XXV.	Analyzing Qualitative Data Francesco Di Maddaloni, The Bartlett School of Sustainable Construction, University College London (UCL), London.

Chapter 3.1 Analyzing Qualitative Data

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ABSTRACT:

Data analysis is a challenging and exciting stage of the qualitative research process. It requires a mix of creativity and systematic searching, a blend of inspiration and diligent detection. Fortunately (or not), there is no clear-cut set of conventions governing the processes involved in the analysis of qualitative data as opposed to that of quantitative research. Although there are no agreed rules or procedures on the variety of methods available for qualitative data analysis, the underlying aim is to transform data into findings in a manner that the analysis process is systematic and transparent. This chapter intends to provide the reader with a structured approach to give the data wider significance for the project management community, thus overcoming the 'attractive nuisance' of the richness that qualitative data provides and the difficulty of finding analytical paths through that richness. Analyzing data with qualitative rigor while still retaining the creative, revelatory potential for generating new concepts and ideas is a paramount factor to convince readers that the conclusions are plausible, defensible, and based on credible interpretations. Driven by the need of seeking qualitative rigor in project studies, which honors the worldview of informants and provides sufficient evidence for claims, this chapter not only presents an overview of the basic principles in analyzing primary qualitative data, but also discusses the analytical challenges and possibilities that arise when selecting, implementing, and reporting from different approaches of qualitative data analysis.

Keywords: Qualitative Data Analysis; Thematic Analysis; Content Analysis; Discourse Analysis

INTRODUCTION

The purpose and outcome of data analysis is to reveal fresh insights about the human conditions (Saldana, 2011). The ability 'to explain' is at the heart of qualitative research, and the exploratory power lies in addressing why and how questions about the meaning of substantive practices, experiences, beliefs, values, and identities. Nonetheless, by understanding processes as well as outcomes through a mix of creativity and systematic searching, a blend of inspiration and diligent detection (Spencer et al., 2003). Qualitative research starts from and returns to words, talk, and texts as meaningful representation of concepts (Gephardt, 2004). Yet, finding a path through the prose that makes up your data is not an easy matter. This is mainly because, unlike the analysis of quantitative data, there are few well-established and widely accepted rules for the analysis of qualitative data (Bell et al., 2019).

According to Gioia et al., (2012) qualitative researchers are casted into the role of "glorified reporters" whose main role is to give an adequate account of the informants' experience and representing their voices prominently in the reporting of the research to create rich opportunities for discovery of new concepts rather than affirmation of existing concepts. Gaining a "holistic" (systemic, encompassing, integrated) overview of the context under study: its logic, its arrangements, its explicit and implicit rules is therefore somehow crucial for the researcher. Qualitative research has a long history, especially in terms of its ability to be revelatory (Lincoln and Guba, 1985). However, it also has a long history of suffering the criticism that it does not adequately justify its assertions, leading to skepticism about getting a satisfactory answer to the question: "How do I know that you know (what you are claiming)"?, or more simply, "Where is the evidence for your assertions"?. Therefore, the research is prompted to think of ways to show that he/she has executed the data gathering and analysis in a systematic way, through a process that reveals the care in the way data is analyzed in a manner that is systematic and transparent. The underlying aim is to transform data into findings by demonstrating 'qualitative rigor' in showing how the data linked to the insights (Gioia, 2012).

Driven by the need of seeking qualitative rigor in project studies, which honors the worldview of informants and provides sufficient evidence for claims (Pratt, 2009), this chapter not only presents an overview of the basic principles in analyzing primary qualitative data, but also discusses the analytical challenges and possibilities that arise when selecting, implementing, and reporting from different approaches of qualitative data analysis. This chapter presents general strategies of qualitative data analysis, specifically three approaches to data analysis are considered: thematic analysis, content analysis, and discourse analysis.

QUALITATIVE ANALYTICAL PRACTICES

Qualitative data analysis is essentially about detection, and the tasks of defining, categorizing, theorizing, explaining, exploring and mapping are fundamental to the analyst's role. A high proportion of material is text based, consisting of verbatim transcriptions of

interviews or discussions, field notes or other written documents. In this chapter we focus on data in the form of words – that is, language in the form of extended text (qualitative data also can appear as still or moving images). As Bryman and Burgess (2002) explain, material collected through qualitative methods is invariably unstructured and unwieldy. Because this cumbersome data set, it is not unusual to look up and conclude, "I'm lost". Therefore, the qualitative researcher has to provide some coherence and structure to this data set while retaining a hold of the original accounts and observations from which is it derived. In doing so, certain functions have to be performed, and the following are frequently included:

Defining concepts: understanding internal structures
Mapping the range, nature and dynamics of phenomena
Creating typologies: categorizing different types of attitudes, behaviours, motivations, etc.
Finding associations: between experiences and attitudes, between attitudes and behaviours, between circumstances and motivations, etc.
Seeking explanations: explicit or implicit
Developing new ideas, theories or strategies

There are a variety of methods available for qualitative data analysis in which strategies will depend on the conceptual framework for a study, the epistemological, theoretical, and methodological glue that holds it together. Regardless the analytical strategy you still have to interpret your data, but at least there are relatively clear rules for getting to that point and what can be provided are broad guidelines. According to Miles and Huberman (1994, p.9), some analytical practices may be used across different qualitative research types. A classic set of analytical moves arranged in sequences is shown in Table 1:

Analytical Moves (in sequence)
- Affixing codes to a set of field notes drawn from observations or interviews
- Noting reflections or other remarks
- Sorting and shifting through these materials to identify similar phrases, relationships between variables, patterns, themes, distinct differences between subgroups, and common sequences
- Isolating these patterns and processes, commonalities and differences, and taking them out to the field in the next wave of data collection
- Gradually elaborating a small set of generalizations that cover the consistencies discerned in the database
- Confronting these generalizations with a formalized body of knowledge in the form of constructs or theories.

