

Qualitative and quantitative methods in sustainable development

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eISBN 978-83-8211-072-2

<https://doi.org/10.18559/978-83-8211-072-2>

PUEB PRESS



POZNAŃ UNIVERSITY
OF ECONOMICS
AND BUSINESS

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Poznań 2021



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1.

QUALITATIVE METHODS



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Abstract: The main goal of the chapter is to present how to use qualitative methods in sustainability research. First, the theoretical basis of the methods is presented, i.e., the essence of qualitative methods, what differs them from quantitative methods, and their types.

The second part of this chapter covers designing and conducting a focus group interview (FGI): its essence and main stages, sampling, projection techniques and the script, as well as it contains the case study of ecological culture of Bulgarians.

The third part presents considerations necessary to conduct a qualitative research, i.e., the organizational aspects of FGI and the guidelines for the work of the moderator. Finally, the last part shows considerations concerning data analysis—using CAQDAS software.

Keywords: CAQDAS software, ecological culture, qualitative methods.

1.1. Methodology of qualitative research—the basics

1.1.1. Qualitative research—theoretical background

Market researchers are noticing a growing discrepancy between what clients declare officially and the actions they take. The implementation of qualitative research methodology, whose aim is to get to the “soul” of a consumer, recognize their emotions, hidden motives and needs, becomes essential to identify the actual market behaviours (Kaczmarek, Olejnik, & Springer, 2013). Qualitative methods make it possible to go beyond consumers’ declarations and recognize their subconscious patterns of behaviour, as well as understand the reasons for their irrational decisions.

The main differences between qualitative and quantitative marketing research are presented in Table 1.1.

Table 1.1. Qualitative vs quantitative research—the main features

Criterion	Qualitative research	Quantitative research
main research questions	what? how? why?	how much? how many? how often?
tool of measurement	scripts: questions are the outline of an interview	questionnaire
sampling	non-random; purposive smaller samples (20–50 people)	random, quota bigger samples (200–1000 people and more)
influence of a researcher on the progress of the research	greater	smaller
possibility of quantitative generalization of the results for the population	no	yes
interpretation method	no statistics—more liberal and subjective	statistics—more objective

Source: (Creswell & Creswell, 2018).

The main features of qualitative research include:

- the guidelines for quantitative research are determined on it basis;
- it may deepen and extend the results of quantitative research;
- it makes it easier to get closer to natural, real world of the respondents;
- its course is audio-visually recorded (on cameras, or voice recorders);
- it is not representative; no statistical reasoning can be performed;
- it requires the use of non-standardized tools;
- the obtained information is presented in a descriptive way (thoughts, attitudes, feelings).

Qualitative research

The process of collecting and analysing non-numeric data (e.g., text that is a transcript of an interview, video, audio, photo) in order to recognize the essence of a specific phenomenon, understand concepts, learn about opinions or experiences related to a given topic.

In turn, considering the most important applications of qualitative research, we can use this method in the following situations:

- launching a product (modification and adjustment of the features: package, name, or image of a launched product);
- product positioning (discovering the most effective ways of sharing information on a product or service with potential customers);
- research on the habits connected with the use of a product (learning about the needs and motives of a given group of products or a brand);
- research on attitudes (learning about opinions, emotions, and associations connected with a tested product or concept);
- advertising message research;
- generation of ideas (creating new ideas—creative groups).

1.1.2. Qualitative research methods

There are a lot of qualitative methods in marketing research. The most important of them are presented in Figure 1.1.

Observation	Interview	Content analysis
<ul style="list-style-type: none"> – participating or not participating – open or hidden – structured, partially-structured or unstructured 	<ul style="list-style-type: none"> – focus group interviews – individual in-depth interviews – dyads, triads, mini-groups – affinity group – narrative interviews – extended groups – panel of experts 	<ul style="list-style-type: none"> – private documents (e.g. letters, e-mails, contracts, invoices, materials published in social media) – public documents (e.g. newspapers, magazines, official reports and reports, entries in social media)

Figure 1.1. Qualitative research methods

Source: Own elaboration.

Observation is a systematic collection and analysis of data, both verbal and non-verbal, about consumer behaviour. It is based on collecting data using sight and hearing. As a research method, it is a deliberate, systematic, selective and objective activity. This method allows you to understand how and why people

behave in a certain way, which is often different from what they think. Therefore, the purpose of observation is to provide information about the real behaviour of people, about what their daily activities look like, i.e., the routine, often followed beyond consciousness. For most people, these activities include those that are done every day at home, on the way to the store (work), while shopping, while working, while spending free time, in the waiting room at the doctor's office, at the at the airport, in the car, reading the newspaper, using the Internet, etc. (Olejnik, 2011, p. 243). Observation can be a good method to be used in comparisons, including competitive ones. The arrangement of stores, merchandising, customer service rules are just examples of areas in which you can legally observe competitors using, e.g., hidden observation, i.e., mystery shoppers.

In the case of content analysis, the information contained in, e.g., newspapers, magazines, books, films, websites, blogs, social media, photos, art objects, song texts, e-mails are analysed.

The interviews, on the other hand, are based, in particular, on verbal data. A researcher-moderator conducts a conversation with one or more respondents on a specific topic, trying to find a solution to the research problem (more—see next part).

The most popular qualitative methods are focus group interview (FGI) and individual in-depth interview (IDI). The comparison between both of these methods is presented in Table 1.2.

Table 1.2. Focus group interview and individual in-depth interview—comparison of main features

FGI	IDI
1 interviewer: 6–8 respondents	1 interviewer: 1 respondent
more information in a shorter time, but less information from one respondent (is less in-depth)	less information in particular time, but more information from one respondent
during the interviews there are discussions among the respondents (interaction)	no discussions (contact) among the respondents
the recruitment is easy, because the respondents are easily available, e.g., housewives, students	there is difficult recruitment, e.g., nuclear engineer
there is the need to confront the opinions of particular respondents	there is also the need to obtain in-depth information from one person
we assume that the presence of others may stimulate the respondents to express their opinions	when we are worried that the presence of other people may block or influence the replies of the respondents

Source: (Creswell & Creswell, 2018).

In each method there are three main stages of research process: preparation, execution and data analysis with interpretation. In the first stage—preparation, we should:

- formulate the research problem and the aims of the research,

- create a research team,
- choose research methods and techniques,
- plan sample selection,
- construct research instruments and prepare additional materials.

In the second stage—performance execution, the researcher collects data and prepares material for analysis and interpretation. In the last phase, the material is analysed and interpreted. In addition, a presentation of the results is prepared for the client.

1.2. Designing a focus group interview

1.2.1. The essence and main stages of focus group interview

Focus group interview as a research method was used for the first time in sociology, by two scientists, Paul F. Lazarsfeld and Robert K. Merton (Merton, Fiske, & Kendall, 1962; Merton, 1987). They are considered to be the precursors of the application of this method. In the 1940s, they used focus group to test radio propaganda broadcasts (Barbour, 2007).

