Dimitri Mortelmans

# Doing Qualitative Data Analysis with NVivo



# Preface

Oualitative research has known turbulent times. The War of the Methods questioning the scientific status of qualitative research lies behind us. The suspicion of digitalisation and colonisation by software programs has silenced. The rise of Mixed Methods was embraced and positioned as a middle way between the qualitative and quantitative approaches of scientific inquiry. And through all these academic debates, Computer-Assisted Qualitative Data AnalysiS (or CAQDAS) developed (Paulus et al., 2014), almost unnoticed. Starting with a wide range of competing programs, the market compacted to a limited number of players. One of the leading software tools is the topic of this comprehensive guide: NVivo. NVivo started as a program designed to code (textual) data and retrieve coded references. Throughout the years, it expanded to a leading software tool to work with multiple data sources, including audio, video and surveys: designed to execute the most complex queries on coded data and to visualise the results in multiple ways. It helps researchers to unlock the potential of their qualitative data, offering rich insights and a deeper understanding of the data they have collected.

The primary aim of this book is to bridge the gap between the daily practice of a qualitative researcher and the software they use. The book does not have the purpose to be a mere software manual or button-course. Off course, when writing about software, buttons, menus and screenshots are indispensable. But all buttons have already been described in the NVivo help pages or on YouTube in the introductory videos. This book grew out of many years of giving Ph.D. workshops on NVivo. Throughout the years, we learnt how qualitative researchers experienced their first encounter with NVivo. We learnt about their struggles with a new piece of software. From that feedback, we learnt to present NVivo from a researcher's perspective. And that is the major aim behind this book: to show you NVivo from the needs of the qualitative researcher, whether experienced or just starting. At the same time, we try to take the wide diversity of qualitative research into account. Coming myself from a Grounded Theory tradition, our first (Dutch) book on NVivo was exclusively oriented to using the software to perform a Grounded Theory analysis (Mortelmans, 2011, 2017). But as NVivo developed into an all-encompassing software program, our courses were also followed by Ph.D.'s that needed more than just an introduction to Grounded Theory with NVivo. As a consequence, the narrow focus disappeared from this book and a wide range of data sources, approaches and techniques are discussed throughout the book. We start from setting up a project and importing data, to coding, querying and visualising data. We also explore more advanced features, such as classifications, and framework matrices, literature reviews and autocoding enabling a wide range of qualitative researchers to conduct complex analyses and extract meaningful insights from their data with their analytical approach.

This book is not a methods book. Some excellent introductions on NVivo (e.g. Jackson & Bazeley, 2019) combine an extensive introduction to qualitative research methodology and its application in NVivo. As this sacrifies room for more detailed insights in NVivo, we kept the methods background to a minimum. This implies that this book is not to be used in a methods course as a handbook but should help you in discovering NVivo's core tools and hidden gems and gain efficiency in using them in your daily practice.

This book is written for both novice and experienced researchers. For beginners, it provides a step-by-step guide to using the three basic skills: project management, coding data and retrieving coded data with Queries. For experienced researchers, we dive into advanced techniques like classifications or artificial intelligence in CAQDAS, and we show the latest features of the program. As such, both the beginning and the experienced users will be able to leverage the full potential of the software in their research no matter what stage of experience you have reached.

The book is structured into three parts. First, we start with a more theoretical background on qualitative research and the place of software in qualitative inquiry. Next, we explore the basic components of the program: setting up a project, importing and managing data, coding, analysing data, and presenting findings. Last, we have a set of more topical chapters where we apply the tools to specific situations like focus groups, mixed method research or literature reviews.

We would like to express our gratitude to all those who have contributed to the creation of this book. Special thanks to the team at Lumivero for developing NVivo and continuously improving it, making qualitative research more accessible and efficient. And even though we do not know them personally, thanks are also warranted for Tom and Lynn Richards for starting this program so many years ago (under the name of NUD\*IST). For those interested in the origin of NVivo, we highly recommend Tom's article on the intellectual history of the program (Richards, 2002). In the journey of writing this book, we have been fortunate to be supported by the insights of many of our colleagues and collaborators. Among them, one colleague and friend stands out for his exceptional contribution: Olivier Chandesais. Olivier's thorough reading and detailed commentary on each chapter of this manuscript have been invaluable. As no one we have ever seen, his eye for detail and his yearlong expertise with qualitative data analysis in teaching has not only enhanced the accuracy of this book but also enriched its content. It was with much curiosity that we looked forward to his next revision and corrections whenever he finished another chapter. Last, we want to thank all the Ph.D. students that have followed our workshops the past decades. Through their struggles with the software, they gave invaluable feedback and suggestions, which have greatly transformed our original software focus into a researcher focus. The unintended insights we got into the minds of starting qualitative researchers were invaluable to our own development as teacher and writer of this book.