Table 1: Analytical Moves

It is important to highlight that research commences from either a deductive or an inductive approach. In starting with a deductive approach, you will seek to use existing theory to shape the qualitative research project and aspects of data analysis. Where you commence using an inductive approach you will seek to build up a theory that is adequately grounded in your data (Saunders et al., 2019).

Using a deductive approach:
Where you have made use of existing theory to formulate your research question and objectives, you may also use the theoretical propositions that helped you do this to devise a framework to help you to organize and direct your data analysis (Yin, 2018). However, in following the deductive approach in qualitative analysis, this theoretical framework may be too restrictive to the issues revealed in the data and fail to allow the meanings expressed by participants to be explored adequately.
Even though you may incorporate an inductive approach in your research, commencing your work from a theoretical perspective may have certain advantages. This, according to Saunders at al. (2019), it will link your research into the existing body of knowledge in your subject area, help you to get started and provide you with an initial analytical framework.

Using an inductive approach:
Researchers that use an inductive approach develop a competent level of knowledge about their research topic. Their research generally commences with a clearly defined research question and objectives, even though these may be amended by the data they subsequently collect. The researcher starts to collect data and then explore them to see which themes or issues to follow up and concentrate on (Saunders et al., 2019). Where you commence your data collection with this type of approach – related initially to an exploratory purpose – you should analyze the data as you collect them and develop a conceptual framework to guide your subsequent work. In this approach theory emerges from the process of data collection, analysis and interpretation and not using a predetermined theoretical framework is related to the desire to avoid being sensitized by existing theoretical constructs. In this approach the researcher aims to search for and recognize meanings in the data and to understand the social context and perceptions of participants. You will need to compare the theory you built with existing theory contained in the literature once you have developed this.

Before presenting the four qualitative analysis approaches covered in this chapter, it is beneficial to illustrate how to prepare your data for analysis.

PREPARING YOUR DATA FOR ANALYSIS:

Qualitative data can be generated in many forms, available in a range of written and non-written forms. Therefore, it is important to emphasize the importance of copying any recordings you make and transcribing both these and your notes to ensure data are not lost (Saunders et al., 2019). In the first required step, the researcher has to focus upon the conversion of qualitative data from oral or handwritten form to word-processed text, as this is the way that you are most likely to use these in your analysis.

Transcribing qualitative data:
In qualitative research, the interview is often audio-recorded and subsequently transcribed, that is, reproduced verbatim as a word-processed account. According to Saunders et al. (2019), is means that the task of transcribing interviews is likely to be time-consuming as you

will need not only to record exactly what was said and by whom, but also try to give an indication of the tone in which it was said and the participants' non-verbal communications. In fact, without this additional contextual information and also the contextual information that locates the interview, important incidents that affect the conduct of your interview or observation may be missed.

Most research methods texts suggest that it takes a touch-typist between 6 and 10 hours to transcribe every hour of audio-recording. Therefore, however you choose to transcribe the data, is making sure that the transcription is accurate by correcting any transcription errors. This process is known as data cleaning.

Data Cleaning:

The basic purpose of data cleaning is to secure a quality standard on the data. Because spoken and written language are very different, the researchers is expected to undertake an inspection process that, if necessary, involves the correction of the interviews' transcripts or observation forms. The researcher must make sure that the transcription is accurate, and it captures the intended meaning of the interviewee by correcting any transcription errors. Once this has been done, you are encouraged to send a copy of the transcript to the participant for approval and comment. This process of 'confirmation' and 'checking' acted as a verification stage to reinforce the reliability of the collected data (Chileshe et al, 2016). While this process ensures factual accuracy, each transcribed interview should be saved as a separate word-processed file. As part of this, it is recommended that a filename that maintains confidentiality and preserves anonymity is used (e.g. using filenames with the interview number) and ensuring that the data are:

- Suitably anonymised
- Appropriately stored for analysis
- Free of typographical errors that you might have introduced

Contextual Information of Data:

Recording contextual information about the interviews or observations that you conduct, will also help your analysis. In addition to transcribing your notes and audio or digital recording, the contextualization of the interview will help to recall the context and content of each interview or observation as well as informing your interpretation as you will be more likely to remember the precise circumstances of your data collection (Saunders at al., 2019). Noting an event that affected the nature of data collection is extremely important to ensure that data is captured correctly. Therefore, where you produce transcripts of interviews or observations, it will be helpful to write a transcript summary of each one. A document summary may be used to summarize and list key points for your research, which become part of your dataset.

Using CAQDAS:

CAQDAS (Computer Assisted Qualitative Data Analysis Software) refers to programs containing a range of tools to facilitate the analysis of qualitative data. Although no computer-based method will ever do the analysis for you, as the analysis still dependent on the researcher knowledge and the methodological approach to coding the researcher has adopted; when used systematically, the use of CAQDAS can aid continuity and increase both transparency and methodological rigor (Lewins and Silver, 2009).