Focus group interview (FGI) is the most frequently used method of collecting qualitative data. The essence of FGI includes:

- 1) the data collected with this method are a result of the effort of all research respondents—so if somebody does not want to speak, the researcher should activate them;
- 2) the group is an informal gathering / collection of purposefully selected people, from whom we try to get information on a particular subject;
- 3) the group most often consists of 6 to 8 people and most often it is relatively homogenic;
- 4) the discussion is conducted by a trained moderator, whose task is to make the respondents provide their answers, using the prepared techniques and materials;
- 5) the FGI does not generate quantitative information, which might be extended on population;
- 6) the aim of an FGI is to record any behaviour that is in any way related to the researched subject (that is why the image and voice recording equipment is used at the interview).

What are the main stages of an FGI? If we know why we want to conduct an FGI¹, we have to define a research problem and research objectives. Then the next thing to do is to set the number of discussion groups and the rules for selecting the

¹ FGI should be used if it is required to: 1) study consumer attitude to products and services, brands, companies; 2) develop a strategy on the product or services positioning, 3) determine negative characteristics of products or services in consumers' perception; 4) find new ideas on the develop-

respondents. The third step is to determine the technical and location conditions of conducting the interviews. And then it is necessary to prepare a design (scenario) of the interview. Of course, similarly to quantitative research we should prepare a time schedule and a budget for the research. Conducting the interviews is the last, but not less important stage. Finally, we analyse and evaluate the results and prepare a report.

1.2.2. Sampling

It is more common for quantitative research to apply random sample selection, which allows us to obtain a representative sample of a given population, whereas for qualitative research the sample choice is most often purposive. It basically means selecting people who constitute a complete (diversified) collection of empirical cases, allowing us to thoroughly recognize a researched phenomenon and achieve our research objectives. For example, if we want to identify a decision-making process of people buying used clothes, we have to invite to our interview the respondents who have bought clothes in second hands shops.

In qualitative research **the sample choice is most often purposive.**

What are the **rules and criteria of participant selection**? One of the basic criteria in the sampling process are demographic criteria, e.g. gender, age, education, income. The criteria that result from the research objectives / purpose, e.g., we need respondents who segregate (or do not) garbage, are also very important for selecting respondents to the sample.

There are also a few additional criteria that are worth considering, e.g. assertiveness, creativity of participants. Preferred respondents are also people who have not recently participated in such surveys (this is due to the fact that such respondents remember the course of such research and may not react as “fresh” as the first-time participants—especially if the research concerns a similar product category or if the same projection techniques are used; on the other hand, if they have participated in such a study before, it is less stressful for them). What is more, people with education or experience in marketing, sociology, psychology or production / sale of the same products (and members from their immediate family) cannot participate either.

The number of cases (people, FGI groups) is often arbitrary determined. For example, when we research students’ eating habits, we can assume that they vary depending on gender and accommodation (with family or on their own), so when

ment of products, services or brands; 5) find new ideas on the development of products or services; 6) test new products or new advertising materials, etc.

determining a sample, it is worth considering these criteria for the sample selection and size, e.g. research in 4 FGI groups, where the first group consists of female students living on their own, the second group—of female students living with family, the third group—male students living on their own, and the fourth one—male students living with their family.

There are many other ways of sampling, such as:

- **combining the so-called extreme cases**, e.g., having a discussion with 3 ardent critics of an X brand and 3 very loyal customers supporting the same brand;
- **random-purposive sampling**—when purposive sampling of individuals could create the sample too large for the needs, e.g., a list has been obtained of a few dozen elementary school maths teachers with up to 5 years teaching experience in a given area, and then, based on this list, a purposive sampling has been conducted for the FGI;
- **the “snowball” sampling**—the method is used with non-easily available respondents. It is basically reduced to finding a first respondent, who then indicates the researcher another person matching the research subject, e.g., it is highly probable that a fan of Olga Tokarczuk’s books has friends who are also readers of the same writer, and a Labrador dog’s owner presumably knows other owners of the same breed.

Beside the research objective it is also very important not to mix in one FGI „ordinary” customers (users) with people professionally related to a product and therefore having much more knowledge on the research subject. For example, in beer consumers’ research, certain individuals should not take part in an FGI, namely: brewery industry employees, bartenders, alcoholic beverages salespeople, etc., which applies to their close relatives as well. Moreover, because of their profession, marketing specialists, marketing researchers, psychologists or sociologists are also not invited to participate.

Another essential thing in the process of qualitative research sampling is to determine the optimal sample size. How many groups and how many people should we interview? The size of a qualitative sample should be big enough to guarantee the recognition of most (or all if possible) observations concerning the researched subject. Therefore, the bigger the sample, the larger the chance for more complex recognition of, e.g., reasons for service quality satisfaction (or dissatisfaction), advertising concept evaluation, or consumer needs, as well as opinions and decision identification.

Summarizing, what should be the sample size in FGI? It depends on many factors—research problem, research objectives, budget, or time set for completing research and presenting its results. The size of a single focus group interview, where respondents can speak freely, is between 6 and 9 people, and FGIs are conducted in at least 2–3 groups.

1.2.3. Ecological culture of Bulgarians: case study (Part 1)

In 2012 Bulgarian Ministry of Environment and Water initiated research in an effort to understand the “ecological culture” of Bulgarians. The research consisted of two parts—qualitative research using focus group interviews, and quantitative research—using a standardized questionnaire. The main goal of the qualitative research was to study in detail the attitudes of Bulgarian citizens to ecology, ecological issues, and the measures undertaken by the government to solve these issues, as well as to better understand everyday behaviour regarding ecological issues and personal involvement in environmental topics. Four focus groups were organized in three major cities: Sofia, Plovdiv, and Veliko Tarnovo. For more details on demographics, see Table 1.3.

Table 1.3. Demographics of participants

Location	Sofia (1)	Sofia (2)	Plovdiv	Veliko Tarnovo
Age	20–35 years	35–55 years	35–55 years	20–35 years
Number	7	8	8	8
Gender	men – 3 women – 4	men – 4 women – 4	men – 4 women – 4	men – 4 women – 5
Educa- tion	higher education – 5 secondary education – 2	higher education – 5 secondary education – 3	higher education – 6 secondary education – 2	higher education – 3 secondary education – 5
Marital status	married with children – 1 divorced with children – 0 not married – 6	married with children – 5 divorced with children – 2 not married – 1	married with children – 5 divorced with children – 1 not married – 2	married with children – 1 divorced with children – 1 not married – 6

Source: Own elaboration.

In each focus group, the discussion went through three levels:

- everyday life (limit waste and save energy in households);
- nationwide issues (prevention of pollution of air, soil, water, and food);
- ideology (harmony between humans and nature).

