Research Article

SAVING TIME WITHOUT SACRIFICING RIGOUR - MAINTAINING DATA IMMERSION IN THEMATIC ANALYSIS

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Abstract

Qualitative research is a matter of interpretation, and it is thus important to know and to show which statements lie at the bottom of said interpretation. When using Thematic analysis as defined by Braun and Clarke, rigour is called for and any analysis needs to be based on an amount of data no researcher can remember. It is, however, necessary to have all references at one's fingertips. The approach described in this research note was designed to make this possible. As the basis of this description, a study on communication in a crisis was used. A systematic approach with IT support through NVivo completed by manual sorting of references led to the creation of theme, sub-theme, code and reference pouches which could be referred to throughout both the preparation of the discussion and the actual writing up. The effort to create these pouches was considerable, but overall, time could be saved. With all data-related details readily available in the pouches, any reference was quick and easy to find. This allowed the vivid illustration of the findings advocated by Braun and Clarke (2023a) within a relatively short amount of time. The described approach has proven useful to save time without the need to sacrifice rigour: it allows, once the preparation has been done, to maintain data immersion throughout the whole research process.

Keywords: Thematic analysis, reflexive thematic analysis, research planning, coding, rigour, interview data, qualitative data analysis.

INTRODUCTION

While this article assumes a certain familiarity with the 2006 seminal article on thematic analysis (TA) by Braun and Clarke, the method has since been refined and extended. Therefore, after an introduction to the study used as an example in this research note, an update on TA is presented in order to illustrate why rigour and consequently maintaining data immersion is especially important when applying TA. The subsequent description of the coding approach and the actual definition of themes explains how rigour and documentation helped define themes and sub-themes as well as the content and structure of the theme pouches created during this phase. Said pouches ensured all supporting documentation was readily available and easy to find, an important factor in maintaining data immersion throughout the research journey. This process is also documented in photographs shown in the appendices. This research note aims to show how, by applying rigour to the process of coding and thematic analysis and investing effort and time in the preparation of the write-up through creating the detailed documentation described above, the resulting deep familiarity with the data and the materials created will allow a speedy write-up of the findings and discussion sections with all relevant information always at hand. The underlying study is deliberately described only regarding the relevant aspects for this research note, thus not including details such as interviewee data. It is meant to serve as a background to the description of the approach to maintaining data immersion in any case of application of thematic analysis. A brief description, however, is necessary.

Overview of the Study

The study in question examined changing practices for client contact management in professional services firms during restrictions on personal contact imposed by the COVID-19 crisis. The aim was to explore how the crisis was experienced and what respondents learned for the future. Investigating communication in a crisis and the resulting changes in practice was a matter of social construction and personal interpretation by respondents. A critical realist paradigm and abductive research logic were adopted. The resulting research design was a sectoral case study of the consulting industry in the German-speaking countries of Europe with semi-structured interviews as the main source of data. Data were structured and analysed using thematic analysis (TA), following the approach of Braun and Clarke (2006) and later refinements (Braun and Clarke, 2019a; Braun, Clarke and Rance, 2014; Braun and Clarke, 2022a) especially around reflexive TA. The subject of the investigation was the emergence of improved practices around client communication in crises and ensuing practice changes. Within the context of the professional services or consulting industry, its clients, plus other stakeholders like the government with its rules and regulations, the study investigated the process of reacting to disruption, the COVID-crisis, gathering experience, analysing and learning and finally adapting. It focused on – mainly interactive – client communication in a crisis, with the aim of identifying improved practices, which can be used both for preparing for future crises or, if possible, become a permanent feature. Key outcomes were a framework of recommendations for client communication in a crisis and first insights into how current crisis management measures might affect the workplace design after the crisis ends. Recommendations highlight in particular the importance of infrastructure and preparation, the need for rapid and pragmatic decision-making, the usefulness of a project-by-project approach where possible, the central role of stakeholder involvement and the potential need of also supporting clients.

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Setting the Basis for Thematic Analysis: Making Clear What Is Under Investigation

A thorough literature research on crisis management, specific measures under COVID-19 and related issues as well as crisis communication was conducted. Communication was identified as critical, as all stakeholders have to be involved, and companies need to manage trust and reputation (Bundy *et al.*, 2017). These latter aspects of communication on the crisis are widely covered in the literature, but this is not the case for communication in the crisis, which focuses less on the content and more on means of communication and processes. The focus of the literature lies on strategic issues rather than tactical ones (Coombs and Holladay, 2010). Conversely, the study aimed to cover some of the latter on the topic of modes of communication in the crisis. Bearing the focus on interactive client communication in mind, open issues around crisis management decisions were identified and presented in a table in order to be able to systematically come back to each issue along the research journey.