The leading CAQDAS packages, such as Nvivo, Atlas.ti, Quirkos and MAXQDA, now fulfil many of the same functions. Although the packages available are increasingly accessible, user-friendly and comprehensive; the reader is strongly advised to refer to dedicated texts for

further details of these programs. Common feature is that most of these tools contain functionalities to assist with three elements of the analytical process – data management, interpretation, and project management.

In terms of data management, CAQDAS packages allow the researcher to:

- Store all their data (transcripts, documents, pictures, sound files) files in one place within a 'project'
- Develop an analytic structure within which to group similar data from across cases
- Code segments of data according to this structure

The interpretative process is supported by:

- Allow searches for strings, words, or phrases in context
- Facilitate the filtering and reorganising of the data set (code and retrieve)
- Enable the reorganisation or extension of themes into higher-level concepts or categories
- Store analytic notes and 'memos' charting the researchers' thinking
- Allow the user to drawn diagrams and maps, visualising the data and emerging relationships between codes and categories, helping the researcher developing explanations or theories.

Finally, according to Spencer et al., CAQDAS packages are also used as project management tools, particularly where researchers are working on a project in different locations. An audit trail is a common function, which can ensure a systematic approach across team members to data management and interpretation (2014, p.288).

There are many different methods of qualitative data analysis, but some are more common than others. As mentioned above, we focus on describing and demonstrating those that are both common within project management and relatively accessible to those new to qualitative research – thematic analysis, grounded theory, content analysis and discourse analysis.

THEMATIC ANALYSIS

One of the most common ways of approaching qualitative data analysis is through conducting what is referred to as Thematic Analysis (TA). Indeed, the search for themes is an activity in most approaches to qualitative data analysis within the project management arena. TA is a method for systematically identifying, organizing, and offering insight into patterns of meaning (themes) across a data set (such as a series of interviews, observations or documents). Through focusing on meaning across a data set, "TA is a way of identifying what is common to the way a topic is talked or written about and of making sense of those commonalities" (Braun and Clarke, 2012, p.57). TA is a standalone analytical technique or process, rather than being part of a theoretically mounted methodological approach (Saunders et al., 2019), and for the same reason it may be used irrespective whether you adopt a deductive or inductive approach. We base our description on 'how to do' TA on the method developed by Braun and Clarke (2006; 2012), which involves a systematic six-phase process.

Data Familiarization:
This phase involves immersing yourself in the data by reading and re-reading textual data and listening to audio recordings or watching video data. You will start to become familiar with

your data as you produce transcripts of the interviews or observation you conduct. Making notes and memos on the data as you read – or listen – to highlight items potentially of interest is part of this phase. In this phase you will need to read the words actively, analytically, and critically and starting to think about what the data mean. The aim of this phase is to become intimately familiar with your data set's content and to begin to notice things that might be relevant to your research question. Note-making at this stage is observational and casual rather than systematic and inclusive and triggers for coding and analysis.

Coding Your Data:
Coding is used to categorize data with similar meanings, and it involves labelling each unit of data within a data item (e.g. transcript or document) with a code that symbolizes or summarizes that extract's meaning (Saunders et al., 2019). According to Braun and Clarke: "Codes are the building block of analysis. If your analysis is a brick-built house with a tile roof, your themes are the walls and roof and your codes are the individual bricks and tiles" (2012, p.61). This process is shown in Figure 1.
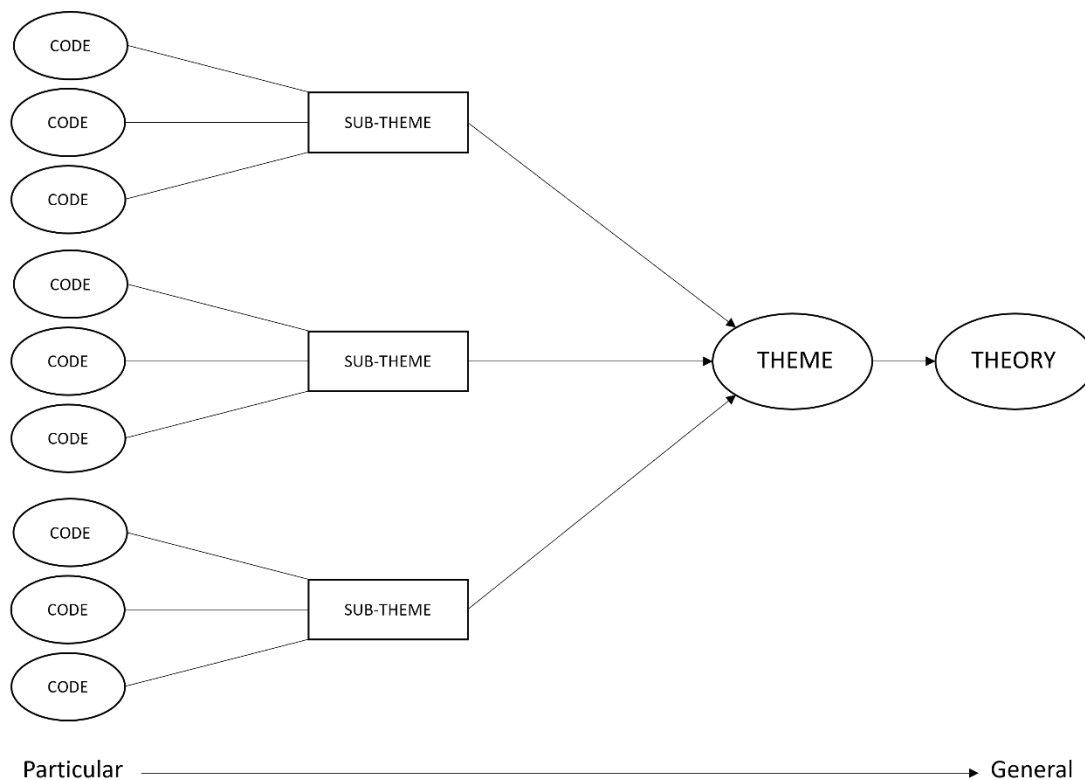

Figure 1: Coding process

A code is most often a word or a short phrase that symbolically assigns a summative, salient, essence capturing, and/or evocative attribute for a portion of language-based or visual data (Saldana, 2009). Coding is something we get better at with practice. What is important for all codes is that they are relevant to answering your research question. Table 2 shows what can be coded.

