

# Qualitative vs. Quantitative Research

## ABSTRACT

### BACKGROUND

Qualitative research is a process of naturalistic inquiry that seeks an in-depth understanding of social phenomena within their natural setting. It focuses on the "why" rather than the "what" of social phenomena and relies on the direct experiences of human beings as meaning-making agents in their everyday lives. Rather than by logical and statistical procedures, qualitative researchers use multiple systems of inquiry for the study of human phenomena including biography, case study, historical analysis, discourse analysis, ethnography, grounded theory, and phenomenology. Quantitative methodology is the dominant research framework in the social sciences. It refers to a set of strategies, techniques and assumptions used to study psychological, social and economic processes through the exploration of numeric patterns. Quantitative research gathers a range of numeric data. Some of the numeric data is intrinsically quantitative (e.g. personal income), while in other cases the numeric structure is imposed (e.g. 'On a scale from 1 to 10, how depressed did you feel last week?'). The collection of quantitative information allows researchers to conduct simple to extremely sophisticated statistical analyses that aggregate the data. Quantitative research includes methodologies such as questionnaires, structured observations or experiments and stands in contrast to qualitative research. Qualitative research involves the collection and analysis of narratives and/or open-ended observations through methodologies such as interviews, focus groups or ethnographies. The purpose of quantitative research is to generate knowledge and create understanding about the social world. Quantitative research is used by social scientists, including communication researchers, to observe phenomena or occurrences affecting individuals. Social scientists are concerned with the study of people. Quantitative research is a way to learn about a particular group of people, known as a sample population. Using scientific inquiry, quantitative research relies on data that are observed or measured to examine questions about the sample population.<sup>1-2</sup>

### KEYWORDS

Qualitative Research, Quantitative Research, Observation

## BACKGROUND

Research is the most widely used tool to increase and brush-up the stock of knowledge about something and someone. In the field of marketing, business, sociology, psychology, science & technology, economics, etc. there are two standard ways of conducting research, i.e. qualitative research or quantitative research.<sup>2</sup> While the qualitative research relies on verbal narrative like spoken or written data, the quantitative research uses logical or statistical observations to draw conclusions. In a qualitative research, there are only a few non-representative cases are used as a sample to develop an initial understanding. Unlike, quantitative research in which a sufficient number of representative cases are taken to consideration to recommend a final course of action. There is a never-ending debate on, which research is better than the other, so in this article, we are going to shed light on the difference between qualitative and quantitative research.

### Definition of Qualitative Research

Qualitative research is one which provides insights and understanding of the problem setting. It is an unstructured, exploratory research method that studies highly complex phenomena that are impossible to elucidate with the quantitative research. Although, it generates ideas or hypothesis for later quantitative research. Qualitative research is used to gain an in-depth understanding of human behaviour, experience, attitudes, intentions, and motivations, on the basis of observation and interpretation, to find out the way people think and feel. It is a form of research in which the researcher gives more weight to the views of the participants. Case study, grounded theory, ethnography, historical and phenomenology are the types of qualitative research.<sup>2</sup>

### Definition of Quantitative Research

Quantitative research is a form of research that relies on the methods of natural sciences, which produces numerical data and hard facts. It aims at establishing cause and effect relationship between two variables by using mathematical, computational and statistical methods. The research is also known as empirical research as it can be accurately and precisely measured. The data collected by the researcher can be divided into categories or put into rank, or it can be measured in terms of units of measurement. Graphs and tables of raw data can be constructed with the help quantitative research, making it easier for the researcher to analyse the results.<sup>2</sup>

Researchers using qualitative methods tend to-

- Think that social sciences cannot be well-studied with the same methods as natural or physical sciences
- Feel that human behaviour is context-specific; therefore, behaviour must be studied holistically, in situ, rather than being manipulated
- Employ an 'insider's' perspective; research tends to be personal and thereby more subjective.