This open issue table was an important starting point for the analysis, as when defining themes, a researcher has leeway and actively defines them instead of letting them emerge (Braun, Clarke and Rance, 2014; Braun and Clarke, 2019a; Braun and Clarke, 2018; Braun and Clarke, 2022a). Themes are not in the data to be identified, rather, they need to be designed to fit the analytic "story" a researcher tells (Braun and Clarke, 2023a). It is therefore crucial to clearly state what the study is focusing on, and this also means to make visible how the research question(s) is (are) derived from the result of the literature research and the knowledge gaps identified. In the present case, the research questions were the following:

- What were the crisis management responses to restrictions around client contact?
- Which of these measures can be useful for future crisis management and why?
- Which changes are likely also to be retained in general and what are the implications and benefits of this?

Data Gathering and Thematic Analysis as the Analytical Method

In order to find answers to the research questions, thirteen interviews were conducted with professionals from the consulting industry. To get a large variety of experiences and points of view, people from both genders, different types of consultancies and from different hierarchical levels were invited to participate. The result was a set of data comprising 6795 lines of transcription from the twelve interviews which could be used. The challenge was to make sense of this with a focus on what the study aimed to clarify. When discussing the phases of qualitative data analysis, Baptiste (2001) describes first tagging the data as the start of the analysis phase, then grouping the tags and trying to make sense of them. Indeed, while Rashid *et al.* (2019) insist that data collection/fieldwork and analysis evolve in parallel, one needs at least a set of data large enough to make a meaningful tagging exercise possible (like coding, the step between data collection and analysis). This can be the starting point for the "making sense" effort. Baptiste (2001, p.8) talks about grouping "tags" or codes into – among others – "themes", and the analysis of such themes is one of the most common methods for data analysis in qualitative research. While thematic analysis was known forlong (Aronson, 1995), Braun and Clarke (2013) note that with the article on TA by themselves (2006) it became an established method. It looks for patterns and tries to identify so-called demi-regularities (Fletcher, 2016). TA was thus a suitable approach for the study discussed here – all the more as Braun and Clarke (2006) argue that TA is very flexible and compatible with many paradigms, including critical realism, where any result can only be a probable one anyway (O'Mahoney and Vincent, 2014).

The answers to the research question were looked for by searching for themes and their describing and defining factors – which Vaismoradi *et al.* (2016) dub "categories". Before finalising the themes, Braun and Clarke (2023b, 2006, 2013, 2022) also group codes into topic domains or "sub-themes" which were aggregated to form the final themes(see Fuchs and Robinson, 2023). During this definition phase, a researcher has, however, to avoid fragmentation and the definition of too many, eventually overlapping, themes, and sub-themes need to reflect particular aspects of the overarching theme (Braun and Clarke, 2023a).When first introducing TA as a method, Braun and Clarke (2006) highlighted the importance of taking a number of decisions. One is about the philosophical stance, and for the present case, the other relevant decisions are shown in Table I:

Table I. Decisions to be taken before starting to apply TA

Decisiontobetaken	Solution forthestudy
Defining, what counts as a theme	Different criteria may apply, and Braun and Clarke (2006) emphasise that is is a judgement matter. For this thesis, number of occurrences of a data item cannot be the defining aspect, as it does not fit the search for deeper meaning in the experiences of participants (Sobh and Perry, 2006). Prevalence, measured not only by numbers but also by the depth and extent of what participants told around the type of data will be the defining criterion.
Deciding whether to look at a rich description or a detailed account of one aspect	Within the focus of the study, and according to CR standards - the "thick" description of what is found(Ryan *et al.*, 2012), the first option is chosen.
Choosing between inductive or theoretical TA, i.e. bottom up with no pre-existing coding frame or more analyst and theory-driven	The "inductive", data-driven way better fits the search for a rich description as well as CR principles, with the reservation that as described above, the approach will be more abductive, and, after a first round of coding without a frame, a second round of axial coding is applied, as recommended by among others Hoddy (2019).
Choosing whether to define themes by semantic criteria (looking for explicit, visible meanings) or latent ones, investigating what lies behind the semantic data content	The study was looking for patterns or demi-regularities (as in Fletcher, 2016) in order to find not only the best solutions for the aspect of crisis management it investigates but also reasons and the embedding of any mechanisms and events in their context, which is why latent themes have to be looked for.

Thematic analysis then moves forward in stages, starting with the familiarisation with the data through coding, searching for and reviewing themes, finally defining and naming them and finally the write-up. In this context it is important to note that all these stages require staying familiarised with the data set – an aspect this research note focuses on. (Braun and Clarke, 2022a, 2022b, 2023a) call for rigour, a "knowing" researcher, thoughtful, engaging and conscious of quality, documenting results in detail, accompanied by supporting data and references. TA may allow to apply judgement, but the researcher needs to stay within the bounds of – theoretically coherent – standards of research quality and ethics (Fuchs, 2023), thus generating trustworthiness (Nowell *et al.*, 2017).