What can be coded	Description	Example
Behaviours	Specific acts in a temporally brief situation	Seeking assurance; showing leadership; bragging; lying

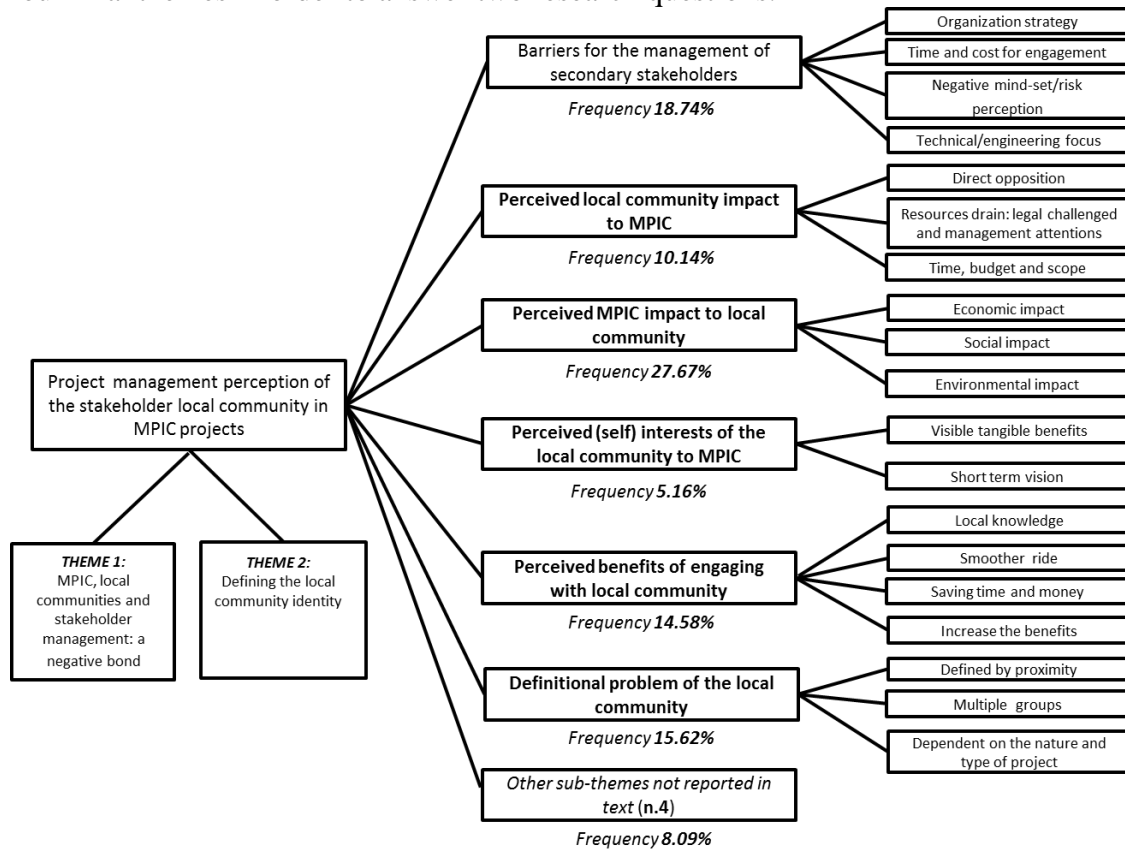| Activities	Acts that take place over a longer duration in a particular setting, using involving others	Managing a project team; doing a course
Events	One-off events	Project kick off; terminating a task/work package; concluding a project stage; first day at work
Strategies	Ways of accomplishing things	"I stay late at work because I want to get promoted"
States	General conditions experienced by people	"I am really worried about the status of the current project I am leading in terms of budget and schedule"
Meanings	What concepts, symbols, sayings etc. do people use to construct their world?	The term "megaproject" is used by project managers and policy makers to describe a large-scale, complex ventures that typically cost a billion dollars or more, take many years to develop and build, involve multiple public and private stakeholders, are transformational, and impact millions of people
Participation	People's involvement in, or adaption to, a certain situation	"In this project we have to put additional resources in terms of working hours because schedule overrun"
Relationships	Interaction with others; social structures	"I work as a project manager, so I have to be careful not to be late or it lets others down"
Consequences	Outcomes of behaviours	Being cheerful attracts a positive reaction from people
Settings	The entire context of the setting being studied	Workplace; project situation

Table 2: What to look for during coding

What is important is that coding is inclusive, thorough, and systematic. As your coding progresses, you can apply the code you have already used or, if needed, create a new code to capture that piece of data. You can also modify existing codes to incorporate new material. What you want are enough codes to capture both the diversity, and the patterns, within the data, and codes should appear across more than one data item (Braun and Clarke, 2012).