The main results indicated that although the awareness of environmental issues is growing, the everyday “ecological culture” of Bulgarians is relatively low. People acknowledge the fact that Bulgarian society is not active enough, and they lack the motivation to contribute to public initiatives. Few people are engaging in waste sorting, and few are using energy-saving appliances. Most participants share the idea that there should be more activities to educate people on the main ecological

issues, and this should start at school. People approve of the nationwide campaign to limit the use of plastic bags. Most participants are not aware of the government measures to protect the environment, and at the same time, they do not trust the institutions that should ensure environmental protection.

1.2.4. Projection techniques

In psychology projection means a transfer of our experiences, sensations, feelings, motives or ideas to another person or object. Projection allows us to express our behaviour, but without being always aware that we are describing ourselves. When we use projection techniques in marketing research, the respondents are asked to interpret the features and behaviour of the others. Thus, this is one of the ways to discover the truth about a consumer.

Table 1.4. Why do we use projection techniques?

- You can ask directly about a lot of things but sometimes the received answer is not true
- A respondent does not always want to reveal too much, e.g., all the reasons for buying a product, for fear of being judged by others or because he / she is simply not aware of them
- These techniques help protect respondents' self-esteem and allow us to avoid their emotional discomfort,
- We want to diversify the research
- We want to get independent opinions of each respondent without possible influence of a group on these opinions

Source: Own elaboration.

There are many kinds of projection techniques. In general, they can be divided into two groups:

- individual,
- collective.

Selected types of projection techniques with a brief explanation and examples are presented in Table 1.5.

Table 1.5. Projection techniques—example

Technique	Description	Example
Word association – free – controlled (<i>individual technique</i>)	words or images evoke some free associations, e.g., a logo, a name, a product, a service or a brand is associated with a colour, a tree, an object, an animal or a person	give a single word associated with “sustainability” (<i>free</i>) which of the following words (<i>here are these words</i>) do you most associate with “ecology” (<i>controlled</i>)?

Technique	Description	Example
Completion techniques – comic strips, – supplementary questions, – test of incomplete statements (<i>individual technique</i>)	they include finishing statements, opinions, stories, pictures the respondents are asked to complete the sentences with the first words that come to their mind.	first of all, I would tell the Minister for the Environment that What irritates me most about using, is I would convince my friends to sort the garbage by telling them that ... A person who does not sort garbage behaves and
Picture sorting (<i>individual and group technique</i>)	each person (or mini-group) gets a set of pictures of: – different people, among which they, e.g., choose a typical user of a product and describe him / her in detail – people, who are then to be sorted into two groups—supporters and opponents	divide these photos into two groups—people who always sort garbage and those who never sort it
Brand party (<i>group technique</i>)	this includes imagining all discussed brands at the same time. It helps determine the image of a brand in comparison with the competing ones	let us imagine all brands are people invited to a party – what do they look like? – how do they behave? – what are they chatting about? – how do they treat each other? – who is dominating? – who is staying aloof?
Collage construction (<i>group technique</i>)	usually, a set of pictures is prepared with various images of inquired associations it is also used with personification or defining a „user profile”	please choose from the photos and magazines on the table the images that will best show the world of a person who cares for the natural environment and lives ecologically

Source: Own elaboration.

1.2.5. The script

The script is a plan of the interview, stating the main points to be discussed at the interview, and the time set for discussing these points (Table 1.6). It is worth emphasizing that a script:

- is prepared by a moderator on the basis of the research objectives,
- is not a questionnaire,
- shows the direction in which the discussion should go,
- presents discussion points in a logical, top-down order,

- contains not too many questions; usually, there are 3–4 discussion points (main area of discussion) for an interview lasting between one and a half to two hours.

Table 1.6. The outline of a script

<p>1. Introduction (5 min)</p> <ul style="list-style-type: none"> – moderator’s self-introduction – informing the participants on the research subject – informing about the rules of the discussion – informing the participants that the discussion is recorded – participants’ self-introductions <p>2. Introductory questions—„a warm-up”—easy questions which everybody should be able to answer. For example, in research on the quality of food it can be:</p> <ul style="list-style-type: none"> – <i>Please finish the following sentence: Good food means to me</i> – <i>What does it mean to you that some food is of good quality?</i> <p>3. Questions essential for achieving the research objective and supporting techniques (50–60 min)</p> <p>4. Closing questions (15 min)</p>

Source: Own elaboration.

We must remember that the questions essential for achieving the research objective should be open, e.g.: *If you were the manager, what would you change first?*, and non-threatening as e.g. a question with reproach: *Why didn’t you give up smoking?*

1.2.6. Ecological culture of Bulgarians: case study (Part 2)

In the previous part of this case study, a brief description of a qualitative research initiated by the Bulgarian Ministry of Environment and Water was presented. The goal of the research was to study in detail the attitudes of Bulgarian citizens to ecology, ecological issues, and the measures undertaken by the government to solve these issues, as well as to better understand everyday behaviour regarding ecological issues and personal involvement in environmental topics. In this part, the planning stage of the focus group interview—the creation of questions and script are focused on.²

Before the start of each session, participants received a document explaining the privacy policy, and a form to express their consent for researchers to record, store, analyse, and present their opinions. When the discussion started, the moderator followed the script shown in Table 1.7.

² Please note that the questions and the script are not the ones used by the research agency that conducted the research. The given script is created specifically to fit the learning objectives of this chapter.

Table 1.7. Ecological culture of Bulgarians—script of the focus group

Script item	Estimated time
<p>Introduction</p> <p>The moderator introduces himself and describes the purpose of the interview. Then he asks for permission to record the session with an audio and / or video recorder. He kindly invites participants to introduce themselves</p>	5 min
<p>Warm-up questions</p> <ul style="list-style-type: none"> – What is your definition of ecology? – What do you hear people around you say about today's ecological problems? – What kind of people care about the environment, and why? How do you know that they care? 	10 min
<p>Everyday life</p> <ul style="list-style-type: none"> – How can households limit the waste they produce? – Which of the above-mentioned measures do you apply at your home? – What sources of information about ecological issues do you typically use? – Do you participate in any nature preserving initiatives? – Does your household engage in a separate collection of waste? – What do you think about energy-saving appliances? Do you have any? 	20 min
<p>Nationwide measures</p> <ul style="list-style-type: none"> – Who do you think is responsible for the prevention of pollution of air, soil, and water? <p><i>Probe:</i> Do you think that people / government should also be held responsible?</p> <ul style="list-style-type: none"> – Are you aware of any initiatives of the government that are aimed at solving a major environmental problem? <p><i>Probe:</i> Do you think that there are none or they are not well promoted?</p> <ul style="list-style-type: none"> – Do you think that the government does enough to protect the environment? <p><i>Probe:</i> What more should be done?</p> <ul style="list-style-type: none"> – Can you name a recent activity—a government or citizens' initiative—aimed to protect the environment that you remember taking place in your hometown? – Do Bulgarians participate in initiatives intended to preserve nature for future generations? <p><i>Probe:</i> What are the most popular initiatives you have heard of?</p> <ul style="list-style-type: none"> – Are people in Bulgaria educated on the environmental issues in the country and the whole world? <p><i>Probe:</i> What could be done to make them more educated?</p>	20 min
<p>Ideological questions</p> <ul style="list-style-type: none"> – How do you understand the relationship between people and the environment? – Is there a harmony between humans and nature? <p><i>Probe:</i> What is causing this lack of harmony? How can this harmony be restored?</p> <ul style="list-style-type: none"> – How important is the protection of the environment for the personal well-being of most Bulgarians? – What is the reason why some people ignore environmental problems? 	20 min
<p>Closing questions</p> <ul style="list-style-type: none"> – Is there anything else you would like to share? – Does anyone have something to add that was not commented so far? 	15 min