Before ending this preface, we want to inform you about the graphical conventions we used when writing this book. In a book, one needs to convert the visual information on the screen of the reader into a written form. Off course, we show screenshots with explanations whenever necessary but still a verbal translation of visual information is unavoidable in this type of book. First, whenever we refer to a button or window, we will use italics for the name of the item and refer to add the name of the item (e.g. the OK button, the Welcome screen). Names of menus will be put in bold (e.g. the File menu). Often, you need to open levels in a menu or a folder structure. The different levels will be separated by an arrow sign: >. The different levels will be put in bold. For menu's, this will look like: File > Project Information > Open Project Event Log. For the Navigation View (the blue rectangular area at the left of your program screen), this will look like: Navigation View > Data > Files. When options are mentioned, they will be written in Italic. When you need to click a check-box, we will use this symbol:  $\square$ . Even though most options are available through menus, working with the *Context menu* is often more efficient. When you right click in your program, a menu will appear next to your pointer offering options the programmers judged useful when being in that part of the program. We refer to a Right Mouse Click with RMC. Also the place on your screen to click will be indicated. So, referring to an option in the Context Menu will be done as follows: RMC (above the main folder) > New Folder.

Throughout the book, we will use the sample projects embedded in the software. As such, all readers of the book can reproduce the examples given in this book. As NVivo regularly gets updates, it is possible that changes in the data of these sample projects produce slightly different results than we show in the screenshots. We hope that these changes will still enable you to follow the examples even though our screenshots might differ from what you see on your screen. Also software changes through updates can create such differences although we are confident that the main structure and way of working with NVivo remains stable across updates and even across versions in the future. As the field of qualitative research and the NVivo software are constantly evolving, feedback and suggestions from you as reader are most welcome. Your feedback

# Contents

1	A Guided Tour in Qualitative Research What is Oualitative Research?	1
	The (Contested) Role of Software in Qualitative Research References	6 8
2	A Guided Tour in Qualitative Data Analysis Approaches in Qualitative Data Analysis Grounded Theory as a Structured Way of QDA Theory as the Core Component of Grounded Theory A Step by Step Frample of a Qualitating Analysis	11 11 13 13
	with Grounded Theory References	15 17
3	A Quick Tour of NVivo What Can NVivo (Not) Do for You? Code and Retrieve as the Fundamental Principle References	19 19 21 23
4	Getting Started 1: Installing and Configuring NVivo Installing the Program Registering the Program Updating the Program Installing Add-Ons Updating Your License	25 25 26 27 28 28
5	Getting Started 2: The Workspace and Jargon of NVivo Main Layout of the Workspace The Navigation View Customising Your Workspace Outlook	31 31 33 34

6	Setting Up Your Project: Primary Data Management	37
	Starting or Opening a Project	37
	Backing Up and Repairing Your Project	39
	Setting Up a Folder Structure	41
	Importing Primary Data in Your Project	42
	Operating Files in Your Project	43
	Transcribing Media Files	45
	Creating New Files	47
7	Working with Memos	49
	Some Theory: The Use of Memos in Qualitative Research	49
	Memos or Annotations?	50
	Working with Memos	51
	Working with Annotations	53
	Listing Your Memos and Annotations	54
	References	54
8	Thematic Coding	57
Ŭ	Some Theory: Coding in Qualitative Research	57
	What Are Codes?	58
	What is Worth Coding in Your Data?	59
	Definition of the Reference	60
	Coding as a Mental Process	61
	Gaining Depth in Your Coding	61
	Number of Codes and the Depth of Codina	63
	Deductive Coding in NVivo	64
	Inductive Coding in NVivo	68
	Working with Codes in a Codebook	70
	Renaming Codes	70
	Colouring Codes	71
	Making Code Hierarchies in Your Codebook	72
	Determining Your Sort Order	73
	Efficiency in Coding	73
	Drag-and-Drop-Coding	74
	Coding Stripes	75
	Code Highlighting	77
	Code Highlighting with Coding Stripes	78
	Some Final Coding Tips	80
	Aggregating Coding Work	80
	In Vivo Coding	81
	Uncoding	82
	Merging Codes	83
	Splitting Codes	84
	Printing Documents with Your Coding Stripes	85
	References	86