Searching for Themes:
In this phase, your analysis starts to take shape as you shift from codes to themes. A theme "captures something important about the data in relation to the research question, and represents some level of patterned response or meaning within the data set" (Braun and Clarke, 2006, p.82). In fact, a theme can be defined as a topic that organizes a group of repeating codes or ideas. Searching for themes is an active process, meaning we generate and construct themes rather than discovering them. This phase involves reviewing the coded data to identify areas of similarity and overlap between codes (Braun and Clarke, 2012). The question is: Can you identify any broad topics or issues around which codes cluster?. The basic process is to generate sub-themes, which are the subcomponents of a theme, by collapsing or clustering codes that seem to share some unifying feature together, so that they

reflect a meaningful pattern in the data. This process repeats, by clustering the emerging sub-themes into your final themes aimed at answering your research question/s.

In our example shown in Figure 2, out of 19 interviews Di Maddaloni and Davis (2018) generated more than 900 initial codes and out of the 21 initial sub-themes developed, they discussed the 14 most relevant for the study against those sub-themes less coded (frequency %) in the 19 interviews. It was noticed that codes clustered around 'project manager's perception of the local community stakeholder' and 'stakeholder management practices at the local level'. Examining these in more details, it was identified that the codes either focused on experiences in managing secondary stakeholders such as the local community, or responses to and ways of managing the stakeholder local community. The authors developed four final themes in order to answer two research questions.
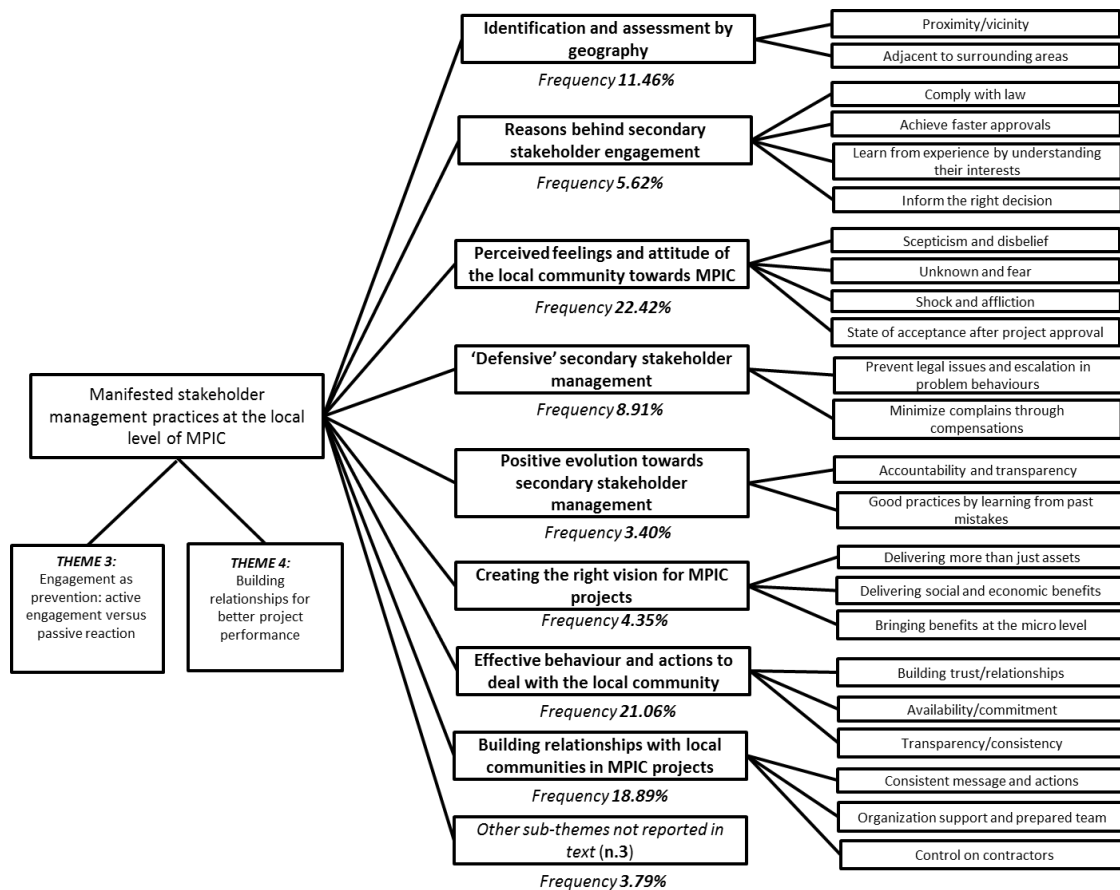
Identification and assessment by geography
Frequency 11.46%

Proximity/vicinity
Adjacent to surrounding areas

Reasons behind secondary stakeholder engagement
Frequency 5.62%

Comply with law
Achieve faster approvals
Learn from experience by understanding their interests
Inform the right decision

Perceived feelings and attitude of the local community towards MPIC
Frequency 22.42%

Scepticism and disbelief
Unknown and fear
Shock and affliction
State of acceptance after project approval

'Defensive' secondary stakeholder management
Frequency 8.91%

Prevent legal issues and escalation in problem behaviours
Minimize complains through compensations

Manifested stakeholder management practices at the local level of MPIC

Positive evolution towards secondary stakeholder management
Frequency 3.40%

Accountability and transparency
Good practices by learning from past mistakes

THEME 3:
Engagement as prevention: active engagement versus passive reaction

THEME 4:
Building relationships for better project performance

Creating the right vision for MPIC projects
Frequency 4.35%

Delivering more than just assets
Delivering social and economic benefits
Bringing benefits at the micro level

Effective behaviour and actions to deal with the local community
Frequency 21.06%

Building relationships with local communities in MPIC projects
Frequency 18.89%

Building trust/relationships
Availability/commitment
Transparency/consistency
Consistent message and actions
Organization support and prepared team
Control on contractors

Other sub-themes not reported in text (n.3)
Frequency 3.79%

Figure 2: Overview of Thematic Chart (Di Maddaloni and Davis, 2018).