As discussed above, themes depend on their conceptualisation by the researcher and the research focus, and thus are **created** from the data (Braun, Clarke and Rance, 2014; Braun and Clarke, 2019a, 2022a, 2023a). The emergence of findings thus happens **from** the themes, not **as** the themes, again emphasising the need for rigour, e.g. in order to avoid confusion between themes.
TA was thus further refined since 2006, mainly in order to make some assumptions not explicitly stated in the initial definition clear, also acknowledging that TA might not be as universally applicable as first stated. Especially the forms of applications they recommend best fit the values of qualitative research, and researcher creativity is called for (Braun and Clarke, 2019a) with this and reflexivity not to be confused with bias (Braun and Clarke, 2023a). TA was divided into three approaches (Braun and Clarke, 2018, 2019a, 2022a, 2022b, 2023b):

- Codebook TA, using a structured codebook on the basis of some familiarisation with the dataset, used to document the occurrence of certain topics,
- Coding reliability TA, more open, with the codebook applied to all the data,
- and reflexive TA, with an open, flexible and looping approach to generating codes

The reflexive approach is recommended, especially when searching for latent themes, but also in general because of it leaving more room for interpretation and the search for meaning beyond the obvious, while codebook TA better fits positivist approaches, if at all (Braun and Clarke, 2019b, 2019a, 2022b). Reflexive TA is therefore the approach best fitting the typical investigation for demi-regularities (Fletcher, 2016). TA is not without limitations, and Braun and Clarke (2006, 2023a, 2023b) explicitly mention several pitfalls. They also emphasise repeatedly the importance of reflecting initial decisions and, based on them, apply the method very consistently. This need for rigour and documentation may sound like a time-consuming factor. However, when applied as in this example, it can both ensure constant data immersion and time savings, especially during the write-up of the results.

Setting the Base with Two Rounds of Coding: Initial and Axial

Coding is a crucial step in the analysis of qualitative data and needs to fit epistemology and methodology, a heuristic exercise which is designed to assign describing tags, "codes", to chunks of the data analysed, with the aim to be able to define (or identify emerging) categories and ultimately themes (Saldaña, 2016). There are different approaches to looking for patterns and defining categories, like similarity, frequency, correspondence or other, and as categories are unknown at the start it makes sense to code for whatever catches ones' attention (Creswell, 2006). Hedlund-DeWitt (2013) cites Charmaz (2006), describing codes as "the bones of the skeleton", yet to be built.

Coding can start early, even while transcribing and is cyclical in nature – like with TA, researchers have to repeatedly retrace their steps, taking into account that a researcher codes with the research question in mind, (Emerson, Fretz and Shaw, 2011). Albeit at least in part cyclical, coding is a process. For each coding cycle, there is a number of methods to choose from, and in order to make the coding exercise comprehensive and to take different points of view into consideration, two cycles of coding were conducted. The first one of "initial" coding (Charmaz, 2014) divides data into chunks it then examines and compares, allowing the use of other methods such as process coding within. Thus, this also follows what Hedlund-DeWitt (2013) believes to be a good approach to analysing qualitative data: taking a first, inductive step – which then is to be followed by a second, deductive (or in the case of this thesis, abductive) one. From a critical realist standpoint, Hoddy (2019) advocates a very open coding approach, followed by axial coding, i.e. coding for categories or sub-categories (the "axes"), which this steps links together, the categories deriving from earlier stages of analysis. Axial coding is thus an extension of the first cycle of coding, especially for initial coding. Some believe that a single round of coding would suffice (Sobh and Perry, 2006; Ridder, 2017). Yet, this would mean that the axes only stem from the framework, which in turn might narrow the choices down as compared to having, at least as an additional source, a first coding cycle. A problem might also be that not all patterns or axes can be found in the conceptual framework, which is why this research started with a first round of initial coding, followed by an axial cycle. This fits the TA investigation for patterns of shared meaning from which themes can be developed (Braun, Clarke and Rance, 2014).

NVivo 12 was used for computer aided coding (CAQDAS) purposes, bearing in mind that using CAQDAS can put repetition or frequency to the foreground, which precludes certain ways of conducting qualitative analysis. For this reason, CAQDAS was not used for all coding related tasks and the actual creation of themes was done manually. Following the decisions taken on the TA approach, the focus lay on "latent" as opposed to semantic codes (Braun and Clarke, 2019a). The first transcripts were also recoded, as new ideas for codes emerged during the process, bringing the total number of codes from 110 after the first five transcripts to 166, later reduced to 125 by merging identical or similar ones. While there is a caveat not to become overly influenced by earlier coding during this exercise (Braun and Clarke, 2019a), an awareness of all used codes helps avoiding too many duplicates.