Source: Own elaboration.

1.3. Conducting a focus group interview

1.3.1. The organizational aspects of FGI

Inviting respondents to the interview we must remember about:

- „back-up participants”—as there may be people who will not come (e.g., while conducting an FGI with people who buy clothing in second-hand stores, out of 10 invited women only 6 joined, even though they had confirmed their attendance by phone the previous evening);
- incentive tools to make people come and participate in a discussion—taking part in an interview is often rewarded with a gift or some amount of money—larger or smaller, e.g. the respondent can receive a gift voucher for the value of 20–25 euros.
- the time and location of the interview—it should finish before 8.00 p.m. If we invite housewives with low income, we should not arrange for it to be in a luxury hotel;
- preparation of recording equipment (along with backup equipment).

1.3.2. FGI moderation

A person who conducts an interview is a moderator. His / her preparation, experience and predisposition are essential for a properly conducted interview (McDaniel & Gates, 2018).

Features of a good moderator

- shows respect for respondents
- expresses himself / herself clearly and loudly
- asks simple questions
- actively listens to answers
- demonstrates creativity and flexibility when asking questions
- uses various techniques involving all respondents
- adopts an open body posture
- conducts the discussion in a logical sequence, from general to specific questions

When asking questions, a moderator should:

- make further inquiry about an ambiguous thing said by a respondent. *Could you explain it to me again, in other words?*
- extend the statements *Could you tell me more about it?*, or *So you mean the biggest advantage of this product is its simplicity?*

How to invite a person to give us some opinion and extend conversations? The moderator could ask *do you agree?*, but it is quite closed question. So, you should open up that question to get a more interesting answer.

There are some examples of a polite way of inviting respondents into the discussion:

- *What do you think...?*
- *What is your opinion...?*
- *How do you feel...?*
- *I am interested to hear your opinion about this.*
- *I would like to hear your thoughts on...*
- *Would you like to add anything?*

On the other hand, what should researcher say when they want to interrupt—when someone else is talking and talking. He or she could say:

- *Excuse me,*
- *Do you mind if someone else adds to that,*
- *Sorry to interrupt but..., sorry for interrupting but..., or if I may interrupt for a minute...*

And when somebody has gone off the topic, and started talking about something else—not necessarily connected with the main topic, the moderator has to lead the conversation back to the topic, he / she can say something like this:

- *So anyway, getting back to my question...*
- *So anyway, where were we?*
- *As I was saying / asking...*

In summary, there are a few techniques of conducting group discussion, including: paraphrasing, confirmation and further extending questions.

The beginnings of paraphrasing statements:

I understand that

What you mean is

What you are saying is (*and repeat back what you heard*),

I understand that you are asking about

Do you mean? (*and then paraphrase what you heard*),

In other words, what you are saying is (*and summarize what you heard*),

I would like to confirm what you said

Can I just confirm that?

Paraphrasing is shortened restating of a person's words by a moderator. It should not contain more details than you have heard. If you use a paraphrase, you show that you are paying attention and understand what has been said and it highlights your interest in what a respondent has to say. Moreover, it allows you to check if you have correctly understood a respondent's intentions (if you have misunderstood,

your respondent has a chance to correct your mistake and present the idea more clearly) and allows you to organize the content of a respondent's message.

On the other hand, we use clarification when we ask the respondent about some unclear answer. We then use sentences like: *Could you explain this to me again, in other words?* or *Can you explain once again what it means to you?*

The examples of further extending questions include: *Could you say something more about it?* *Could you give me more details?*

Finally, it is worth adding that when the topic is controversial, it does not mean, that moderator needs to avoid it. How to keep the conversation open and positive in this situation? The moderator could start like this: *I know not everyone agrees with it...* or *I know this is a contentious issue, but...*

When conducting FGIs we may come across various problems. These include the following: overeager debater, untalkative—'silent' participants, overactive or passive group and jokers. But of course, a well-prepared, qualified moderator can handle these issues.

Conducting face-to-face interviews is different from online projects. The basic differences in moderating interviews are presented in Table 1.8.

Table 1.8. Moderating online and face-to-face interviews

Online	Face-to-face
<ul style="list-style-type: none"> – the discussion may be conducted by more than 1 moderator; a second moderator is very useful – it allows you to generate more data in less time – length of the interview: maximum 90 minutes – much greater enthusiasm and involvement of the moderator is necessary – greater opportunities for communication between moderators, and moderators and the research client 	<ul style="list-style-type: none"> – the interview is usually conducted by only 1 moderator – it allows you to generate less data in a longer time – length of the interview: about 1.5–2 hours – it is easier to control the involvement of all respondents – less communication opportunities between the moderator and his assistant, and between the moderator and the manager during the survey

Source: (Olejnik, Dębska & Zieliński, 2020).

1.4. Analysis of qualitative data using the CAQDAS programs

1.4.1. Fundamentals of qualitative data analysis

CAQDAS is an acronym for computer-assisted qualitative data analysis software. Qualitative data typically includes text, images, audio and video materials. The decision whether or not to use CAQDAS software in the process of analysing

qualitative data depends on two considerations: first, whether the data processing is feasible by the researcher alone or it would take too much effort and time, and second, whether the researcher is willing to adapt the whole research process to the specific requirements of the software. The software package can facilitate the analysis but cannot do it alone—the researcher is the one with expertise who interprets the results in the light of research goals and hypothesis. It is essential to be aware of the fact that both the researcher and the software can have impact on the research process and its outcomes. The researcher should refrain from conveying his or her expectations and opinions on the interpretation of the results. At the same time, one should use CAQDAS packages and its various functionalities only when the outcomes have implications for the subject of matter. Some researchers believe that this type of software makes analysis outcomes more plausible because it is unbiased and brings some structure to the analytical process. Unfortunately, this is not true, especially when using too much automatic procedures leads to overlooking the complexity of the data.