Figure 2 above shows the final outcome of the thematic chart. However, the more data you have, the more codes and thus themes, you will likely generate. Therefore, it is important to explore the relationship between themes and to consider how themes will work together in telling an over-all story about the data. Your job is to tell a particular story about the data, it is not to represent everything that was said in the data. You might find that some themes do not fit well or are less relevant than others in providing answers to your research question and clustering/revising them is a common procedure. In this stage you should be able to collate all the data extracts relevant to each theme, so you are ready to begin the process of reviewing your themes (Braun and Clarke, 2012).

Reviewing Potential Themes
This phase is essentially about quality checking, in which the developing themes are reviewed in relation to the coded data and entire data set. The first step is to check whether the theme works in relation to the data. If it does not, you might need to discard some codes or relocate them under another theme; or you might want to redraw the boundaries of the theme so that it more meaningfully captures the relevant data. According to Braun and Clarke (2012, p.65), what you are aiming for is a set of themes that capture the most important elements of the data in relation to your research question. In doing so, key questions to ask are as follow:

- Is this a theme or just a code?
- What is the quality of this theme (does it tell me something useful about the data set and my research question)?
- What tare the boundaries of this theme (what does it include and exclude)?

- Are there enough data to support this theme?
- Does the theme lack coherence (data is too diverse)?

Defining and Naming Themes:
When defining your themes, you need to be able to clearly state what is unique and specific about each theme. Braun and Clarke (2012) reinforce that a good thematic analysis will have themes that (1) do not try to do too much as they should have a singular focus; (2) are related but do not overlap and although they might build on previous theme, they are not repetitive; and (3) directly address your research question. In this way, your themes should be able to provide a coherent overall story about the data. This phase involves selecting the extracts to present and analyze. The extract you select to quote and analyze provide the structure for the analysis. In analyzing the data, you use it to tell a story of the data and your analytic narrative needs to tell the reader what about an extract is interesting and why.
Analysis needs to be driven by the question, "So what?" What is relevant and useful here to answering my question?. This process of telling an analytical narrative around your data extract needs to take place for all your themes. Conclusion can and should be drawn from across the whole analysis and a good name for a theme is informative, concise, and catchy.

Producing the Report:
The final phase of your analysis is the production of a report such as a journal article or a dissertation. The purpose is to provide a compelling story about your data based on your analysis. The story should be convincing, clear and defendable. This story it needs to go beyond description to make an argument that answers your research question. Provide enough data for the 'pattern' in the data to be seen. The report should show balance between theory and data. One common problem I found in many publications is that the authors are inclined to mainly talk about data, without showing it. I find this problem towards publications in project studies, in which the authors give mainly only their interpretation of the data, rather than show any raw data. A phenomenon that Golden-Biddle and Locke (2007) referred to as too much 'telling' and not enough 'showing'. The work of Lofland and Lofland (1995) on analyzing social settings and illustrating analytic vs. descriptive excess might be of help to the reader. 'Too much telling' is problematic because no clear chain of evidence shows how the researcher moved from their data to their interpretations. Crafting elaborate tables to organize data, and relegating all your data to these tables, is a variation to this problem. Have data both in the body of your paper and in tables whenever possible. These data might be in the form of "power quote" and "proof quote" Pratt (2008). Limiting an analysis to simply describing what one found is not likely to be enough, without explaining how this classification scheme leads to new theory or new theoretical insights.

CONTENT ANALYSIS

Probably the best-known definition of Content Analysis (CA) is as follow: "A research technique for the objective, systematic and quantitative description of the manifest content of communication" (Berelson, 1952, p.18). Similarly, Holsti defines CA as "any technique for making inferences by objectively and systematically identifying specified characteristics of messages" (1964, p.14).
The main use of CA has been to examine mass media items, as well as texts and documents that are either produced by the organization, such as annual reports, or written about it, such as articles in the business press. Imagine you are interested in the amount and nature of the

interest shown by the mass media, such as newspapers, in a project news such as the HS2 connecting London to Birmingham in the UK and the arguments against this project around how it might impact on the country's green spaces and countryside. You might ask such questions as:

- When did news items on this topic first began to appear?
- Which newspapers were the faster generating an interest in the topic?
- Which newspapers have shown the greatest interest in the topic?
- At what point did media interest begin to wane?
- Have journalists' stances on the topic changed, for example, in terms of their support for the project environmental impact, or in calling for increased government environmental impact assessment considerations?

If you want to know the answers to research questions such as these, you are likely to need to use CA to answer them.

CA is mainly associated with a positivistic approach, as a means of analyzing qualitative data. It is a way of systematically converting text to numerical variables for quantitative data analysis. The advent of computer programs such as CAQDAS packages that facilitate the analysis of textual data and the increase in number of searchable electronic databases available have also enabled some of the tediousness associated with the method to be removed, enhanced reliability and speed.

