

Research Methods: Qualitative Data Analysis
By Gail Fann Thomas, Associate Professor
Graduate School of Business & Public Policy
Naval Postgraduate School

Chances are you've chosen a qualitative approach because you wanted to interview key informants, use focus groups to learn about a social phenomenon, or analyze critical documents associated with an important issue. Now let's suppose you've collected your data, but you're not sure how to go about analyzing it. This module will help you start the process by giving you a few simple guidelines. Once you've completed this module, you'll be ready to sit down and start analyzing your own data.

As you'll soon find out, qualitative analysis is quite different from quantitative or statistical analysis. Yet, if done well, the process should be just as systematic, just as rigorous, and just as disciplined as any quantitative analysis. After you've finished this module we think you'll see what we mean.

Learning Objectives

Let's take a quick look at an overview of this module and see what you'll be expected to know when you've finished this session.

First, we'll do a quick review of the differences between quantitative and qualitative studies. This will be a good way to establish the context for the remainder of the discussion. Next, we'll describe the steps you'll use to conduct an analysis and along the way we'll show you an example of how to go about doing this.

As you proceed through this module you'll notice that we've designed this session to give you some simple guidelines for analyzing qualitative data. Please note that this module does NOT go into detail about *when* to use qualitative methods, how to do interviews or focus groups, how to write interview questions, or how to write up a qualitative study. While we briefly mention these aspects of qualitative research, you'll need to consult another module in this series or refer to another source to learn more about these other aspects.

Know, too, that qualitative research is a broad and fast-growing field. If you were to take a course on qualitative research you'd learn that there are numerous approaches to this type of research. We've chosen *thematic analysis* for this module because we think it will be most useful in the work you will be doing for your projects.

When you finish this session you'll know enough about thematic analysis to get started on your own study, but you may still want to do some additional reading on this topic. In that case, you'll find a list of resources accompanying this learning module. One set of references addresses the actual method. The other set of references lists studies done using this technique. By looking at some of these examples, you'll see the wide variety of ways to use this approach.

When you've finished viewing this module, we hope you'll be able to:

- Describe how qualitative and quantitative analyses are different,
- Explain the steps for conducting a qualitative analysis, and
- Demonstrate your understanding by coding some data.

Okay, let's get started.

Qualitative Research

Innovators are told: "Think outside the box."

Qualitative scholars tell their students: "Study the box. Observe it. Inside. Outside. From inside to outside, and outside to inside. Where is it? How did it get there? What's around it? Who says it's a 'box'? What do they mean? Why does it matter? Or does it? What is *not* 'box'? Ask the box questions. Question others about the box. What's the perspective from inside? From outside? Study diagrams of the box. Find documents related to the box. What does *thinking* have to do with the box anyway? Understand *this* box. Study another box. And another. Understand *box*. Understand. Then you can think inside *and* outside the box. Perhaps. For a while. Until it changes. Until you change. Until outside becomes inside—again. Then start over. Study the box."

Patton, *Qualitative Research & Evaluation Methods* (2002), 2

Quantitative research is used to analyze numerical data. Qualitative research analyzes words. Researchers may choose a qualitative approach for several reasons: 1) because the phenomenon under study is not well-researched, which means it might be hard to generate hypotheses and develop quantitative measures, 2) the issue at hand can be studied more deeply and fully by observing actual behavior or questioning informants, 3) a process can be studied over time.

Types of Qualitative Data

Qualitative data fall into three broad categories:

- 1) *Interviews and focus groups* which pose open-ended questions of participants to glean information about people's experience, perceptions, opinions, feelings, and knowledge. These data are usually transcribed so the researcher can study and code the text.
- 2) *Observations* which allow researchers to view activities, behaviors, actions, conversations, interpersonal interactions, or organizational processes. Researchers generally take notes, tape record, or videotape to capture these data.
- 3) *Written documents*, including organizational records, policies, memoranda, official publications and reports, personal diaries, or photographs. These documents are generally digitized for further analysis.

Characteristics of Qualitative Analysis

Data you will collect for a qualitative study will have words—and lots of them! Your job will be to reduce, categorize, find patterns, illuminate relationships, make sense, and interpret these thousands of words in meaningful ways.

If you were to conduct a quantitative study, you'd need to know something about means, medians, and modes. Chances are you'd learn things about independent and dependent variables, correlations, chi-squares, multiple regression, or analysis of variance. These procedures are standardized and proceed in almost a cookbook fashion.