- Do interviews, focus groups, field research, case studies, and conversational or content analysis.<sup>3</sup>

Basis for Comparison	Qualitative Research	Quantitative Research
Meaning	Qualitative research is a method of inquiry that develops understanding on human and social sciences, to find the way people think and feel.	Quantitative research is a research method that is used to generate numerical data and hard facts, by employing statistical, logical and mathematical technique.
Nature	Holistic	Particularistic
Approach	Subjective	Objective
Research type	Exploratory	Conclusive
Reasoning	Inductive	Deductive
Sampling	Purposive	
Data	Verbal	Measurable
Inquiry	Process-oriented	Result-oriented
Hypothesis	Generated	Tested
Elements of analysis	Words, pictures and objects	Numerical data
Objective	To explore and discover ideas used in the ongoing processes.	To examine cause and effect relationship between variables.
Methods	Non-structured techniques like In-depth interviews, group discussions etc.	Structured techniques such as surveys, questionnaires and observations.
Result	Develops initial understanding	Recommends final course of action

*Table 1. Comparison Chart*

### Qualitative Research: An Operational Description<sup>4</sup>

- Purpose: explain; gain insight and understanding of phenomena through intensive collection and study of narrative data
- Approach: inductive; value-laden/subjective; holistic, process-oriented
- Hypotheses: tentative, evolving; based on the particular study
- Lit. Review: limited; may not be exhaustive
- Setting: naturalistic, when and as much as possible
- Sampling: for the purpose; not necessarily representative; for in-depth understanding
- Measurement: narrative; ongoing
- Design and Method: flexible, specified only generally; based on non-intervention, minimal disturbance, such as historical, ethnographic, or case studies
- Data Collection: document collection, participant observation, informal interviews, field notes
- Data Analysis: raw data is words/ ongoing; involves synthesis
- Data Interpretation: tentative, reviewed on ongoing basis, speculative<sup>4</sup>

### Trends

- Qualitative research with more structure and less subjectivity
- Increased application of both strategies to the same study ("mixed methods")
- Evidence-based practice emphasized in more fields (nursing, social work, education, and others).

Researchers using quantitative methods tend to-

- Think that both natural and social sciences strive to explain phenomena with confirmable theories derived from testable assumptions
- Attempt to reduce social reality to variables, in the same way as with physical reality
- Try to tightly control the variable (s) in question to see how the others are influenced.
- Do experiments, have control groups, use blind or double-blind studies; use measures or instruments.<sup>4</sup>

### **Quantitative Research: An Operational Description**

- Purpose: explain, predict or control phenomena through focused collection and analysis of numerical data.
- Approach: deductive; tries to be value-free/has objectives/ is outcome-oriented.
- Hypotheses: Specific, testable, and stated prior to study.
- Lit. Review: extensive; may significantly influence a particular study.
- Setting: controlled to the degree possible.
- Sampling: uses largest manageable random/randomized sample, to allow generalization of results to larger populations.
- Measurement: standardized, numerical; "at the end"
- Design and Method: Strongly structured, specified in detail in advance; involves intervention, manipulation and control groups; descriptive, correlation, experimental.
- Data Collection: via instruments, surveys, experiments, semi-structured formal interviews, tests or questionnaires.
- Data Analysis: raw data is numbers; at end of study, usually statistical.
- Data Interpretation: formulated at end of study; stated as a degree of certainty<sup>4</sup>

Quantitative data can help to see the big picture. Qualitative data adds the details and can also give survey results.

How to use each method in a research project-

- Formulating Hypotheses: Qualitative research helps you gather detailed information on a topic. You can use it to initiate your research by discovering the problems or opportunities people are thinking about. Those ideas can become hypotheses to be proven through quantitative research.
- Validating Your Hypotheses: Quantitative research will get you numbers that you can apply statistical analysis to in order to validate your hypotheses. Was that problem real or just someone's perception? The hard facts obtained will enable you to make decisions based on objective observations.
- Finding General Answers: Quantitative research usually has more respondents than qualitative research because it is easier to conduct a multiple-choice survey

than a series of interviews or focus groups. Therefore, it can help you definitely answer broad questions like: Do people prefer you to your competitors? Which of your company's services are most important? What ad is most appealing?

