



Evidence-based Management

Qualitative and Quantitative Approaches to Evidence-Based Management

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Executive summary

Social scientists are tasked with the difficult job of examining something as mutable, idiosyncratic, and subjective as human experience, and distilling their findings in a systematic, unbiased manner. The field has been shaped by controversies over how best to accomplish this. Early psychologists such as Wilhem Wundt, Sigmund Freud, and Carl Jung believed that the study of human psychology required personalized, florid descriptions of individual experience; however, the data this yielded was often difficult to analyze in an objective, organized way (Hatfield, 1997). In contrast, behaviorists such as B.F. Skinner and cognitivists such as Norbert Weiner (1948) believed that humans' thoughts, feelings, and actions should be recorded in a close-ended fashion, and analyzed mathematically (Delprato & Midgley, 1992). The data yielded by this approach was often straightforward to analyze, but more difficult to meaningfully interpret. These two schools of thought led to the formation of two different research philosophies usually referred to as quantitative and qualitative approach to research.

Introduction

Qualitative and quantitative approaches are still frequently seen as competing. The distinct advantages and disadvantages of each, as well as the research questions that are best suited to each, are explored below. In addition, this CQ Dossier describes mixed-methods approaches, which incorporate elements of both quantitative methods and qualitative methods.

Qualitative approaches

Defined. Qualitative research is descriptive, open-ended, and adaptable. The philosophy behind qualitative methods is that a researcher cannot anticipate participants' responses or reactions prior to collecting data from them, and that every scientific study is biased by researchers' own background and viewpoint (Kelly, 2008). According to this perspective, a researcher should not attempt to obscure the personal reactions and impressions of either the researcher or participants; rather, the researcher should document them and reflect upon them. In a qualitative study, a researcher accepts and

embraces subjectivity, letting the participants' feedback guide the study process, and exploring topics and themes the researcher may not have anticipated being relevant initially.

Qualitative research usually entails collecting large amounts of detailed information that is either narrative (story-based) or impressionistic (subjective-reaction-based). In qualitative designs such as focus groups, semi-structured interviews, or phenomenological studies, the participant provides a great deal of information in their own words; this information is later coded by the researcher, or analyzed for prevailing themes (Ayers, 2008). In designs such as case studies, workplace observations, or field notes, the researcher themselves contributes a great deal of information, indicating their impressions of what has occurred and how the participant appears to think, feel, and behave (Maxwell, 2008).

Advantages. Because of their in-depth, open-ended nature, qualitative approaches typically leave the researcher with a large amount of data that can be carefully read and analyzed in a variety of ways. Since participants' responses are not restricted by close-ended survey options or pre-determined definitions of variables, a qualitative approach can yield data that challenges the researcher's assumptions or expands their understanding of the topic being explored (Cassell & Symon, 2004).

Qualitative data collection also allows participants to be expressive and emotive. Many readers find quotes from qualitative data to be especially compelling; a participant's own words can be used to illustrate a larger trend the researcher noticed in the data. Qualitative methods are best suited to research questions that are descriptive and exploratory in nature – if a researcher is striving to document what a phenomenon looks like in the real world, or wants to learn more about what a group of people perceives or believes, a qualitative approach is ideal.

Disadvantages. Qualitative research does not provide straightforward answers to research questions. Qualitative data, by its very nature, is subjective; a participant's perceptions of reality may not line up with the facts, or with the perceptions of other people. Furthermore, a researcher's interpretation of qualitative data is subjective; often multiple competing narratives can be crafted from the same set of responses. If a

researcher seeks a clear-cut comparison between groups or an objective test of an intervention, a qualitative approach is not a good fit.

Quantitative approaches

Defined. Quantitative research quantifies human experience in numerical terms. Quantitative researchers believe that the best way to circumvent human error in the sciences is to strive for objective, concrete methods of manipulating and recording variables (Allison, 2002). Most quantitative researchers also believe that any subjective human experience can be measured in a numerical fashion. This perspective is exemplified by the words of social psychologist Hans Eysenck: "If it cannot be measured, it does not exist" (Gibson, 1981).

Using pre-determined systems of measurement such as close-ended surveys and tests, a quantitative researcher collects numerical data on participants' feelings, thoughts, and behaviors. This numerical data can be analyzed statistically – allowing the researcher to compare distinct groups, examine overall trends, and explore linear and non-linear relationships between recorded variables. When beginning a quantitative study, the researcher already has a firm idea of the information they will be collecting and how that data will be analyzed to answer their research questions (Neuman, 2002).

Advantages. Quantitative research relies on measures that have been validated and tested for reliability. Because instruments and response options are developed and tested prior to data collection, it is very easy for a researcher or group of researchers to use consistent methods from study to study. This consistency allows researchers to carefully reproduce one another's results, often in new settings with new samples.

The systematic nature of quantitative research lends itself to research questions that require relatively clear-cut answers. For example, if an organization seeks to determine which of three offices is highest in productivity, a quantitative researcher can collect standardized data on productivity from all three locations and compare their averages in a manner that is both efficient and easy to interpret. Quantitative results can describe how two variables relate to one another, document changes or trends over time, and indicate how groups differ from one another in measured terms (Bernard & Bernard,

2012). The results of quantitative studies are typically easily to graphically depict, and conclusions are guided by pre-determined statistical standards.

Disadvantages. A quantitative researcher's conclusions are only as good as their measurement instruments. If a survey question offers a limited range of response options and a participant is left unsure how to respond, the resulting data may be randomly distributed and useless. Data can be further jeopardized if a participant doesn't understand what they are being asked, or if they disagree with the underlying premises implied by the questions (Presser et al, 2004). It is also easy for participants to respond dishonestly to close-ended surveys and tests, or to complete them as quickly as possible, without carefully reading them. None of these issues can be detected in the final data. Quantitative methods also cannot adapt throughout the duration of the study – a researcher is not able to ask follow-up questions or adjust their data collection strategy once the research has begun.

Quantitative data also suffers from a built-in false positive rate. Most quantitative studies are analyzed with a Type I error rate (false positive rate) of .05, or 5%. This means that, as famously noted by Ioannidis (2005), at least 5% of all published research results are false. Quantitative approaches also come with an embedded risk of Type II errors (false negatives) – an existing effect or meaningful trend may not show up in the data if the sample is too small or insufficiently diverse. These restrictions are inherent to the statistical procedures used in quantitative research, and can be viewed as an acknowledged limitation, rather than a flaw.

Mixed-Methods Approaches

The dichotomy between quantitative and qualitative approaches is a false one. Many researchers elect to use a mixed-methods approach, collecting some data in a quantitative fashion but asking follow-up questions that are more open-ended and qualitative in nature (Jick, 1979). Social scientists can also combine a quantitative design – such as an experiment or a survey – with a more qualitative one, such as a focus group or interview, to help triangulate their findings. A mixed-method approach can allow a researcher to document straightforward statistical phenomena while also giving participants the space to describe their subjective experience in their own words. While

it can be more time-consuming to collect and analyze both sets of data, it allows a researcher to harness the advantages of both approaches (Hussein, 2015).

Key take-aways

- Qualitative and quantitative approaches both attempt to accurately render subjective human experiences.
- Qualitative research is open-ended, highly detailed, and subjective, but complicated to analyze
- Quantitative research uses validated methods to measure and describe data, but it can miss deeper subjective truths
- Whether a researcher should employ a quantitative or qualitative approach depends on the researcher's goals and questions
- A mixed-methods approach involves combining close-ended, quantitative questions with open-ended, qualitative ones

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