Unlike quantitative studies, qualitative analysis has fewer universal rules and is less linear. Qualitative analysis is a more iterative process, moving back and forth from an inductive to deductive process. Because of its lack of standardization, the researcher needs to take extra care in demonstrating a systematic and disciplined approach to the analysis. Like all scientific studies, your conclusions must be credible, defensible, warranted, and able to withstand alternative explanations.

Starting Off – The Research Question

In any study, the research question provides a grounding force. In a quantitative study, it points to your hypothesis, independent and dependent variables. In a qualitative study, it will set the stage and help you determine where to collect data and how to analyze those data.

Let's use an example to illustrate. Say you want to study interagency collaboration. You might start by asking, "What factors contribute to successful interagency collaboration?" A sub-question might be "What are the barriers to interagency collaboration?" To answer these research questions, you might interview selected homeland security professionals and ask them to talk about successful interagency experiences.

A key to good qualitative analysis will be the quality of the questions you ask your participants. Open-ended yet focused questions will yield rich, in-depth data. Be careful not to develop a questionnaire that yields short, closed-ended responses (like "yes" "no" answers or numerical-type questions).

Now back to our example. Let's assume we've asked well-crafted questions that allow us to gather rich detail about the factors that led to successful interagency collaboration. An example of such a question might be: "Tell me about a time when your agency was involved in a successful collaboration. What were the circumstances? What led to the collaboration?" And so forth. See what we mean by asking rich, open-ended questions versus simple close-ended questions?

In this example, we'll narrow our data collection to interviews (instead of focus groups, observations, or documents) and assume that we've recorded and transcribed all of the interviews. Let's say we determined that 60-minute interviews with ten key informants were sufficient for our study. Transcribed, those ten interviews will yield about 150 pages of single-spaced text. Now, what do you do with it?

Thematic Analysis

Thematic analysis captures important categories in the data in relation to the research question. It reveals patterns and makes sense of the data in meaningful ways. The "keyness" of a theme is not necessarily the number of times it appears but whether it captures something important in relation to the overall research question.

DATA DO NOT SPEAK FOR THEMSELVES.

The data you collect should not be expected to speak for themselves. Rather the data will serve as evidence for the themes and relationships you will establish.

The Process

Now you have a mass of data that must be organized and reduced. Your job will be to select, focus, simplify, and transform the data to answer the question at hand. It's much like the photographer describing a photo to someone. What's key in the picture? What's in the foreground? What's in the background? What can you tell us about the context? What are the relationships of the objects in the photo? After systematically analyzing your data, you'll be able to illuminate your data and tell a story that is defensible to most any audience.

As we mentioned earlier, qualitative research is less linear and more iterative than quantitative. So if you've done your job well, you've already been keeping a notebook with insights you've gleaned along the way. For instance, when we're involved in an interview project, we generally schedule time after an interview to write down any insights. We also read the related literature as we go along and keep notes that might help us interpret the data. These notes or "memoing" are an integral part of the data analysis.

Now let's proceed to the steps you will follow to develop your themes.

1. *Close Reading of Data.*

In the course of your analysis, you will read and reread the data attempting to gain a deep understanding of it. If you conduct interviews, your first introduction to the data will occur as you listen to the respondents answer your questions. If you transcribe your own data, you'll have another chance to gain a deeper understanding of the data. Once the data are transcribed, you will want to read and reread the transcripts before you actually begin your coding. Each reading reveals nuances not evident from the previous reading.

2. *Identifying Initial Codes.*

Now you'll want to begin coding your data. Codes are assigned to segments of data that seem interesting and relate to the research questions. A code may be tagged to a word, a phrase, a sentence, or some larger segment of text. Text can have multiples codes.

Codes are the basic stepping stones to the development of themes. At first you'll want to code for many possible themes.

Coding can be done manually, with word processing, or with specialized qualitative analysis tools such as QSR NVivo or ATLAS.ti.

Manual coding. If you code manually, you'll need a set of colored markers. Take the transcript or other written record of text and begin highlighting the text and writing codes in the margins.

Once you have the text coded, you'll cut the paper into strips, combining codes into like piles. Be sure to identify the sources of the text so you can go back to the original transcript if needed.

Interview Transcript	Code
Participant 5 – Page 3 11The initial development of the group 12[resulted from having] to determine 13how to spend around \$7 million. 14While this amount will not provide 15ample funding for security for all 16agencies, the coming together and 17development of a single vision of 18what homeland security should be in 19the region was developed.	incentive to collaborate developing a vision

Coding with word processing software. If you choose to use a word processing to code, you'll use a process similar to the one above, but each coded text can be cut and pasted into separate windows. Using the Windows function you can open several windows simultaneously and paste text into the appropriate window.