Just like any other research project, qualitative research can use two main types of data:

- primary,
- secondary.

Primary data includes interview and focus group transcripts, created through the processing of the audio and video materials, and notes and other materials collected during the fieldwork. Secondary data includes all other sources of information that are relevant to the research—public documents, press releases, opinions in social networks, etc. Among these, some data sources can be analysed with CAQDAS packages (like interview transcripts and answers to open-ended questions), and others have fewer options for analysis (like audio and video materials and other types of visual materials). However, most types of data sources can be imported and managed in CAQDAS software packages, so the researcher can have all the information at one place.

Qualitative data is by definition unstructured or semi-structured and traditional statistical methods have a limited application in the process of analysing it. Instead, different methods to derive a meaning from the data are used. Some of the most common types are discussed here. Application of each method depends on the purpose of the study.

Discourse analysis

This analysis is focused on written or spoken language, as well as clues from the body language and the social context, in order to unveil the meaning of what is said. It helps understand the conversation in a rich cultural and personal life context and thus—it lets the researcher discover concealed meaning of used language.

Discourse analysis comprises different approaches and procedures that provide the researcher a perspective for interpretation rather than absolute answers. The interviewee can speak about the topic from many different perspectives and not be consistent in his/her answers. In the discourse analytical approach, it is important to understand what these points of view are and what is really meant, i.e., how culture and context affect the expressed opinions.

Narrative-based analysis

Narratives are stories that are used by researchers to understand the personal experiences of the “narrator”—the interviewee. It is feasible if the interview includes questions that presume a story-like answers, like explaining past experiences and biographical stories. This type of storytelling can occur between two people (in-depth interview) or in a group (focus group interview). Usually, the interviewer or the moderator helps participants construct the narrative by making suggestions and asking questions, so that the participant can proceed and finish the story. There are guidelines for analysing the narratives, and one of the following four approaches is used: narrative thematic analysis, structural analysis, dialogic / performance analysis, and visual narrative analysis (Butina, 2015).

Grounded theory

The approach followed in grounded theory is that all concepts and hypothesis in the research should be generated after the data is gathered and analysed, rather than prior to this, with the use of theoretical induction and deduction (Gibson & Brown, 2009, p. 27). It provides methods for both conducting the research and the analysis. It is more an exploratory and not conclusive research approach, although it can make use of both qualitative and quantitative data.

Qualitative content analysis

Just like previous types of analytical approaches, qualitative content analysis is also aimed at bringing to light the meaning of qualitative data. This analysis uses quantitative approach to analyse qualitative data—it classifies words or phrases and counts its frequencies in the analysed material. It can be used to analyse both primary and secondary data, verbal and visual. This analytical method includes:

- 1) creating coding frame with categories and subcategories of data carrying the same meaning,
- 2) dividing the analysed material into units of coding,
- 3) validating the coding frame,
- 4) classifying the units into created categories and subcategories (Schreier, 2012, p. 6).

1.4.2. Common steps in qualitative data analysis

Regardless of the approach to the analysis, there are some common steps in qualitative data analysis with CAQDAS packages that can be pointed out:

1. Transcribing the interviews.
2. Preparing and exploring the data.
3. Creating categories of data.
4. Reviewing the codes.
5. Interpreting and presenting the results.

The first step of qualitative data analysis is **the transcription of all audio and video materials**. This way, you can easily take notes on the printed transcript and use the digital file for further analysis (if one is needed). Different software packages require specific formatting of the text documents. Before starting the transcription, the researcher must check these requirements and choose an appropriate file format (.txt, .rtf or .doc). During the process itself some rules must also be followed in order to make the text 'readable' for the software, especially if one intends to make the coding process automatic. Creating a transcript of the recorded interview can be facilitated with the use of an appropriate software package that turns speech into text.

Preparing and exploring the data: next, you need to organize all available materials, including transcripts, field notes, and other documents that will be used during the analysis. Most CAQDAS software packages allow you to import various types of data files and to organize them in a research project. However, they differ in the extent to which visual and audio formats can be used in analytical procedures. It should be mentioned that sometimes the time needed to prepare the data is extensive. For example, if you have focus group interviews data, you have to revise a large number of pages in order to unify participants ID names, change font colour, bold or highlight text to make visual inspection of the text easier. In addition, if you use automated analytical procedures sometimes you need to change the structure of the text. You should consider whether you can skip some of the data preparation steps based on your plan for the analysis.

This step also includes a thorough reading of the materials and making any additional notes that will further help with the analysis. These notes can be stored as separate documents or embedded in the transcription file.

Creating categories of data: at this step, you create categories by using keywords or phrases that are linked to the research objectives as categories. There are different approaches to do this: you can use theory to list terms and words that are related to the research topic; you can also use past research to identify relevant keywords; finally, you can combine these approaches and add your own categories based on your

experience during the initial stages of the research and the data preparation process. After you are ready with the category list, you have to read the transcript carefully and mark the text that falls in each category. This process is known as “coding”.

Reviewing the codes: the main goal of interviews is to obtain a deep insight into the opinions shared on the topic of interest. Deriving meaning from the qualitative data is possible when we identify recurring themes and connect codes that seem to be interrelated.

Interpreting and presenting the results: at this last step, we relate the obtained meanings of the text to the initial research questions. The interpretation is always made in the light of the objectives of the study. A report with the findings is prepared and presented before the intended audience.

The main difference between analysis of data from an in-depth interview and focus group is that the latter includes an interaction between group members. This could be an important aspect of the study and the researcher could be interested in how participants collaborate and create a shared view on some topics.

An important element in the presentation of the research results is also the use of various **graphic forms**. They facilitate a better understanding of the research results—a good picture says more than 100 words. Examples of graphic forms that can be used in the presentation of the results of qualitative research are presented in Figures 1.2 and 1.3.

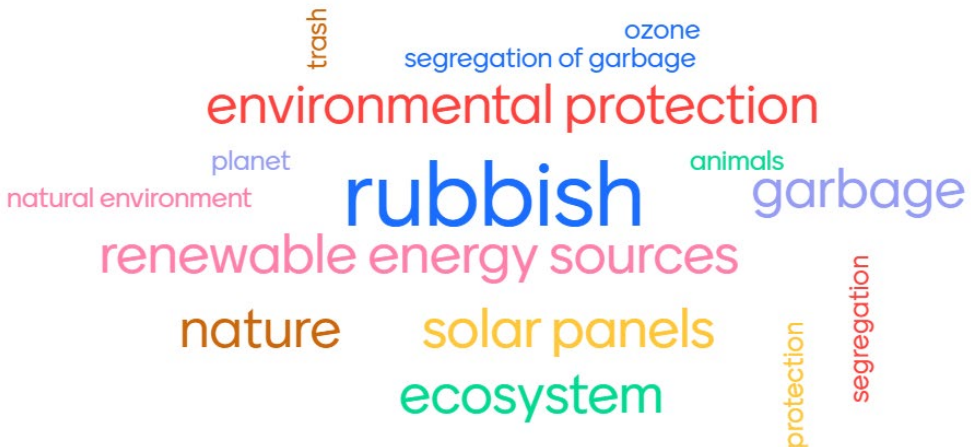


Figure 1.2. Word cloud related to the word “ecology”—results of the spontaneous associations test

Source: Own elaboration.