To these codes corresponded 1,462 references from the transcripts, which were duly cut from the lists created by NVivo and grouped by code, with handwritten references on their use for other codes. This process, while time-consuming, further helps familiarisation with the data and lies at the bottom of the creation of theme and reference pouches, which in turn will help saving a considerable amount of time in subsequent research steps. The resulting code book was then used in the next step of grouping the codes in order to develop the axes for the second cycle of coding (see Appendix 1).

Axial coding was also done manually in part, and the codes were then manually grouped according to topics, a step which already means looking for categories but in this case with a focus on identifying potential "parent codes" (Fletcher, 2016) which can then be used for defining the axes. The resulting 53 parent codes were then grouped and 36 axes were defined (see appendix 2 for a list of the axes). During this step is was important to take into account that axes should not stem from the conceptual framework but should support it (Ridder, 2017). Therefore, the results were mapped against the framework as a further step in checking the quality of the analysis, checking whether the findings contradict the assumptions which have led to the conceptual framework (see Appendix 1). This approach also responds to the guideline to make sure that the relationship of the conceptual or theoretical frameworks of a study and the themes need to be clear (Braun and Clarke, 2023b).

As can be seen, all but one of the axes could be assigned to elements of the framework, the exception relating to switching back to normal after the end of the crisis. Reciprocally, all the elements of the conceptual framework had axes associated with it. Thus, this quality check confirmed that the framework on communication in a crisis as described in section 4.2 is indeed a fitting guideline for the research work of the study, and that at this stage the collection of data looked comprehensive. This illustrates that coding already is part of data analysis and does contain elements of judgement and interpretation, especially when merging or grouping codes. Nonetheless, regardless of potential – and unavoidable – bias as well as errors researchers, being humans, make, the results were a viable basis for further analysis.

While the axes were entered into NVivo, it proved easier to use the axes and the already cut out references and to regroup them manually. Because re-allocation of references as well as their use for more than one axis was expected (some of which already was identified during the definition of the axes, see appendix 1), a second set of references from all the transcripts were cut out. These snippets were then assigned to the axes, a process during which, for the sake of clarity, four axes were split and another three identified. This fits observations that codes develop and new ones do constantly emerge (Low, 2019). NVivo was then used again in order to, transcript by transcript, look for references that might have been omitted. The results can be seen in appendix 2.

At this stage, familiarisation with the data was quite extensive and it was felt that it was time to move on to defining the themes themselves. It was also clear that the themes would not just be identical with the axes, nor even groups of axes, but clearly distinct and sometimes cutting across axes, so that the next step of generating findings could be started.

Identifying Themes

The next step was to identify themes, bearing in mind that for a theme to be defined, the importance of an idea in relation to the topic under scrutiny is key, and not the number of occurrences. This was done with rigid method application as well as a second round of reviewing themes and sub-themes, needed before coming up with the final thematic map (Braun and Clarke, 2006, 2022a, 2023b; Braun, Clarke and Rance, 2014). With this in mind, the codes from the second cycle of coding (the axes) were first grouped, and special attention was given to the constituents of an axis, be they codes from the first cycle or even individual references, some of which could be assigned to more than one code, axis or theme.

Designing the Initial Thematic Map

Before analysing the data and grouping relevant themes, it was necessary to reflect which topics were to be distilled from the data. The open points from the literature research were mapped with elements of reality in critical realism and, in line with the abductive logic, the result was then used to determine in which areas themes might be defined, data permitting. Of course, it could not be ruled out that the data also contained relevant information on topics that were not thought of before, and from the early stages of the analysis on, some information from the data was placed in a separate group, labelled "miscellaneous" as proposed by Braun and Clarke (2006).

In a final check, groups of references were finalised. These were similar to the codes from initial coding but adjusted for the results of axial coding and thus partially regrouped and allocated to the axes. The latter were then used for phase three of thematic analysis, the first round of theme definition (Braun and Clarke, 2006, 2022a). In a series of steps, groups of axes were formed, and to make sure the meaning of the data was always clear, reference groups were also ready for examination and verification.