Coding with specialized software. Specialized software is available for managing qualitative data. While the researcher is always the one who will have to identify the codes, qualitative software works well for managing large sets of data.

Products like QSR NVivo allow you to code the data. Coded data is automatically tagged to the source and dumped into a file. The researcher can also assign attributes such as gender, occupation, and age to each coded excerpt and sort accordingly. While the software provides a more sophisticated approach to coding, there is a rather steep learning curve to learn the software. Count on investing a few hours to learn the most basic functions.

3. Development of Themes

This stage of the analysis requires the researcher to review all the codes and determine how different codes may combine to form an overarching theme and subthemes. At this point you should have several files that combine text into homogeneous codes.

Back to our earlier example about collaborative capacity, we might have two pages of excerpts that were coded “incentive to collaborate.” This set of data will represent the first theme. Now that we have our coded text grouped, we would read and reread these related excerpts to better understand the notion of “incentives” as they relate to the other themes we develop and as they relate to the larger question of successful interagency collaboration.

In addition to the coding, we may also want to analyze data with tools such as process maps or cross-classification matrices. Cross-classification matrices are created by crossing one dimension with another, working back and forth with the data to fill in the matrix. This type of tool allows you to surface meaningful patterns in the data.

After the first-round of theme development, you’ll want to review the themes with an eye to refining them. Some themes may need to be collapsed and others may be broken into subthemes. You’ll want to look for internal homogeneity – coherence within a theme and external heterogeneity—distinct themes that represent the data set with clear relationships among the themes and a clear connection to the original research questions.

4. Thematic Map

After carefully developing the themes, you should be able to draw a thematic map—much like a mindmap. The map provides an overall conception of the data patterns and the relationship among the themes. Let’s return to our collaborative capacity example. Here’s the mindmap that eventually came out of those data. The main phenomenon lies at the center of the map. Themes and subthemes are shown in the map with the relationships among the themes.

5. **Writing Up the Analysis**

For each theme you should be able to write a detailed analysis. Be sure to show how each theme fits into the overarching theme and how it relates to your research questions. Your report should provide a convincing, coherent, logical and interesting account of a story within and across the themes. You'll want to choose vivid examples of quotes from your transcript that will serve as evidence of your claims. Each quote should be representative of the theme. Be sure to go beyond description and make an argument in relationship to your research question.

Summary

Upon completion of your study, you should be able to step back and answer these questions:

- Are the themes internally coherent, consistent, and distinct?
- Have the data been analyzed, not just paraphrased and described?
- Do the quotes or extracts illustrate the analytic claims?
- Does the analysis tell a convincing story about the data and topic?
- Is there a good balance between the story that makes sense of the data and the extracts that serve as evidence?
- Does the analysis address the research questions adequately?
- Have you written a provocative, defensible story that adds to our knowledge about the stated topic?

If you can answer “yes” to all of these questions, chances are you’ve conducted a good qualitative analysis.

REFERENCES

Examples of Qualitative Studies

Henderson, Nicole J., Christopher W. Ortiz, Naomi F. Sugie, and Joel Miller. *Law Enforcement and Arab American Community Relations After September 11, 2001*. Technical Report. Vera Institute of Justice, June 2006.
http://www.vera.org/publication_pdf/354_637.pdf

Hocevar, Susan Page, Gail Fann Thomas, and Erik Jansen. "Building Collaborative Capacity: An Innovative Strategy for Homeland Security Preparedness." In *Innovation Through Collaboration*, Advances in Interdisciplinary Studies of Work Teams. Elsevier Series, Volume 13, September 2006.

Policy Studies, Inc. "Communicating about BioTerrorism: Report on Focus Groups with the General Public and In-Depth Interviews with Representatives of Special Populations in Rhode Island." Rhode Island Department of Health, November 2002. <https://www.hsdl.org/homesec/docs/health/nps19-032805-05.pdf>

Qualitative Data Analysis -- Sources that informed this module

Boyatzis, Richard E. *Transforming Qualitative Information: Thematic Analysis and Code Development*. Thousand Oaks, CA: Sage Publications, 1998.

Johnson, Burke and Larry Christensen. "Educational Research: Quantitative, Qualitative, and Mixed Approaches."
<https://www.southalabama.edu/coe/bset/johnson/lectures/lec17.pdf>

Patton, Michael Quinn. *Qualitative Research & Evaluation Methods*, 3rd edition. Thousand Oaks, CA: Sage Publications, 2002.

Strauss, Anselm and Juliet M. Corbin. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. Thousand Oaks, CA: Sage Publications, 1998.