Figure 1.3. Advantages and disadvantages of renewable energy sources—example of a metaphorical visual display

Source: Own elaboration.

1.4.3. Analysing qualitative data with a CAQDAS software

There are two major groups of CAQDAS software packages that follow qualitative approach to the data analysis (Lewins & Silver, 2007):

- Code-based theory building software: this type of software enables thematic coding of pieces of data. These packages can either facilitate the researcher in reducing the data, allowing him to explore relationships between different themes, or help him to develop more detailed and sophisticated codes.
- Text retrievers and textbase managers: these packages provide the researcher with tools to analyse the text for specific words and to look for synonyms or words with close meaning, while also providing indexing for all words in the text, frequency tables, and key word in context retrieval.

The distinction between these types of software is not absolute: contemporary software packages allow both coding and text retrieving, while also offering complex text-based searching tools.

There are different software packages that can be used to analyse qualitative data, including ATLAS.ti, NVivo, Quirkos, MAXQDA, and many others.

Before we discuss an example on how you can manage and analyse qualitative data with CAQDAS software, consider the following tips on data preparation process:

1. Preparing the transcript
 - Coloured, bolded and underlined text can help highlight important moments of the interview but it cannot be used by the CAQDAS packages. This type

of text formatting can be applied to help the researcher quickly identify different respondents and topics.

- Some software packages can use full stops, question marks and exclamation marks to recognize the end of a sentence. This can make the automatic coding much easier. If the transcription is made with a separate tool that turns audio into text, it is necessary to thoroughly revise the punctuation.
- Sometimes the researcher may want to indicate different structures in the text by using new paragraphs and sections in the text document. CAQDAS packages differ in their ability to handle these text structures so before doing this, the researcher must check specifically for the chosen software. Again, even if this formatting is not useful for the package, it can be used in order to make the visual inspection of the text easier.

2. Identifying respondents, topics and questions.

When we analyse focus group data, we may want the CAQDAS software to identify each speaker in the discussion script. In order to automatically do so, the text needs to have a unique identification name for each participant that should be used every time this participant have said something. This identification can be the actual name of the participant or just a code (like RE12–20) that is used to replace the name for anonymity purposes. Using capital letters can make visual identification of each participant much easier and can improve the interpretation of answers. You should use identifiers for questions asked by the moderator/interviewer as this facilitates the detection of new topics in the text. These identifiers can be as simple as this: Q1-S (question one, interviewer Sonya) or Q1.F2 (question one, focus group two). It is important to make the identifiers somehow different from the short words in the text. For example, if your materials are in English you should avoid using ‘or’, ‘on’, ‘to’, etc. as identifiers for both respondents and questions, especially written with lower letters.

1.4.4. Example of CAQDAS software—Atlas.ti

Atlas.ti³ is a popular software used for qualitative data analysis and mixed methods research in academic, market and user experience research. This program is a very powerful data analysis tool. It allows not only simple grouping and counting of data, but also the performance of advanced qualitative analyses leading to the creation of hypotheses and generation of theories (Niedbalski, 2014).

We choose this software to illustrate how you can manage your qualitative research project using CAQDAS package. Atlas.ti is easy to use and intuitive. Therefore,

³ You can download a free trial here: <https://atlasti.com/free-trial-version/> A trial license lets you explore these apps with no functional limitations for up to five days within a 90-days period (according to information of March 2021).

only a few selected elements will be shown below to help you get started with this program. We encourage people interested in expanding their competences to use the program independently, supporting themselves with user manual (Friese, 2019), numerous tutorials and other materials available on the Internet.

After launching Atlas.ti, you need to add the documents to be analysed (Figure 1.4). Atlas.ti allows you to analyse different types of data: large bodies of textual data (e.g., transcripts from interviews, but also in the case of content analysis: articles and all texts obtained, e.g., from the Internet), as well as graphical, audio or video data.

There are important options in the menu, including:

- documents,
- quotations,
- codes,
- memos.

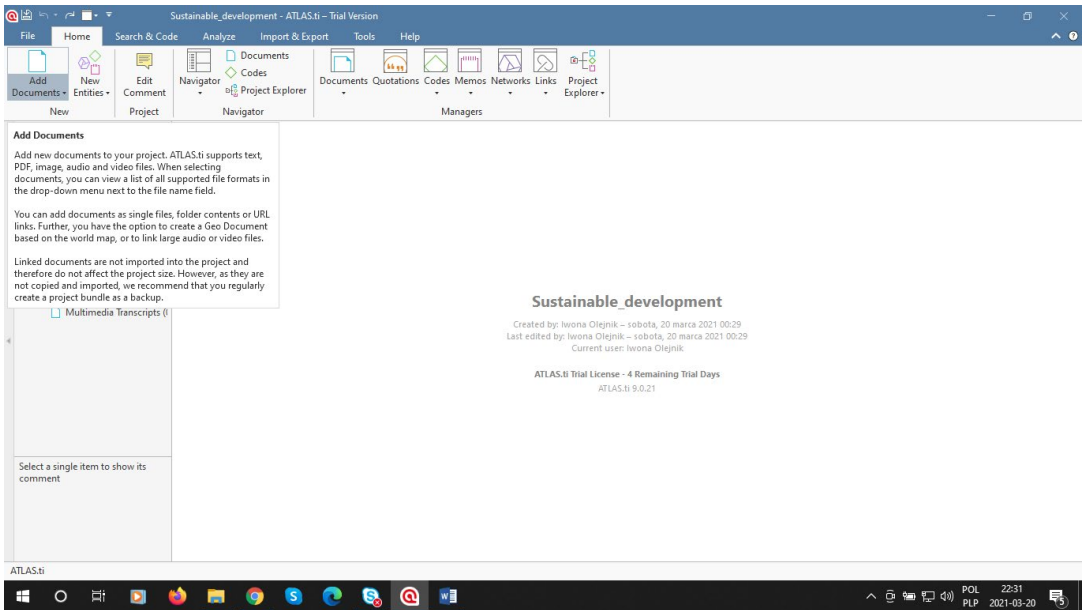


Figure 1.4. Adding documents in Atlas.ti 9—computer program window

Source: Own elaboration.