- Incorporating the Human Element: Qualitative research can also help in the final stages of your project. The quotes you obtained from open-ended questions can put a human voice to the objective numbers and trends in your results. Many times, it helps to hear your customers describe your company in their own words to uncover your blind spots. Qualitative data will get you that.<sup>4</sup>

### **Balancing Qualitative and Quantitative Research**

These two research methods don't conflict with each other. They actually work much better as a team. In a world of Big Data, there's a wealth of statistics and figures that form the strong foundation on which your decisions can rest. But that foundation is incomplete without the information collected from real people that gives the numbers meaning.

So how do you put these two forms of research together? Qualitative research is almost always the starting point when you seek to discover new problems and opportunities—which will help you do deeper research later. Quantitative data will give you measurements to confirm each problem or opportunity and understand it.

For example, Let's say you held a conference and wanted feedback from your attendees. You can probably already measure several things with quantitative research, such as attendance rate, overall satisfaction, quality of speakers, value of information given, etc. All these questions can be given in a closed-ended and measurable way. But you also may want to provide a few open-ended, qualitative research questions to find out what you may have overlooked. You could use questions like:

- What did you enjoy most about the conference?
- How could we improve your experience?
- Is there any feedback on the conference you think we should be aware of?

If you discover any common themes through these qualitative questions, you can decide to research them more in depth, make changes to your next event, and make sure to add quantitative questions about these topics after the next conference.

For example, let's say several attendees said that their least favorite thing about the conference was the difficult-to-reach location. Next time, your survey might ask quantitative questions like how satisfied people were with the location, or let respondents choose from a list of potential sites they would prefer.<sup>3-4</sup>

### **Open-Ended vs. Close-Ended Questions**

A good way of recognizing when you want to switch from one method to the other is to look at your open-ended questions and ask yourself why you are using them. For example, if you asked: "What do you think of our ice cream

prices?”, people would give you feedback in their own words and you will probably get some out-of-the-box answers. If that’s not what you’re looking for, you should consider using an easily quantifiable response. For example: Relative to our competitors, do you think our ice cream prices are-Higher/About the same/Lower. This kind of question will give your survey respondents clarity and in turn it will provide you with consistent data that is easy to analyze.<sup>5</sup>

### How to Get Qualitative Data

There are many methods you can use to conduct qualitative research that will get you richly detailed information on your topic of interest.

- Interviews- One-on-one conversations that go deep into the topic at hand.
- Case Studies- Collections of client stories from in-depth interviews.
- Expert Opinions- High-quality information from well-informed sources.
- Focus Groups- In-person or online conversation with small groups of people to listen to their views on a product or topic.
- Open-ended Survey Questions. A text box in a survey that lets the respondent express their thoughts on the matter at hand freely.
- Observational Research. Observing people during the course of their habitual routines to understand how they interact with a product, for example.

However, this open-ended method of research does not always lend itself to bringing you the most accurate results to big questions. And analysing the results is hard because people will use different words and phrases to describe their points of view, and may not even talk about the same things if they find space to roam with their responses.<sup>5</sup> In some cases, it may be more effective to go ‘full quantitative’ with your questions.

### Why Collect Quantitative Data?

Qualitative survey questions can run the risk of being too vague- To avoid confusing your respondents, you may want to eschew questions like, “What do you think about our internet service?” Instead you could ask a closed-ended, quantitative question like in the following example.<sup>5</sup>

The internet service is reliable- Always/Most of the time/About half the time/Once in a while/Never

### Qualitative Questions Take Longer to Answer

Survey respondents don’t always have the patience to reflect on what they are being asked and write long responses that accurately express their views. It’s much faster to choose one of several pre-loaded options in a questionnaire. Using quantitative questions helps you get more questions in your survey and more responses out of it.<sup>5</sup>

### Quantitative Survey Questions are Just More Quantifiable

Even word responses in closed-ended questionnaires can be assigned numerical values that you can later convert into indicators and graphs. This means that the overall quality of the data is better. Remember that the most accurate data leads you to the best possible decisions.<sup>5</sup>