9	Coding with Classifications	89
	Some Theory: Comparing Basic Operation in Qualitative	
	Research	89
	Out-of-the-Box: What If There Were No Classifications?	90
	Determining Your Unit of Analysis	94
	Choosing the Correct Type of Classification	95
	Making and Using File Classifications	97
	Creating the File Classification (STEP 1)	98
	Using the File Classification (STEPs 2 and 3)	99
	Note on Classifications and the Navigation View	100
	Making and Using Case Classifications	101
	Creating the Case Classification (STEP 1)	101
	Creating Cases (STEP 2)	102
	Code the Case with the Classification and Add	
	the Case-Specific Data (STEPs $3 + 4$ )	103
	Code Your Data with Their Twin-Case (STEP 5)	105
	Gaining Efficiency in Creating and Using Classifications	107
	Classifications When Importing Data	108
	Cases from Files	109
	Using the Classification Sheet for Data Entry	109
	Fully Automated Use of Classifications: The Descriptive Matrix	110
10	Exploring Coded Data	115
	Walking Through Your Data with the Explore Diagram	115
	Dual Comparisons with the Comparison Diagram	117
	Making Summaries with the Framework Matrix	118
11	Organising Your Project: Secondary Data Management	123
	Linking Data with Relationships	124
	Step 1. Creating Relationship Types	124
	Step 2. Assigning Relationships to Project Items	125
	Linking Data with See-Also-Links	126
	Grouping Data with Static Sets	128
	Grouping Data with Dynamic Sets	129
12	Querying (Coded) Data	133
	Some Background on Querying	133
	Dissecting the Query Window	134
	Making Your First (Coding) Query	138
	The Coding Query (Some More Details)	142
	The Text Search Query	148
	The Matrix Coding Query	149
	The Crosstab Query	154
	Other NVivo Queries	155
	The Word Frequency Query	155
	The Compound Query	157

	The Coding Comparison Query The Group Query Coding With Queries (Save Results) Reference	157 159 162 163
13	Visualising Data with Maps Introduction The Mind Map The Concept Map The Project Map	165 165 166 168 170
14	Reporting and Exporting Data Introduction Formatted Reports Exporting Project Material with Text Reports (Extracts) Exporting Project Copying an Entire Project Export Parts of a Project Export to the REFI-QDA Format Exporting Specific Project Items	173 173 174 175 179 179 179 181 182
15	Using NVivo in Focus Group Research Some Background on Analysing Focus Groups Transcribing Focus Groups Comparing Interviews and Focus Groups as Analytical Data Sources Using Classifications in Focus Groups Using Queries in Focus Groups References	185 186 189 190 192 193 196
16	Using Multimedia Material (Photos, Sound and Videos) Different or Similar? Handling Pictures, Sound and Video Coding Pictures Coding Audio and Video Files Querying Non-textual Material	197 197 198 198 200 203
17	Using Social Media in NVivo Different or Similar? Importing Social Media with NCapture NCapture Capturing Websites NCapture Capturing Tweets NCapture Capturing Content on Facebook NCapture Capturing Videos from YouTube Import NCapture Entries in Your Project Coding Social Media Material Querying Social Media Material References	207 207 208 208 210 210 210 212 213 214 215

18	NVivo in Mixed Methods Studies	217
	Some Theory on Surveys and Mixed Methods	217
	Importing Databases	219
	The Classify Cases from Dataset Wizard	221
	Sorting and Filtering Databases	223
	Sorting Datasets	223
	Filtering Datasets	224
	Coding Databases	224
	Querving Databases	225
	References	226
19	NVivo and AI: (Semi)-Automatic Coding	229
	Artificial Intelligence (AI) and Automatic Coding	
	in Qualitative Research	229
	Semi-auto Coding Based on the Paragraph Style	230
	Semi-auto Coding Based on Paragraphs	233
	Semi-automatic Range Coding	236
	Semi-auto Coding Based on Speaker Names (in Focus Groups)	237
	AI-Based Auto Coding of Sentiment	239
	AI-Based Auto Coding of Themes	242
	Machine Learning Based Auto Coding of Coding Patterns	242
	Semi-auto Coding Social Media and Surveys	245
	References	249
20	Using NVivo in Team Projects	251
	Stand Alone or Server?	251
	Separated Team Projects	252
	Integrated Team Projects	253
21	Doing a Literature Review with NVivo	259
	Some Background on Literature Reviews	259
	Importing Bibliographic Data from a Reference Manager	261
	Thematic Coding of Your Literature	263
	Using the Autocode Functions	267
	Summarising Your Literature	267
	Visualising Your Literature	269
	The Word Cloud in the Word Frequency Query	269
	The Explore Diagram	269
	The Comparison Diagram	270

Cluster Analysis	271
The Hierarchy Chart	271
Querying Your Literature	272
Network Analysis to Gain Insights into Your Literature	272
References	278
Index	279



## CHAPTER 1

# A Guided Tour in Qualitative Research

Key messages in this chapter

- Qualitative research methodology is defined through its research components.
- The place of software in qualitative data analysis is accepted but also contested by some scholars.