CA should be conducted in a consistent, transparent and replicable way. Stress is laid on different researchers being able to replicate content analysis by using explicit categories to produce an identical outcome. Rules are clearly specified in advance for the assignment of the raw material (such as newspaper stories) to categories. The purpose of CA is to quantify and describe aspects of textual or visual data after coding and categorizing them. This analysis may vary from identifying frequencies to examining relationships between variables. Using our earlier example about the environmental impact that HS2 might have on UK's green spaces and countryside, and attitude of newspapers about this topic and who holds these views, the frequency of different attitudes may be measured and the relative importance of negative or positive ones identified; it would be also possible to examine relationships between these different attitudes and the characteristics of those who hold them (Saunders et al., 2019). There must be transparency in the procedure for assigning the raw material to categories to minimize as much as possible the analyst's personal biases.

CA is more likely to follow a step-by-step or sequential process. This process involves sampling, devising analytical categories, defining the unit of analysis, conducting coding and undertaking quantitative analysis. We outline briefly each of these procedural steps according to Saunders et al. (2019, p.611) and Hussey and Hussey (1997, p.251).

Sampling:
You might need to select a sample if the amount of material available is large. Determining the amount of material that exist depend on your research question and factors such as the existence of and access to suitable documents. However, if a large volume of written, oral or visual research data exists, a decision must be made on the rationale for extracting a sample.

Devising Analytical Categories:
The categories you devise signify the essence of what you wish to record and analyze. Categories have to be exhaustive, mutually exclusive, independent and developed from a single classification.

Defining Unit of Analysis:
You will need to define the unit of analysis you intend to use to record content. This will be determined by your research question and purpose, and it may focus on individual words, based on identifying and counting particular words in the content of your sample. The unit of analysis may be larger than the word, related to the occurrence of phrases or to sentences or paragraphs. The unit of analysis may also focus on the characteristics of those involved such as age, occupation, work department.

Determine Coding Units and Undertaking Analysis:
The next stage is to determine coding units, such as a particular word, character, item or theme which is found in the material. Coding involves you working through your data to code units of these data according to the categories you have devised. Examples of units which could be used for coding are shown on Table 3.

Coding Unit	Examples
Word/Phrases	- Examine minutes of company/union meetings for the word 'dispute' - Examine reports to project stakeholders for the words 'value and benefits'
Theme	- Examine minutes of company/union meetings for occasions where discussions lead to agreements - Examine reports to project stakeholders for example where increases in benefits realization are linked to increased social value
Item	- Examine newspapers for whole articles dealing with poor project performance - Examine company Environmental Impact Assessment (EIA) for entire pieces on environmental issues
Time	- Measure the time allocated in broadcast news bulletins to industrial issues

Table 3: Examples of coding units

The analysis can be therefore conducted purely on frequency; alternatively, it may incorporate the placing of the items or words (in documents) or the duration (for audio or filmed communications). The analysis, where categories are deductively predetermined, will provide the opportunity to test your system of categories, on a sample of your data and to modify it if necessary before applying it across all of your data. Where categories are inductively derived from the data rather than being predetermined, you will need to read through your data very carefully, highlighting or noting key aspects that relates to the purpose of your research and your anticipated use of this technique. As this process continues you will need to identify analytical categories, define these and ensure that they are exhaustive, mutually exclusive, independent and developed from a single classification.

Although CA has many merits such as being a very transparent research method, highly flexible, and allowing information to be generated about social groups that are difficult to gain access to; the researcher has to be also aware of the disadvantages of this particular approach. In fact, a CA can only be as good as the documents on which the researcher works. It is also almost impossible to devise coding manuals that do not entail some interpretation on the part of the researcher. Through CA it is difficult to ascertain the answers to 'Why?' questions and, to conclude, content analysis studies are sometimes accused of being atheoretical. The emphasis in CA on measurement can easily and unwittingly result in an accent being placed on what is measurable rather than on what is theoretically significant or important (Bell et al., 2019).

DISCOURSE ANALYSIS

Discourse Analysis (DA) is another popular method which is used in so many different ways. DA is a vast and evolving field, but our main focus is on versions of DA that look at patterns (of meaning or language practice) across linguistic. Broadly speaking, patter-based discourse analysis is concerned with patterns in language use connected to the social production of reality, and with understanding how accounts of objects and events are constructed in particular ways. DA is an approach that analyze the social effects of the use of language. In general terms 'discourse' refers to the spoken or written use of language, often referred to as talk or text. In this way DA explores how discourses construct or constitute social reality and social relations though creating meanings and perceptions (Saunders et al., 2019).

The DA approach suggests that things like self, subjectivity, identity, memory, categorization, emotion, prejudice, gender, sexuality – should be seen as social processes or activities, which can be understood by looking at the level of language and discourse. The use of language is seen as important for understanding psychological and social issues. Thus, by studying textual sources or passages of naturally occurring talk, the meaning we produce through language is treated as 'real' and as the end point of explanation (Braun and Clarke, 2013).

DA will often involve using multiple texts that are interrelated to understand the nature and development of a discourse. Transcripts of recordings of naturally occurring talk can also be used to explore a discourse. Unlike some of the techniques we discussed earlier, DA does not specify a particular set of procedures to conduct analysis. As mentioned, DA encompasses a range of approaches which focus varies from 'finely-grained' analysis of text or talk to grand theoretical abstractions about the nature of social practices. We will give you a very brief (and limited) sense of the scope of two different 'foundational' approaches to pattern-based DA. These are the Poststructuralist DA and Interpretative Repertoires.

