

Qualitative and Quantitative Research: How to Choose the Best Design

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May, 2007

Introduction

It is often difficult to choose between quantitative and qualitative research design. At times, a researcher may choose a design because he or she is more familiar with one method or the other or a colleague recommends a particular design. However, our research will be more helpful if we make our decision based on well-considered, suitable design rather than simply choosing a design that is more familiar or comfortable to the researcher. The purpose of this paper is to introduce graduate students and new researchers to quantitative and qualitative research design and to help them choose the best method based on the type of information needed and analytical capability.

Quantitative Design & Analysis

Quantitative Research establishes statistically significant conclusions about a population by studying a representative sample of the population.¹ The population consists of the entire group being studied. It does not matter if the population is broad or narrow, only that it includes every individual that fits the description of the group being studied.

Since it is impractical to conduct a census (include everyone in the population) because of constant turnover and resource constraints, a representative sample is chosen from the population. If chosen properly, the sample will be statistically identical to the population and conclusions for the sample can be inferred to the population.²

Quantitative research usually is one of two types: experimental or descriptive. Experimental research tests the accuracy of a theory by determining if the independent variable(s) (controlled by the researcher) causes an effect on the dependent variable (the variable being measured for change).³ Often, surveys, correlation studies, and measures

¹ Creswell, J.W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. (2nd ed.). Thousand Oaks: Sage Publications.

² Zikmund, W.G. (2001). *Exploring Marketing Research*. (7th ed.). Fort Worth: The Dryden Press.

³ Campbell, D.T. & Stanley, J.C. (1963). *Experimental and Quasi-Experimental Designs for Research*. Boston: Houghton Mifflin Company.

of experimental outcomes are evaluated to establish causality within a credible confidence range.

Descriptive research measures the sample at a moment in time and simply describes the sample's demography. Although this is not seen as a statistically robust or difficult exercise, a good description of the variables helps the researcher evaluate the statistical output in the proper context.⁴

Some researchers think that quantitative research is better than qualitative research at establishing causality because of the precise measurements and controlled environment of experiments; however qualitative studies can also be used to establish causality but with less external validity. Laboratory experiments are used when all extraneous variables need to be controlled so that the specific action and effect of the independent variable can be controlled. In addition, it may be important to be able to replicate the study and a laboratory setting makes these things possible. Field experiments are conducted when it is important to measure what the research element actually does, rather than what they say they will do. As can be seen with concept studies, what a person says they will do and what they actually do can be very different.⁵

Reliability and Validity

Reliability is the ability of separate researchers to come to similar conclusions using the same experimental design or participants in a study to consistently produce the same measurement.⁶ For example, a person who takes a risk toleration survey will achieve the same score regardless of whether he or she takes it in the morning or evening, in January or July, etc.

Validity refers to the ability of an instrument to measure what it is supposed to measure.⁷ If I conducted a survey to measure the degree of financial risk a person was willing to tolerate and the survey measured the respondent's IQ instead, it would not be valid.

Internal Validity refers to the veracity of the study, how well it was constructed and run, accuracy of definitions and theories employed, accurate measurement of variables, and the researcher's degree of confidence that the change in the dependent variable was effected by the independent variable.⁸

External Validity is a study's ability to have the results generalized to the population.⁹ In quantitative studies this is done by ensuring that sampling was done in an appropriate way, such as randomizing selection so that every element

⁴ Creswell, J.W. (2003).

⁵ Zikmund, W.G. (2001).

⁶ De Vaus, D. (2001). *Research Design in Social Research*. Thousand Oaks: Sage Publications.

⁷ Zikmund, W.G. (2001).

⁸ Huitt, B. (2003). *Internal and External Validity: General Issues*. Educational Psychology Interactive, Valdosta State University. Retrieved from <http://chiron.valdosta.edu/whuitt/col/intro/research.html> on February 16, 2003.