The analytical process begins with data coding, sorting and assigning them to specific topic category. The next step is to combine thematically coherent codes and search for relationships between them (Niedbalski, 2014). The basic unit of analysis is a piece of data that is separated according to the issue of interest of the

researcher—**quotations**. It can be a single phrase (e.g., “experiences with services”), a line, a sentence or a paragraph. They are assigned certain, specific codes. Coding in Atlas.ti is (technically) a selection of a piece of text that is assigned specific labels—**codes** (Figure 1.5).

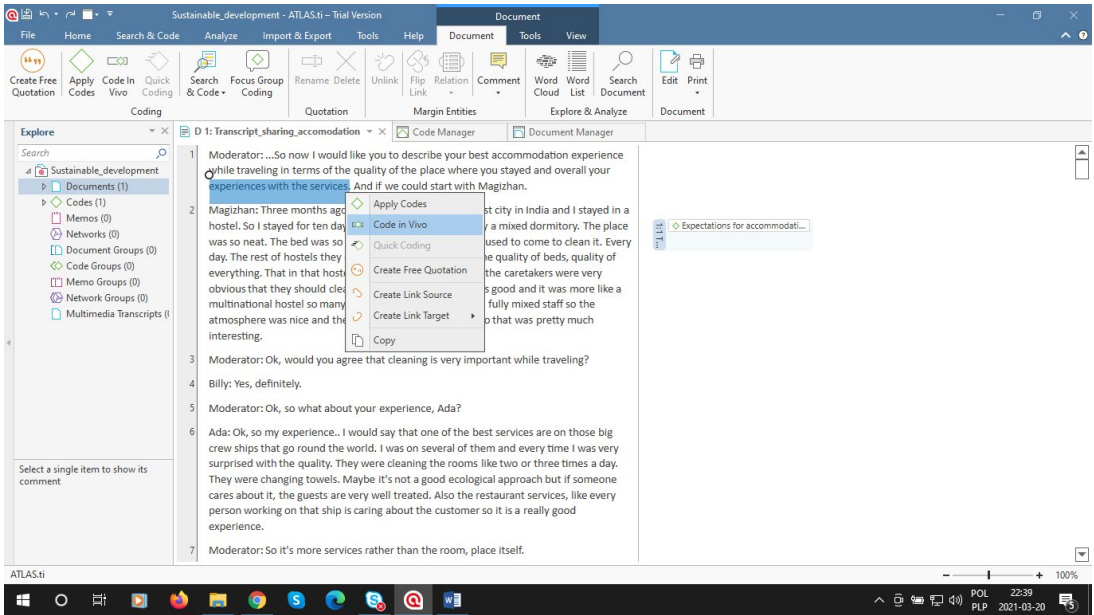


Figure 1.5. Data encoding—code in Vivo in Atlas.ti 9

Source: Own elaboration.

Atlas.ti allows you to encode data in several ways. These are mainly:

- open coding: creating a new one code based on data analysis or creation of one that has not yet been marked with any text (i.e., “new free codes”) (*expectations for accommodations*, see Figure 1.5),
- code in-vivo: the code name will be a fragment of the original text (*experiences with the services*, see Figure 1.5),
- coding based on a list of codes already created: reusing the code that has already been created to mark a new piece of data with it (see Figure 1.6).

When creating codes, it is worth remembering that there can be an unlimited number of them, and a single code should be built rather of a small number of words (if it is too long, further analysis is facilitated by shortening its names and moving the content to the comment) (Figure 1.6). The Code Manager provides an overview of all codes and code groups. You can create new “free” codes, rename, delete, duplicate, merge or split codes.

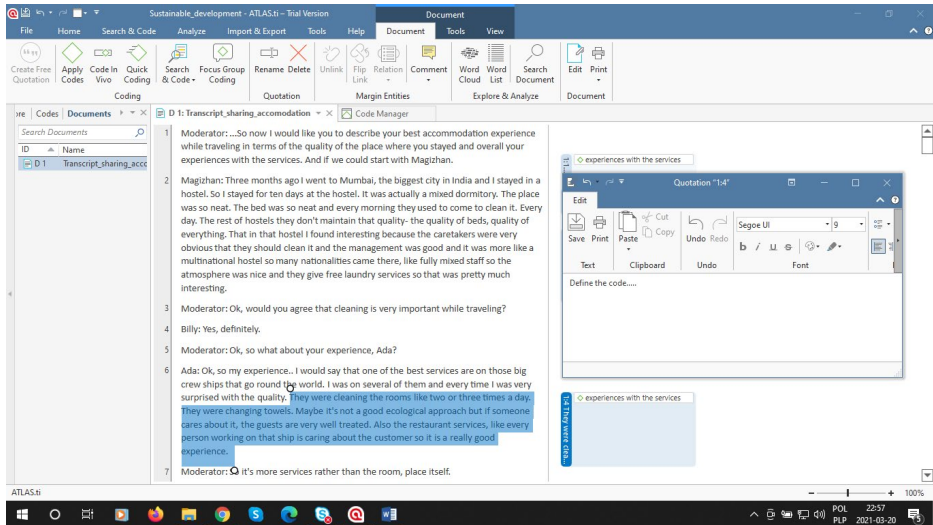


Figure 1.6. Data encoding—quotation and code definition

Source: Own elaboration.

Another basic and very useful function of the presented software is “memos” (Figure 1.7). It is some kind of a notebook in which you can write down all kinds of notes. These may be the researcher’s thoughts related to the analysed text, being a “link” between the codes and the final research report (or final article, Ph.D. thesis etc.).

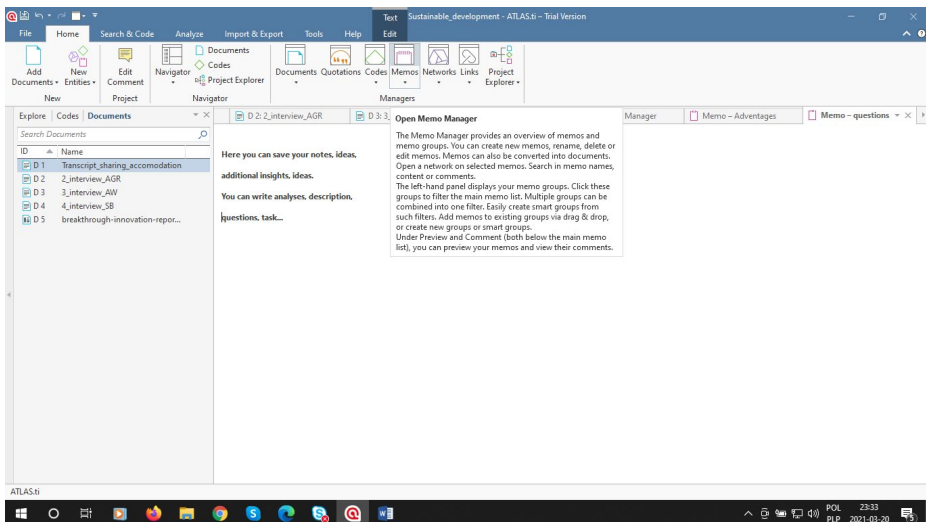


Figure 1.7. Memos in Atlas.ti 9

Source: Own elaboration.