# WHAT IS QUALITATIVE RESEARCH?

Delineating the boundaries of qualitative research within a single definition is not straightforward. Intuitively, many perceive qualitative research as "something that does not involve numbers" or "something that includes open-ended interviews". A potential start is the definition of Denzin and Lincoln from the first edition of their handbook:

Qualitative research is a situated activity that locates the observer in the world. Qualitative research consists of interpretive, material practices that make the world visible. These practices transform the world. They turn the world into a series of representations, including field notes, interviews, conversations, photographs, recordings, and memos to the self. At this level, qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of or interpret phenomena in terms of the meanings people bring to them. (Denzin & Lincoln, 2017, p. 10)

Central to this definition is the researcher's perspective on the world. Furthermore, the natural, everyday environment is pivotal in the research, and a researcher who seeks to understand processes of meaning-making. There are many more potential definitions of qualitative research, but often elements from the aforementioned definition are repeated, omitted, or supplemented. Within the scope of this book, it is not our aim to attempt to provide a definitive definition of what qualitative research is or should be. Hence, we align with a group of authors (e.g. Bryman, 2012; Shank, 2006; Snape & Spencer, 2003) who attempt to define qualitative research by listing characteristics that are often present, but not necessarily found in all qualitative research. The distinct nature of qualitative research can be found in the domain of the research questions, the employed research design, the methods of data collection, the analytic approach, and the output that the research ultimately yields.

The different components in Table 1.1 together provide an insight into the essence of qualitative research. However, it is crucial to recognize that these characteristics are largely indicative. The recurrent mention of 'flexibility' highlights the relative nature of such lists. Simultaneously, it becomes evident that qualitative research is a large 'tent' (Shank, 2006) or 'umbrella' (LaMarre & Chamberlain, 2022) under which many approaches can be sheltered.

rch
r

- 1. Research questions and objectives
  - Questions address complex themes or social processes
  - The everyday reality of the subjects is central
- 2. Research design
  - The design is flexible
  - The design focuses on studies in a natural setting
  - The design aims for a "holistic" understanding of the context
- 3. Data collection methods
  - A wide range of data collection methods is available
  - · Multiple methods are often employed in a single study
  - The use of methods is flexible
  - Data collection often implies intense and/or prolonged engagement with the field
- 4. Analysis
  - The analysis is primarily text-based rather than numerical
  - The goal of analysis is to uncover meaning
  - Processes are central in the analysis
  - The aim of the analysis is to understand in-depth rather than to provide representative descriptions
- 5. Reporting
  - · Subjects are involved in (the review of) the results
  - Reporting attempts to represent the context of the whole
  - The influence of the researcher on their research design is explicitly considered

#### Research questions

In qualitative research, the focus is not on the researcher but on the researched. It is not the all-knowing scientist who is central, but the everyday living environment of the individuals or groups under study. This is the classic distinction made in anthropology between the deductive and inductive perspectives in research. A *deductive* perspective involves a researcher who, guided by literature study and previous results, approaches the subject with a predetermined framework (such as a closed questionnaire). In contrast, the *inductive* approach of qualitative research seeks these frameworks among the subjects themselves (Silverman, 2018). When a researcher adopts this approach, different research questions naturally come into focus. Instead of quantifying frequency, the researcher seeks to understand how social meaning is constructed, how social processes unfold.

#### The research design

When seeking to understand the meaning-making of individuals, we must be acutely aware that although humans are composed of atoms, they certainly do not react like atoms. Human nature is inherently unpredictable. However, this does not imply that the study of social interaction and processes is an impossible task. Like Miles et al. (2018), we consider ourselves "transcendental realists". This means we believe that social phenomena exist not only in our minds but also outside them, and that scientists are capable of discovering lawful and reasonably stable relationships in that objective world. These lawful and stable foundations of social life enable the development of concepts and theories that provide insight into underlying processes in social reality. This perspective is eminently suitable from both a quantitative and qualitative research viewpoint. As a qualitative researcher, you also aim to identify regularities with the goal of theory formation. This focus is much closer to the subjects themselves compared to quantitative research. Social processes and meaning-making are examined from the perspective of the individuals' own lived experiences, including the rich context of their lives. This context is not "preformed" as in quantitative research, where questions are the same for everyone, and the context - what is not asked in the standard questionnaire - is assumed to be constant. In qualitative research, there is a continuous interaction between your study and its context, where sometimes context becomes research and research becomes context. Unexpected occurrences are common during qualitative studies. To understand how people give meaning to their surroundings, and how the environment shapes this meaning-making, it is necessary to employ a research design that is as open as possible. A research design is the way a researcher plans and organizes a study in advance. It is essentially their "work plan". Such an approach needs to be "holistic", meaning that the research design should be capable of approaching the research topic in a systematic, comprehensive, and integrated manner.

Therefore, qualitative researchers prefer not to fix everything in advance too rigidly. They review literature to understand the state of research in their field, without going so far as to prevent their minds from entering the research field with an "open" mindset. They write a research question that serves as a compass for the study, without this question precluding all side paths and discoveries. They collect data without creating instruments beforehand that are fixed and uniform for all subjects.