Interim results were then mapped against both the topics from the open points from the literature review and the crisis management phases. They were then grouped, and some groups were distinct but pertained to a superordinate topic. These were then defined as themes and the groups as sub-themes. This process is documented with photographs in appendix 3 leading to the initial thematic shown in figure 1.
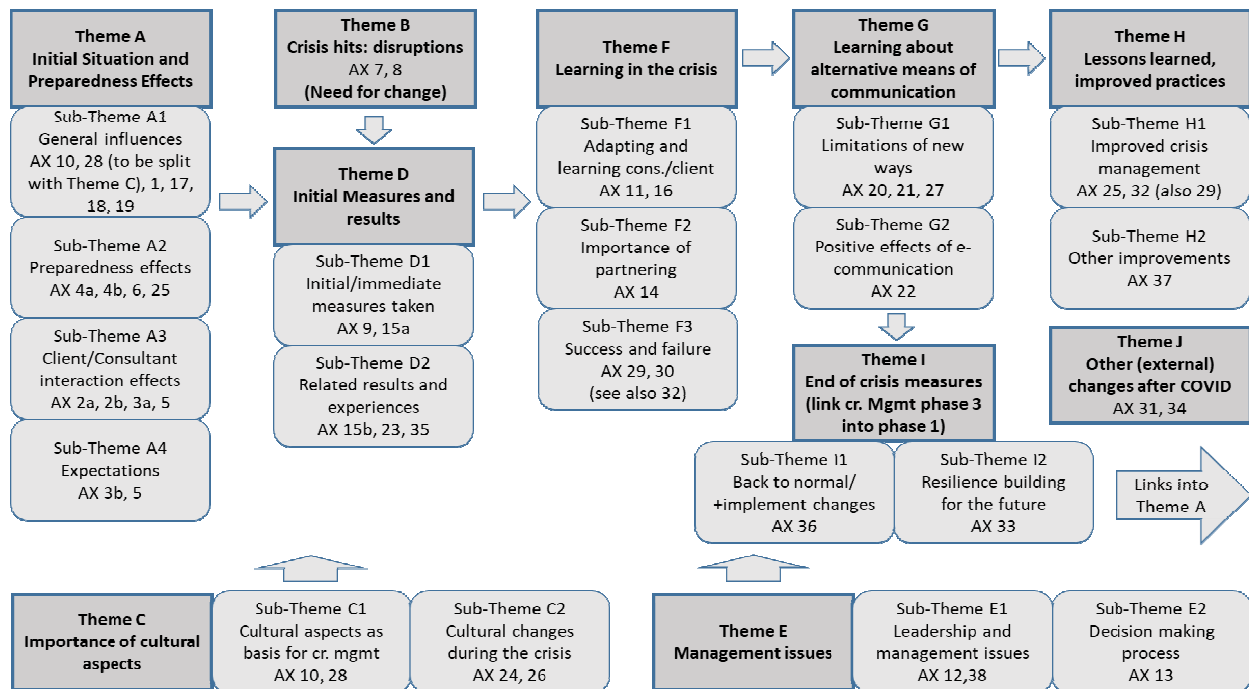
Figure 1. Initial Thematic Map with Codes/Axes by Theme/Sub-Theme

Review of Themes and Finalising the Map

Following the phases of thematic analysis as described in section themes were reviewed again to check that "candidate themes" (Braun and Clarke, 2006, p. 91) were distinct from others, homogeneous and sufficiently well supported with data as well as distinct from research and interview questions (see Javadi and Zarea, 2016). This was achieved by checking all the reference groups assigned to the axes which, in turn, formed the themes, see appendix 3. It also confirmed the structure using both overarching themes and related sub-themes. While being distinct, sub-themes supported the superordinate theme as advocated by Braun and Clarke (2023a), but it was felt that they did not carry enough meaning by themselves as to merit being defined as themes.

