. Laurie L. Charles (2008) cited that researcher assures trustworthiness “ by addressing the study’s confirmability, dependability, credibility, and transferability” (p. 25) Charles pointed out that confirmability rejects the concept of researcher objectivity rather, it emphasizes the accuracy of the data themselves. Citing Lincoln and Guba, Charles noted that a researcher establishes confirmability through an audit trail which then organize and document the research in progress.

Charles emphasized that, there are five categories of organization and documentation in an audit trail. They are: raw data (such as field notes and interview tape), data reduction and analysis products, data reconstruction and synthesis products, process notes, and materials relating to intentions and disposition. Obviously, confirmability prevents the researcher from integrating any subjective idea in the research; the idea lies on the accuracy of the gathered data through which the hypotheses will be tested.

Dependability ensures the consistency of the study, rather than its accuracy.

According to Charles, to demonstrate dependability, “ the researcher illustrates the process of taking into account both factors of instability and factors of phenomenal or design induced change. This is another aspect why a paper can be considered trustworthy. To test its dependability, there is process that should be taken into account some factors. These factors according to Charles are factors of instability and factors of phenomenal (p.

26) that are usually passed through an auditing process, which help increase the dependability of the study through inquiries.

Credibility on the other hand “ refers to how the researcher shows that the data are representative of the multiple constructions about the phenomenon...” (Charles, p. 26). A paper can be considered credible if it represents the greater population; because, only a portion of the population is used as the sample population, whose result best represents, the bigger population. Credibility is also shown if the researcher has prolonged engagement with the problem (or phenomena) through immersion and interview with crisis negotiation practitioners.

Credibility is then, a practical means of getting into the heart of the problem. Transferability on the other hand refers to the way a researcher “ reconstructs the data” (Charles, p. 27). This is a counterpart of credibility where a researcher “ attends to the inquiry in a circuitous way, fully addressing both the phenomenon... and the research process” (p. 27). Thus, the results would be transferable to others who want to replicate the inquiry. Conclusion There are many test of a rigorous research to make sure that it is objective, valid, reliable, authoritative, verifiable, and trustworthy.

It takes a lot of procedures to employ basically the involvement of mathematical analyses of the gathered data for the resolution of the problem. Likewise, a qualitative research though purely descriptive, may be treated with the use of statistical analysis sometimes; while quantitative research requires the rigorous process. Both have limitations yet, both have proven important in selected studies and may help resolve a given problem

related to social and behavioral studies. Rigorous study seeks to keep the research useful in resolving current phenomena.