## The data collection method

In qualitative research, one does not confine oneself to a single method of data collection or consistently use the same method. Switching data collection methods during the course of a study, as necessitated by the research setting, is common. Moreover, employing multiple methods to gather data is more the norm than the exception. In quantitative research, one usually limits oneself to either conducting an experiment or administering a structured questionnaire. In qualitative research, however, you will likely collect statistics, conduct observations, and carry out interviews. It is often observed that in qualitative research, one method tends to be dominant. The researcher may primarily focus on participating in the field or mainly conduct in-depth interviews.

A characteristic common to many qualitative data collection methods is the prolonged and in-depth contact with the field. Gathering data about the context in which people live and the meanings they ascribe to their environment is rarely a matter of minutes. It can take days, weeks, or even years to gain a deep understanding of the subject of study. Particularly when opting for observation and participation techniques, the time for data collection increases.

## The analysis

Qualitative research is sometimes narrowly defined as a method that produces results without statistical procedures or quantification (Strauss & Corbin, 1998). Many students also confuse the absence of numbers with qualitative research itself. Often, a choice is made for qualitative research in a thesis or paper because it does not involve numbers, and more importantly, no statistics. While reducing qualitative research to non-numerical research is an accurate depiction, this definition conceals as much as it clarifies. The lack of statistical analysis is a common feature across almost all qualitative variants. However, the characteristics previously mentioned are at least as defining for qualitative research as the mere absence of numerical data. If a researcher poses quantitative research questions and then uses a small sample with in-depth interviews to answer these questions, they have conducted neither quantitative nor qualitative research, even if no statistics were involved. The research may be presented as quantitative, but it is merely a weak version of it. Conversely, qualitative researchers sometimes do use numerical data to outline the context of their research problem. Statistical data can help illuminate the contours of a particular issue, indicating what the researcher is addressing. Quantitative supplementary information can also be useful in analysing qualitative material. Nevertheless, the primary material for analysis is predominantly textual. Interviews are transcribed, and these transcripts are analysed. With observation or participation techniques, field notes are created, again a textual form of primary material. Visual material is also used to a lesser extent, focusing on content rather than appearance (as in quantitative content analysis, see Berelson, 1971; Krippendorf, 2018; Neuendorf, 2017). The analysis of this visual material is again conducted with words. Qualitative researchers read, code, and interpret their data. They create concepts and construct theories based on them. They typically work inductively, without testing pre-established hypotheses.

Since the goal of the analysis is to uncover the meaning-making of individuals and gain insights into social processes, flexibility is also necessary when analyzing qualitative data. While statistical procedures might be challenging due to their mathematical background, they offer the advantage of being unequivocal and can be quickly executed using accessible software. Today, one primarily needs to know the right menus and input screens to perform complicated statistical operations. Although NVivo will help you in performing your qualitative analysis, like all qualitative software programs, it lacks predefined paths. NVivo incorporates the flexibility of qualitative research and gives the researcher the freedom to conduct their analysis as they wish or as their data guide them but there are no pre-programmed routines that immediately provide output for the researcher to use in their report.

#### Reporting

Lastly, the reporting in qualitative research also differs. Although qualitative research also emphasizes presenting results in an accessible and readable manner, the style of writing differs from that of quantitative research. In qualitative research, the aim is to provide an extensive description of the collected material. Throughout the description, the material should 'speak' for itself. The goal is not to present all results as compactly as possible but to offer a rich contextual sketch of the findings.

Additionally, the respondents who provided the primary material during data collection can be involved in the reporting process. Unlike in quantitative research, where respondents often learn about the results from the researcher via the media, in qualitative research, direct feedback on the results is sought from the participants. This approach checks whether the analyses conducted by the researcher align with the respondents' own perceptions.

# The (Contested) Role of Software in Qualitative Research

The emergence of illuminated manuscripts during the Middle Ages stands as a testament to the era's artistic and cultural heritage. Crafted with immense care in monasteries worldwide, these manuscripts, including gospel books, psalters, and bibles, were intricately adorned with an array of initials, marginalia, and miniature illustrations. However, the advent of the Gutenberg printing process, which enabled the mass production of books, simultaneously marked the decline of the labour-intensive tradition of manually copying manuscripts. While the efficiency and large-scale capabilities of printing technology are undeniable, they inadvertently signalled the end of the age-old art of illuminated manuscripts. A similar trajectory is observable with the introduction of Computer Assisted Qualitative Data AnalysiS (CAQDAS). This technological innovation, much like Gutenberg's printing press, brought about significant changes in the field, hinting at a transformation akin to the one experienced by the art of manuscript illumination.