The analysis was conducted both bottom-up and top-down, and for the bottom-up analysis, individual references from the interviews were used. For the top-down one, it was verified whether themes and sub-themes work, supporting the conceptual framework (which was checked in line with recommendations by Ridder (2017), see appendix 3), fitting the elements of crisis management under investigation, providing answers to the research questions and clarifying the elements of reality according to critical realism. This was confirmed and led to the final thematic map shown in figure 2.
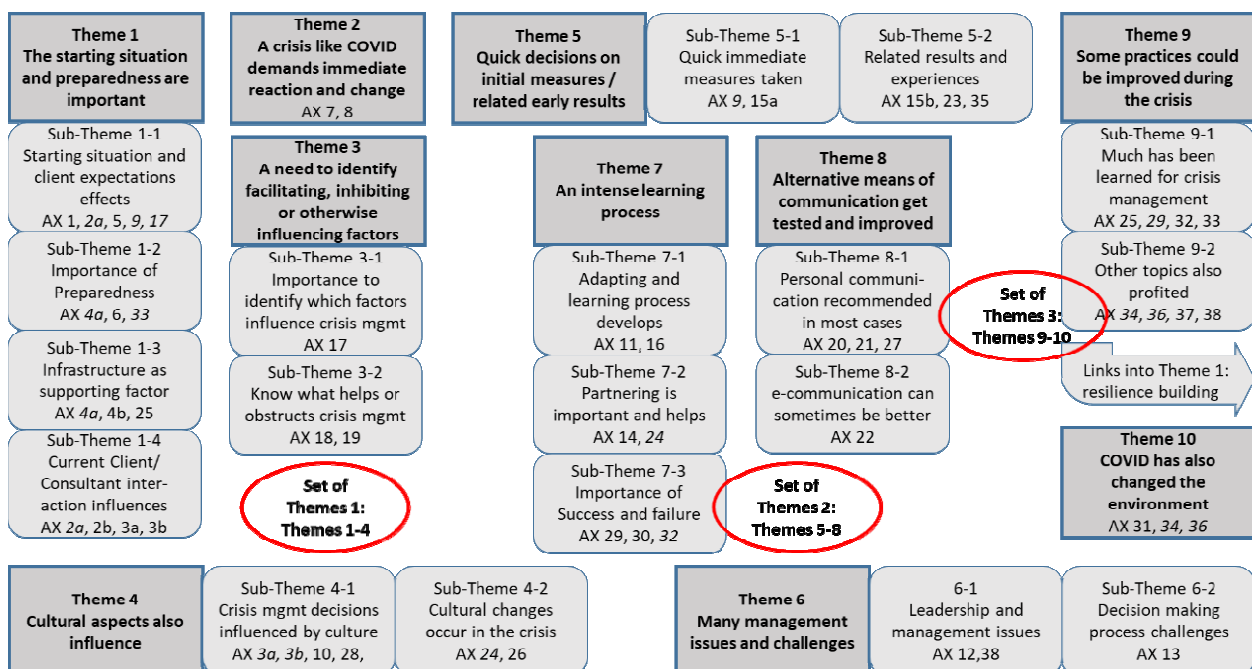

Figure 2. Thematic Map (axis numbers in italics denote that some related references were shared between themes)

Through this step, groups of themes became visible: the themes were clearly distinct, but some pertained to the same crisis management phase or turned around a common topic.

Resulting Study Structure and Write-Up

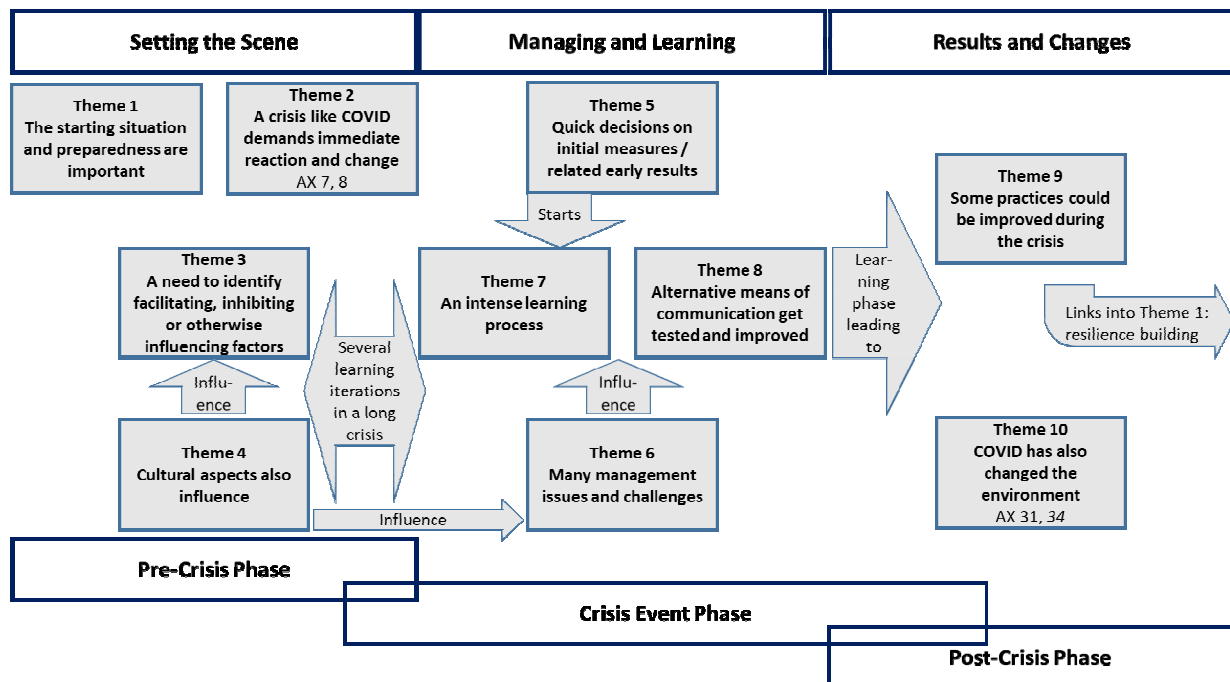After the finalisation of themes, the study could be structured following the theme groups (see figure 3).