We could also take other advantage of some of the tools. E.g., in the case of content analysis, if we have an article (or any other text) and we have not even read it yet, we just want to have a quick global overview and know what the main concepts in this text is, we can create a word list or in a different layout—word cloud (Figure 1.8). This enables, among others, to analyse word frequencies, so we can see which ones are occurring more or less frequently.

For example, the analysis of the second chapter of this e-book (*Questionnaire design*) is presented below. We can notice that the dominant words in the text are *questionnaire* and *questions*, the former appearing 45 times in the text. It is worth adding that in this way we can analyse more than one document at the same time.

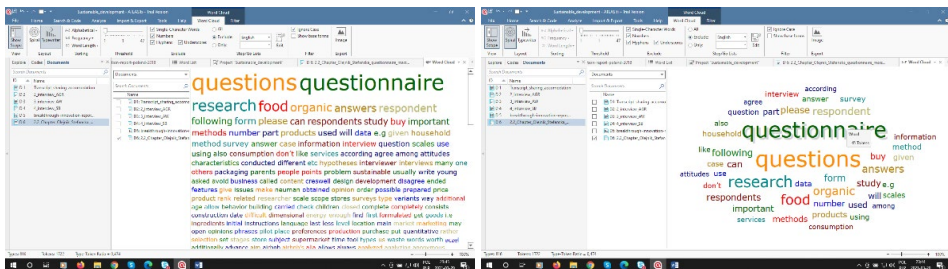


Figure 1.8. Word cloud in Atlas.ti 9—quick global data overview

Source: Own elaboration.

This tool also allows you to quickly find what context is a given word in, in the analysed text. The example below shows where the word “food” appears in the text.

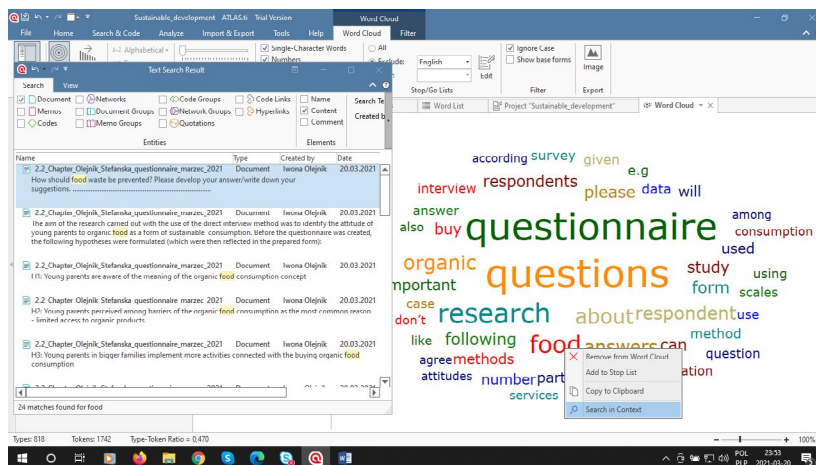


Figure 1.9. Search word in context

Source: Own elaboration.

In conclusion, only a few examples of the usefulness of the Atlas.ti software are presented above. It should be emphasized that this and other software have many additional functions useful in the analysis of qualitative data. However, it is worth emphasizing once again that a researcher conducting qualitative data analysis using CAQDAS software should remember that even the best software cannot “read between the lines”. Therefore, such software without the participation of a researcher will not read the proper sense of the statement, e.g., a humorous or ironic tone. In this way, the information obtained can even be misinterpreted. Thus, the software used in qualitative research should be treated as supporting and not replacing data analysis (Kaczmarek et al., 2013).

Questions / tasks

Work individually to answer the following questions:

1. Do the questions used in the focus group interviews meet the recommendations given in this chapter?
2. Is the time provided for each item in the script enough to cover all the questions there?
3. Can you think of other questions that can be added to each category? Please, give an example of at least three other questions.
4. Please use 2–3 chosen projection techniques, which may be applied in this project.

Work in groups to answer the following questions:

5. Was the selected method of qualitative research appropriate to fulfil the goal of this research?
6. Considering the number of people interviewed, would it take more or less time to take individual interviews rather than focus group interviews?
7. Do you think that the main conclusions of these focus groups could be useful for questionnaire development for the qualitative part of this research?
8. What other demographics the researchers could have used when selecting the participants of the focus groups?
9. In the light of sustainability issues, how useful could focus group interviews be for private companies? Please, give an example of a managerial problem related to sustainability that could benefit from conducting a focus group.
10. Which of the following statements about in-depth interviews is correct?
 - The questions used in this type of interview have predefined answers.
 - There is a strict order in which the interviewer asks questions.
 - The interview involves one interviewer and a group of people (interviewees).
 - This method helps marketers reveal the real motives behind consumer attitudes and actions, which often are subconscious.

11. In which of the following situation is it appropriate to conduct an in-depth interview?
 - When the purpose is to gather representative data on the topic of interest.
 - When the researcher needs information that will be directly used to make an important managerial decision.
 - When one wants to generate a new product conception.
 - When there is a need to discuss topics of public interest.
12. All but one of the following statements refer to the focus group interview. Which one?
 - Focus groups can include either a small or large number of people (between 5 and 30).
 - A typical focus group consists of a relatively small number of people.
 - The discussion in a focus group interview is spontaneous and unstructured.
 - In a focus group interview, the discussion is led by a moderator.
13. Which one of the following do you consider the advantage of focus group interviews?
 - They can be used to gather representative data.
 - The results are easy to analyse and interpret.
 - They are useful for gaining insight into consumers' inner world.
 - Moderation of the discussion is easy.
14. What features should a moderator have?
15. What are the pros and cons of implementing qualitative online interviews as compared to face-to-face?
16. Prepare a recruitment questionnaire for research on a chosen topic:
 - How to reduce the “production of garbage” in households? The results are to be used in a promotional campaign—aimed at increasing consumer awareness.
 - Unethical consumer behaviour—identification, perception, possible countermeasures.
 - Perception of the corporate social responsibility.
 - Sharing economics—advantages and disadvantages for consumers (or companies / cities / society).
17. Prepare a fragment of a script for FGI research on a chosen subject (see—task 16)
18. Prepare a practical implementation of a chosen projection technique: animalization, personification, completion techniques, picture drawing, picture sorting, „brand party”, shopping list analysis, „family game”, collage construction; attention: the topic should be connected with sustainable development. Apply this technique by researching with your colleagues at the lecture / workshop / home. Present theoretically what this technique is about.

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