"Invent the piano, and a whole host of composers will start writing a new music." (Richards, 2002, p. 203). Richards writes this quote to illustrate the huge impact (his) software had on the daily practice of qualitative research. The quote draws a parallel to the evolution in writing and book production, positioning the development of Computer Assisted Qualitative Data AnalysiS (CAQDAS) within a narrative of both progress and loss. While the adoption of software in qualitative research is now widely regarded as standard practice, it's important to acknowledge that this technological integration does more than just offer benefits. It may also have fundamentally altered the essence of qualitative analysis itself.

Several concerns have been raised by authors about the application of software in analysing qualitative data. The first issue pertains to the *legitimation of the analysis* through software use. Authors like Bong (2007) have noted that merely mentioning software like NVivo in a study's methodology does not inherently validate the analysis. As Barbour (2001) and Pratt (2009) caution, simply citing software, similar to general terms like "purposive sampling" or "Grounded Theory", does not guarantee analytical rigor. Editors increasingly encourage authors to move beyond this simplistic validation approach.

A second concern relates to the confusion between qualitative data analysis and coding. Seidel (1991) referred to this as "analytical madness", highlighting the risk that the ease of coding with software could lead to an overemphasis on coding as an end goal, rather than a means to achieving theoretical depth. This is echoed by Levin (1986), who suggests that software might transform from a support tool to a methodology in itself. Coffey et al. (1996) extend this argument, noting that the popularity of CAQDAS, predominantly developed by Grounded Theory researchers, risks pushing qualitative research towards a uniform approach. However, as Lee and Fielding (1996) and Leech and Onwuegbuzie (2011) argue, most modern software packages offer flexibility that accommodates various analytical methods.

Thirdly, Weaver and Atkinson (1994) argue that software can *distance the researcher from his data*, a phenomenon known as "reification of researcher and data". This issue arises from coding processes that may detach researchers from the original context of their raw material (e.g. a transcript). However, NVivo addresses this by allowing broader context retrieval during coding. When reviewing coded material with queries, the researcher can use the option "spread to" to increase the original coded material to a broader context (see Section "Dissecting the Query Window" in Chap. 12).

Additionally, there are concerns about the expanding size of qualitative research projects, now that NVivo is capable of handling vast data quantities. This growth, as Jansen (2005) points out, has led to the term 'qualitative survey' being coined. However, this expansion raises fears of a shift towards quantitative analysis methods, where the focus is more on counting codes rather than in-depth interpretation (Bassett, 2004; Mason, 1996). NVivo's development over time reflects this risk, with increased capabilities for statistical analysis and mixed methods. NVivo does produce several statistics on number of codes, number of fragments coded at and the percentage of text (or visuals) being coded. As such, the software supplies abundant opportunities to fall in this trap. But the risk is bigger than the information given in the codebook. The data can be exported to Excel or SPSS leading to a further quantification of the coding work (see Section "Exporting Project Material with Text Reports (Extracts)" in Chap. 14) and NVivo also imports surveys from Qualtrics or Survey Monkey (see Section "Importing Primary Data in Your Project" in Chap. 6). In addition, quantitative techniques like cluster analysis are built into the program to help users automatically detect (statistical) associations within the raw material (see Chap. 19). This evolution is driven by a rhetoric of the programmers that NVivo increasingly will help you to detect the patterns in the data automatically instead of helping the researcher to dive into his data and support the intellectual analysis of the empirical material.

It's worth noting that most of these concerns, as highlighted by authors like Barry (1998), date back to the 1990s when CAQDAS tools were new and less developed. But even back then, the benefits of using such software, including efficiency and flexibility, were already acknowledged by authors like Tesch (1990, 1991). However, the earlier warnings still hold relevance. As NVivo offers more automated and AI-based analysis features, there's a risk that researchers might opt for quicker, less rigorous methods over more detailed manual coding processes. The rise of Generative AI and its application in qualitative data analysis (especially coding data) is reigniting the debates about the role of software in qualitative research (e.g. Davison et al., 2024).