Poststructuralist Discourse Analysis:
Poststructuralist DA is the most 'macro' form of DA and it theorizes language and discourse as constitutive of our social and psychological realities. This approach theorizes the way we think, feel, experience and act as people are produced by discourse(s) that are available to us in our social contexts (Hollway, 1989). The idea is that discourses make available certain ideas and ways of seeing and understanding the word, and ourselves in relation to it, and precludes others (Braun and Clarke, 2013).

Every time we talk about or describe something, we 'draw on' a discourse that gives a particular meaning or shape to what we describe. For example, if 'project performance' were the object of discourse, you could identify a number of discourses around it: a 'governance'

discourse, which constructs project performance in terms of project stakeholders and risk terms; a 'moral' discourse, which constructs project performance in terms of value creation and benefits realization; a 'pride' discourse, which constructs project performance as a positive social/economic outcome and increased company reputability. One or two discourses will tend to dominate and form the 'taken for granted' truth within society.

Interpretative Repertoires:
Repertoire-based discourse analysis has a more 'micro' focus than poststructuralist DA. Here the idea is that language is studied as both resource (repertoires) and as practice (the way it is put to use; the effects – social, political, economic, psychological, etc. – that it has), and that there is an interest in how descriptions in talk construct particular versions of reality (Potter & Wetherell, 1994).
Interpretative repertoires have been defined as a "relatively coherent ways of talking about objects and events in the world" (Edley, 2001a, p.198). This approach is developed to capture the systems of meaning that people live within and draw on as collectively available resources in their use of language (Potter and Wetherell, 1994). While poststructuralist DA can be seen as interested (in part) in a 'person who is spoken into being' through discourse (a person conceptualized as 'used' by discourse; Potter et al., 1990); repertoire analysis is interested in the reality a speaking person creates (a person conceptualized as a user of discourse; Potter et al., 1990).

What the various approaches to DA share, is a view of language as productive rather than reflective. The analytical focus is on understanding in different ways, what language does, what (big or small) realities are created through language, and how this occurs. Differences between the different 'schools' of DA are mainly around whether or not it is the content of language (language as resource) or the process of language use (language practice). Poststructuralist DA focuses on the content of language and treats language primarily as a resource for the construction of realities and subjectivities. In contrast, repertoire analysis takes more an outsider position, keeping closer to the data, it has an interest in both the content and use of language, but the use of language to construct certain social realities or psychological states is key (Braun and Clarke, 2013).

CONCLUSIONS

Driven by the desire to provide qualitative rigor in project studies, this chapter examined some of the most used methods of qualitative data analysis, which main focus, strengths and weaknesses are summarized in Table 4.

Analysis Type	Focus/method	Strengths	Weaknesses
Thematic Analysis	Thematic coding; develop hierarchies of themes; revise coding as interpretation develops	Flexible; not prescriptive; principles easily grasped; structured	Lack of information on how to use/do; generation of themes can end up too simple or complex; danger of over-description
Content Analysis	Mostly pre-determined codes; counting and	Straightforward; easily validated (co-	Lose richness; questionable links

	categorizing; positivist stance	researcher duplicates counts)	with statistics; imposes categories
Discourse Analysis	Different types but focus on language as level of analysis; constructions made; functions of talk; look for patterns, variability, inconsistency	Language understood as active, functional, etc.; access to dynamic construction and broad group/social influences	Very time-consuming; word-length issues in write-up; reification of language; no clear method; practical use?

Table 4: Forms of Analysis

Regardless the approach used, the main challenge is to transform data into findings in a manner that the analysis process is systematic and transparent. This process starts on how you have reduced the data, how have you structured it and use it in a form other than extended text, both in the analysis itself and later when presenting the findings. Analyzing data with qualitative rigor while still retaining the creative, revelatory potential for generating new concepts and ideas is a paramount factor to convince readers that the conclusions are plausible, defensible, and based on credible interpretations. Therefore, the researcher will also want to know how to evaluate his/her analysis. Lincoln and Guba (1985) suggest that four criteria should be used:

- Credibility
- Transferability
- Dependability
- Confirmability

Credibility demonstrates that the research was conducted in such a manner that the subject of the enquiry was correctly identified and described. Transferability in concerned about whether the findings can be applied to another situation which is sufficiently similar to permit the generalization. Dependability should show that the research process is systematic, rigorous and well documented. Confirmability should be used as a criterion where the study has described the research process fully and it is possible to assess whether the findings flow from the data.

The synthesis and reorganization of data should lead to the development of themes and patterns which can be confronted by existing theories or used to construct new theories. You need to remember that your purpose, when analyzing the data, is to find answers to your research questions. No matter how good the system and procedure you adopt are, the quality of your analysis will depend on the quality of the data you have collected and your interpretations.

QUESTIONS FOR REVIEW:

- Why do we describe qualitative analysis as an 'interactive process'?
- How would you differentiate between a deductive and an inductive analytical approach?
- How CAQDAS packages might assist you in analysing qualitative data?
- What is the difference between codes and themes in thematic analysis?

- Can you describe the analytical process suggested by Braun ad Clarke (2012) for thematic analysis?
- With what general kinds of research questions is content analysis concerned?
- What kinds of things might be counted in the course of doing a content analysis?
- How would you describe discourse analysis?
- What is the difference between poststructuralist discourse analysis and interpretative repertoires?
- What are the four criteria to evaluate qualitative analysis?

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