### Review of Literature

- If respondents do not see a value for them in the research, they may provide inaccurate or false information. They may also say what they think the researcher wishes to hear. Qualitative researchers therefore need to take the time to build relationships with their research subjects and always be aware of this potential.
- Although ethics are an issue for any type of research, there may be particular difficulties with qualitative research because the researcher may be party to confidential information. It is important always to bear in mind that you must do no harm to your research subjects.
- It is generally harder for qualitative researchers to remain apart from their work. By the nature of their study, they are involved with people. It is therefore helpful to develop habits of reflecting on your part in the work and how this may affect the research.
- Because qualitative data are drawn from a wide variety of sources, they can be radically different in scope.
- There are, therefore, a wide variety of methods for analysing them, many of which involve structuring and coding the data into groups and themes. There are also a variety of computer packages to support qualitative data analysis. The best way to work out which ones are right for your research is to discuss it with academic colleagues and your supervisor.<sup>6-7</sup>

Qualitative	Quantitative
Methods include focus groups, unstructured or in-depth interviews, and reviews of documents for types of themes	Surveys, structured interviews, measurements & observations, and reviews of records or documents for numeric or quantifiable information
A primarily inductive process used to formulate theory or hypotheses	A primarily deductive process used to test pre-specified concepts, constructs, and hypotheses that make up a theory
More subjective: describes a problem or condition from the point of view of those experiencing it	More objective: provides observed effects (interpreted by researchers) of a program on a problem or condition
Text-based	Number-based
More in-depth information on a few cases	Less in-depth but more breadth of information across a large number of cases
Unstructured or semi-structured response options	Fixed response options, measurements, or observations
No statistical tests	Statistical tests are used for analysis
Less generalizable	More generalizable

**Table 2. Summarized Differences**

It is possible to combine quantitative and qualitative methods, although great care should be taken to ensure that the theory behind each method is compatible and that the

methods are being used for appropriate reasons. The two methods can be used sequentially (first a quantitative then a qualitative study or vice versa), where the first approach is used to facilitate the design of the second; they can be used in parallel as different approaches to the same question; or a dominant method may be enriched with a small component of an alternative method (such as qualitative interviews 'nested' in a large survey). It is important to note that free text in surveys represents qualitative data but does not constitute qualitative research. Qualitative and quantitative methods may be used together for corroboration (hoping for similar outcomes from both methods), elaboration (using qualitative data to explain or interpret quantitative data, or to demonstrate how the quantitative findings apply in particular cases), complementarity (where the qualitative and quantitative results differ but generate complementary insights) or contradiction (where qualitative and quantitative data lead to different conclusions). Each has its advantages and challenges.<sup>8</sup>

Qualitative research is gaining increased momentum in the clinical setting and carries different criteria for evaluating its rigor or quality. Quantitative studies generally involve the systematic collection of data about a phenomenon, using standardized measures and statistical analysis. In contrast, qualitative studies involve the systematic collection, organization, description and interpretation of textual, verbal or visual data. The particular approach taken determines to a certain extent the criteria used for judging the quality of the report. However, research using qualitative methods can be evaluated and there are some generic guidelines for assessing qualitative research.<sup>9-11</sup>

## CONCLUSIONS

Although the quantitative and qualitative approaches to research are different, they can be complementary when used together; e.g., a researcher may conduct a focus group first to aid in the development of an instrument such as a survey. On the other hand, a researcher who completes a quantitative analysis may choose to look more in depth at a particular trend or phenomenon that was discovered during the data analysis and/or interpretation phases. Researchers may also use techniques from both traditions simultaneously. For example, a researcher might decide to

conduct a content analysis of an online forum and quantitatively analyse data obtained from a survey instrument. Using mixed methods is a good way of employing triangulation, particularly "methodological triangulation."<sup>7</sup> It will be up to you, the researcher, and your advisor to decide as to which methods will work best for your research questions and goals. It is important that you understand that you are not locked into using one tradition or the other when writing your thesis or dissertation, and both are valuable.

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