#### References

- Barbour, R. S. (2001). Checklists for improving rigour in qualitative research: A case of the tail wagging the dog? *BMJ*, *322*(7294), 1115–1117. https://doi.org/10. 1136/bmj.322.7294.1115
- Barry, C. A. (1998). Choosing qualitative data analysis software: Atlas/ti and Nudist compared. Sociological Research Online, 3(3). http://www.socresonline.org.uk/3/ 3/4.html
- Bassett, R. (2004). Qualitative data analysis software: Addressing the debates. Journal of Management Systems, 16(4), 33-39.
- Berelson, B. (1971). Content analysis in communication research. Hafner Publishing Company.
- Bong, S. A. (2007). Debunking myths in CAQDAS use and coding in qualitative data analysis. Experiences with and reflections on Grounded Theory Methodology. *Historical Social Research*, 19, 258–275.
- Bryman, A. (2012). Social research methods (4th ed.). Oxford University Press.
- Coffey, A., Holbrook, B., & Atkinson, P. (1996). Qualitative data analysis: Technologies and representations. *Sociological Research Online*, 1(1), http://www.socresonline.org.uk/1-1/4.html.
- Davison, R. M., Chughtai, H., Nielsen, P., Marabelli, M., Iannacci, F., van Offenbeek, M., Tarafdar, M., Trenz, M., Techatassanasoontorn, A. A., Díaz Andrade, A., & Panteli, N. (2024). The ethics of using generative AI for qualitative data analysis. *Information Systems Journal*. https://doi.org/10.1111/isj.12504
- Denzin, N. K., & Lincoln, Y. S. (Eds.). (2017). The Sage handbook of qualitative research (5th ed.). Sage.
- Jansen, H. (2005). De kwalitatieve survey. Methodologische identiteit en systematiek van het meest eenvoudige type kwalitatief onderzoek. *Kwalon*, 10(3), 15–34.
- Krippendorf, K. (2018). Content analysis. Sage Publications.
- LaMarre, A., & Chamberlain, K. (2022). Innovating qualitative research methods: Proposals and possibilities. *Methods in Psychology*, 6. https://doi.org/10.1016/j. metip.2021.100083
- Lee, R. M., & Fielding, N. (1996). Qualitative data anlaysis: Representations of a technology: A comment on Coffey, Holbrook and Atkinson. *Sociological Research Online*, 1(4). http://www.socresonline.org.uk/1/4/lf.html
- Leech, N. L., & Onwuegbuzie, A. J. (2011). Beyond constant comparison qualitative data analysis: Using NVivo. School Psychology Quarterly, 26(1), 70–84. https://doi. org/10.1037/a0022711
- Levin, R. B. (1986). Technological determinism in social data analysis. *Computers and the Social Sciences*, 2, 201–206.
- Mason, J. (1996). Qualitative researching. Sage.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2018). Qualitative data analysis: A methods Sourcebook. Sage
- Neuendorf, K. A. (2017). The content analysis guidebook (2nd ed.). Sage. https://doi. org/10.4135/9781071802878
- Pratt, M. G. (2009). From the editors: For the lack of a boilerplate: Tips on writing up (and reviewing) qualitative research. *Academy of Management Journal*, 52(5), 856–862. https://doi.org/10.5465/AMJ.2009.44632557

- Richards, T. (2002). An intellectual history of NUD\*IST and NVivo. International Journal of Social Research Methodology, 5(3), 199–214. https://doi.org/10.1080/13645570210146267
- Seidel, J. V. (1991). Method and madness in the application of computer technology to qualitative data analysis. In N. Fielding & R. M. Lee (Eds.), *Using computers in qualitative research* (pp. 107–116). Sage.
- Shank, G. D. (2006). Qualitative reserarch. A personal skills approach. Pearson.
- Silverman, D. (2018). Doing qualitative research. Sage.
- Snape, D., & Spencer, L. (2003). The foundations of qualitative research. In J. Ritchie & J. Lewis (Eds.), *Qualitative research practice* (pp. 1–23). Sage.
- Strauss, A. L., & Corbin, J. (1998). Basics of qualitative research: Grounded Theory procedures and techniques (2nd ed.). Sage.
- Tesch, R. (1990). Qualitative research: Analysis types and software tools. *The Falmer Press*. https://doi.org/10.4324/9781315067339
- Tesch, R. (1991). Computer programs that assist in the analysis of qualitative data: An overview. *Qualitative Health Research*, 1(3), 309–325.
- Weaver, A., & Atkinson, P. (1994). *Microcomputing and qualitative data analysis*. Avebury.

**Open Access** This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (http://creativecommons.org/licenses/by/4.0/), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.





## CHAPTER 2

# A Guided Tour in Qualitative Data Analysis

#### Key messages in this chapter

- In qualitative research, data analysis can be done from many methodological approaches.
- Nevertheless, most approaches have the same way op analysing qualitative data.
- We illustrate one way of analysing as an example: Grounded Theory analysis.