⁹ Huitt, B. (2003).

in a population has a chance to participate or to use selective techniques, such as stratified or snowball sampling, to ensure that various groups are adequately represented.¹⁰ The elimination of extraneous variables as causative factors increases external validity.¹¹

Qualitative Design & Analysis

Qualitative Research describes an event in its natural setting.¹² It is a subjective way to look at life as it is lived and an attempt to explain the studied behavior.¹³

Rather than design an experiment and artificially control the variables, qualitative researchers use anthropological and ethnographic methods to study the participants. As little intrusion as possible should occur in qualitative research and a researcher will frequently observe the participants unnoticed.¹⁴

Instead of providing a broad view of a phenomenon that can be generalized to the population, qualitative research seeks to explain a current situation and only describes that situation for that group. Since only a current situation is observed, all qualitative research is done in the field. A possible exception is the focus group, which is conducted with 3-10 persons and uses a script of questions. The moderator asks the questions and the recorder records the responses. Although a focus group is conducted in a controlled environment, the open ended questions and lack of rigid sample selection make it seem more like a field exercise.¹⁵

Whereas quantitative research seeks to validate a theory by conducting an experiment and analyzing the results numerically, qualitative research seeks to arrive at a theory that explains the behavior observed. In this way, it can be said that quantitative research is more deductive and qualitative research is more inductive.¹⁶

Reliability and Validity

As in quantitative research, the ability to reproduce results is important in qualitative research.

¹⁰ Zikmund, W.G. (2001).

¹¹ Flick, U. (2002). *An Introduction to Qualitative Research*. (2nd ed.). Thousand Oaks: Sage Publications.

¹² Abusabha, R. & Woelfel, M.L. (2003). Qualitative vs. Quantitative Methods: Two Opposites that Make a Perfect Match. *Journal of the American Dietetic Association*, 103(5), 566-575.

¹³ Walsh, K. (2003). Qualitative Research: Advancing the Science and Practice of Hospitality. *Cornell Hotel & Restaurant Quarterly*, 44(12), 66-75.

¹⁴ Creswell, J.W. (2003); de Vaus, D. (2001).

¹⁵ Zikmund, W.G. (2001).

¹⁶ Trochim, W.M.K. (2000). *Deduction and Induction: Deductive and Inductive Thinking*. Retrieved from <http://trochim.human.cornell.edu/kb/dedind.htm> on March 30, 2003.

Internal validity is automatically established in qualitative research because the group acts as its own point of reference.¹⁷

External validity cannot be established in the traditional sense with qualitative sense because it is not trying to reach a general conclusion about the population. Instead, validity for qualitative research is best described as rigorous, credible, and trustworthy.

Design and Study Location

Depending upon the researcher's need for objectivity, location and type of experiment can be chosen in order to maximize validity. The following grid shows when each type of design is compatible with each type of location/method.

	Laboratory	Field
Quantitative	Yes, control needed, causality can be established	Yes, observation, control not needed, correlation
Qualitative	No (except for similarities with focus groups)	Yes, all observations are in the field, explain current phenomenon

A Practical Example

To illustrate different approaches, consider the example of a company experiencing a sudden increase in turnover. The manager is unsure why turnover has suddenly spiked and commissions a study to determine its cause.

If a researcher wants to determine the cause of the increased turnover, he or she may analyze the situation differently depending on the research method chosen.

Quantitative: The researcher would start by gathering demographic data so he or she could describe the employee pool. Then, a data gathering instrument such as a

¹⁷ de Vaus, D. (2001).

survey may be used to ask specific questions about personal characteristics, cause for terminating employment, etc. The data would be numerically analyzed to see if a correlation existed between variables and, if so, regression may be used to predict future turnover based on the presence of the same independent factors (variables) that were studied.

Qualitative: If qualitative research methodology was chosen, the researcher may choose to conduct a case study, using personal interviews and observation to try to determine the cause(s) of increased turnover. Since ethnographic considerations are taken, the researcher tries to determine this group's version of reality, rather than accepting one generic version of reality like the quantitative researcher would do. Since this is a study about why this company has experienced an increase in turnover, the results could only be inferred for this company or, at the most, to companies that are very much like this one.¹⁸

Conclusion

Depending upon the desired outcome of the research, social scientists may choose between quantitative or qualitative designs. Since they seek to explain events from different perspectives, both are valid ways to evaluate a phenomenon in the proper context. By examining the current situation, the research question, and the critical factors of each design, the researcher can make a more informed choice and enhance both reliability and validity of the study.

¹⁸ Creswell, J.W. (2003); de Vaus, D. (2001); Flick, U. (2002).