# Approaches in Qualitative Data Analysis

The analysis phase of a study is often where researchers find themselves unexpectedly challenged. While qualitative research is perceived as quick and cost-effective, especially in comparison to large-scale surveys, this is not always the case. Although data may be gathered more swiftly, the time saved is often negated by the extensive and time-consuming analytic process. This intensive engagement with the data contrasts sharply with the click-of-abutton efficiency offered by statistical software like SAS or SPSS. In qualitative data analysis (QDA), the researcher grapples with their data alone, and no computer can replace the creative phase of this analysis. Though quantitative research also demands creativity, it is largely intertwined with the computational power of the processes. Software like NVivo can ease the burden of qualitative researchers, but it will never autonomously produce results ready for reporting. Consequently, delivering you with a cookbook approach to qualitative analysis is not possible. Just as one cannot encapsulate "falling in love" in rules and procedures, qualitative analysis cannot be fully captured in a definitive analytical pathway. However, this does not diminish the value of NVivo as a tool that can enhance the qualitative researcher's experience. While it doesn't provide ready-made analyses, the computational power of the software is harnessed to organize, make searchable, and visually condense qualitative material. This chapter provides an overview of the steps a qualitative researcher might take in their analysis, offering a potential pathway for researchers. This is not to suggest that it is the only or an infallibly successful approach. Every qualitative research project and set of data is unique, demanding a creative and adaptable approach to the methodologies outlined in this chapter: utilize them as needed and modify them when necessary. The flexibility of NVivo ensures that most alternative approaches can be seamlessly integrated into its usage.

Over the years, qualitative research has evolved into an amalgamation of various approaches and schools of thought. This complex evolution has led to the emergence of three distinct methodological paradigms: postpositivism, constructivism, and the paradigm encompassing critical and feminist approaches. Within the latter, various sub-streams can be identified. Each of these streams emphasizes different aspects within qualitative research and brings different focuses to the forefront. As a result, the qualitative analysis conducted by each stream can also differ.

Qualitative researchers have access to multiple sources of data. They can conduct interviews or focus groups, engage in participatory observation, gather documents, or take photographs. Theoretically, all these content streams and data forms could be placed in a matrix to derive a multitude of analytical approaches. However, this is not the case in the practical world of research. Still, it can be said that various established methods of analysis have crystallized over time. For instance, certain forms of analysis are based on specific types of data, like participatory observation (as illustrated by Spradley, 1980) or are aligned with a particular qualitative paradigm, such as phenomenology (Moustakas, 1994).

Authors like Tesch (1990) argue that the differences between these methods are not as vast as they might initially appear. Tesch categorizes the objectives of qualitative analyses into four main goals: uncovering language characteristics, discovering regularities, understanding the meaning of a text or action, and reflection. From her analysis, she proposes a continuum of methods, ranging from highly formalized (almost quantitative) to those where almost no method is defined. Beyond these extremes, she identifies ten basic principles common across most methods. Creswell (1998), in his comparison of five streams (the biographical method, phenomenology, Grounded Theory, ethnography, and case study), finds a common analytical procedure at the base of each method.

Regardless of the method or paradigm, a researcher typically starts by organizing the data (data management) and begins with reading interview transcripts or field notes. Then, the data are broken down into smaller segments, filtering out irrelevant information. This is followed by describing the data and connecting different data parts. The analysis concludes with writing up the findings. The central process in this can be metaphorically described as **dismantling** and **rebuilding**. It's like a researcher entering a jungle and encountering unknown ruins. They see the forms of buildings, some unclear or collapsed. Carefully, they remove the debris and number the stones that belong together. Then, they clean the site and begin reconstructing the buildings step by step, often returning to the leftover stones to fit them into the larger structure. The dismantling process in qualitative research is described as coding, indexing, labeling. The rebuilding phase involves linking, connecting, aggregating. The outcome of this phase are constructs, concepts, variables, themes, which later evolve into theories or narratives.

# GROUNDED THEORY AS A STRUCTURED WAY OF QDA

In this chapter, we show you one methodological approach to CAQDAS: Grounded Theory. As we have shown above, this is only one family withing a wide range of possible analytical approaches. Grounded Theory is founded on the works of Anselm Strauss and Barry Glaser, originating from their collaborative publication "The Discovery of Grounded Theory" (Glaser & Strauss, 1967). The rationale behind this choice is its prevalence and it's historic connection to NVivo. Grounded Theory is the most expansive qualitative analytical approach (Bong, 2002). The majority of qualitative publications employ or reference Glaser and Strauss's method in data processing. The dominance of Grounded Theory is evident not only in the number of studies utilizing this method but also in the plethora of handbooks making a similar choice to this book. It is important to note, however, that the following sections are inspired by Grounded Theory but do not represent the Grounded Theory in its entirety. The divergent approaches of Glaser (1978, 1992, 2001, 2002, 2003, 2005) and Strauss and Corbin (1990, 1990, 1998a) alone illustrate that there are varying perspectives on the approach. We also opted for Grounded Theory as an example in this chapter as the predecessor of NVivo (NUD\*IST) originated in this methodology. Even though NVivo today is a flexible and methodology independent program, it has its roots in the Grounded Theory approach (Richards, 2002).

#### Theory as the Core Component of Grounded Theory

While it is clear that Grounded Theory is not a monolithic methodology, its foundational framework shares common ground, particularly in two central elements: theory and procedures. Theoretical development has always been at the heart of the Grounded Theory approach. The very idea of the method is