Figure 3. Structure of the study chapters related to findings and discussion, following the themes and their interrelations

All sections entered into a dialogue with the data (as in Nicholas and McDowall, 2012), in order to look at why this might be so and which factors have led to the consulting industry thriving despite the fact that the way consultants have been working so far have been disrupted. This was made easier and faster by having axes, codes and references related to each theme and sub-theme ready in pouches, see appendix 4.

Findings were described by group of themes and an interpretation given. Indeed, the structure itself already was part of interpreting the data, as the order in which they are presented and grouped shows how different themes and sub-themes are connected and influence each other, in the sense of the analytic story described by Silverman (2017). When applying TA, the researcher does tell such a story (Braun and Clarke, 2022b), and the story in the study under discussion was the one of solving urgent communication problems in a crisis, given the current situation, aims and technical means available.

Each section on set of themes was introduced with a table with the overarching view and themes and subordinate topics, then followed by an initial discussion, linking the findings to the literature and preparing the integrative discussion and the recommendations presented the following chapter and closed on a table showing the main results of the section. The transparent pockets in the theme pouches (see photographs in appendix 4) contained all relevant reference snippets, thus greatly helping in writing up. Having the references ready also made a vivid and comprehensive illustration of the findings and derived conclusions possible, as defined as good practice by Braun and Clarke (2023a). When snippets were missing, e.g. when they were used for more than one of the themes, the numbering showed where the missing references could be found. Thus, for each section all the references were readily available in an order corresponding to the structure of the study.

A chapter with an integrative discussion and recommendations built on the per-theme set discussions structured and clarified the results, removed overlaps and differentiated between the findings as related to open points in the literature and the specific recommendations for crisis management. It then closed the loop by presenting a summary of Findings in relation to the open issues from the literature research, following the structure of the initial table mentioned above. These results, as well as additional ones obtained over the course of the analysis of the data, were used to establish a framework of recommendations around communication in crises. On top of that, they allowed some conclusions on post-crisis adaptations of the business communication environment and the workplace in general.

Conclusion

The study used as an example was looking for latent themes – as opposed to semantic ones – and used the open approach to coding and interpretation which is inherent to reflexive thematic analysis (Braun and Clarke, 2019a, 2022a, 2022b). While this approach allows for flexibility, it is crucial to apply high standards of rigour in order to achieve the "trustworthiness" Nowell et al.

(2017) call for when applying TA. This rigour starts at the process of coding, with its re-iteration and cycles aiming to achieve the correct interpretation of the data available. A thorough approach to defining themes and sub-themes, avoiding – where possible – overlaps and making sure that sub-themes pertain to the themes and support their interpretation and understanding. This "Big Q" (Kidder and Fine, 1987) qualitative approach requires maintaining deep familiarity with the data throughout the research journey, even in case a large number of codes and references are used. The approach described in this research note, combining the use of CAQDAS and manual tasks in order to create team pouches, hierarchically structured with sub-theme pouches containing axis (code) and reference materials aims to answer these requirements. The materials were in this case physical ones, more digitally minded researchers may want to try and digitalise them. The effort to create these materials will be considerable in both cases, but the application of this approach has shown that overall, time could be saved. With all data related details structured in the described way, any reference was readily available and easy to find, greatly supporting the aim to vividly describe and illustrating the findings (as advocated by Braun and Clarke, 2023a) and writing up, especially the findings and discussion chapters, was speedily done. Braun and Clarke (2023b) see writing up as an opportunity for further refining the analysis, and the closeness to the data helped seizing this opportunity. During the later stages of the research, it nearly felt as if the data were remembered in their entirety.

Appendix (1): Pictures from the Stages of Initial Coding and Defining of the Axes (TA Phase 2)
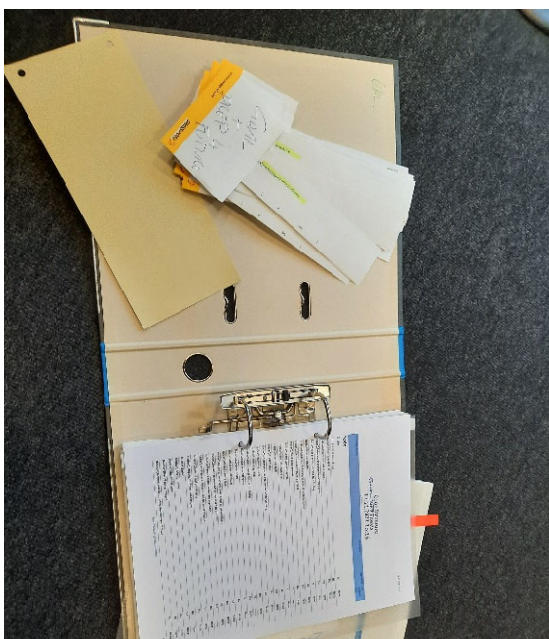
Plate 1. Arranging codes into groups and merging codes after the pilot study:

Plate 2. After coding all inter- views, printing and cutting out codes and related references:
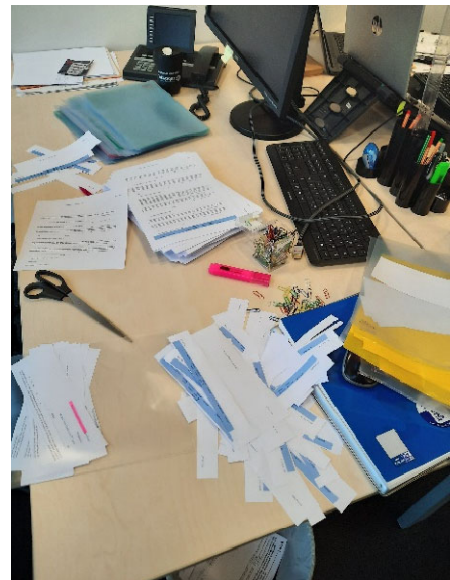
Plate 3: Updating the code book with the results of initial coding:

Plate 4: The lockable cupboard with all transcripts and the code book:

Defining the axes:

Plates 5 and 6, day 1: preparing the definition of axes. The codes have been reduced from 146 to 125. Each transparent pocket contains one code with all related references:

Plates 7 and 8: Grouping codes and defining "parent codes" in preparation of the definition of axes:

Plates 9 and 10, day 2: Sorting the sub-categories into axes, allocating to them the codes from initial coding. Red post-its denote allocation to more than one axis:
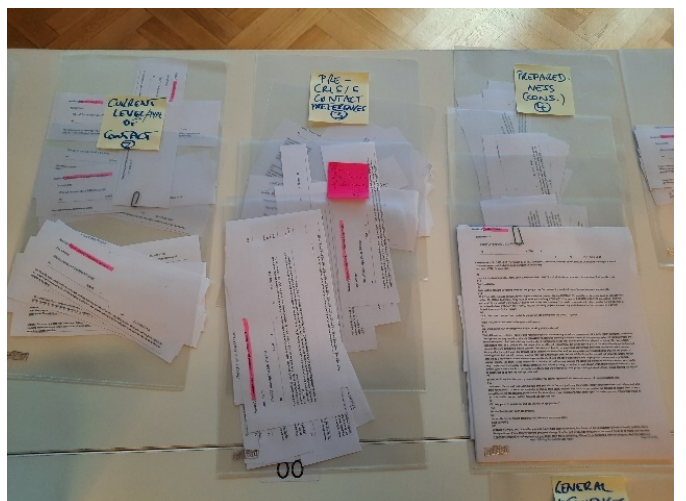
Plates 11 and 12: the 36 axes defined in this process (the actual axial coding yielded an additional seven axes):
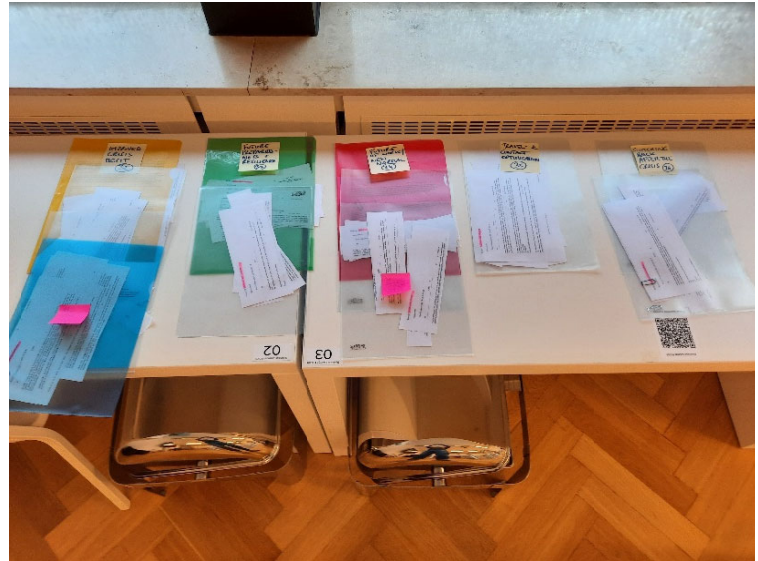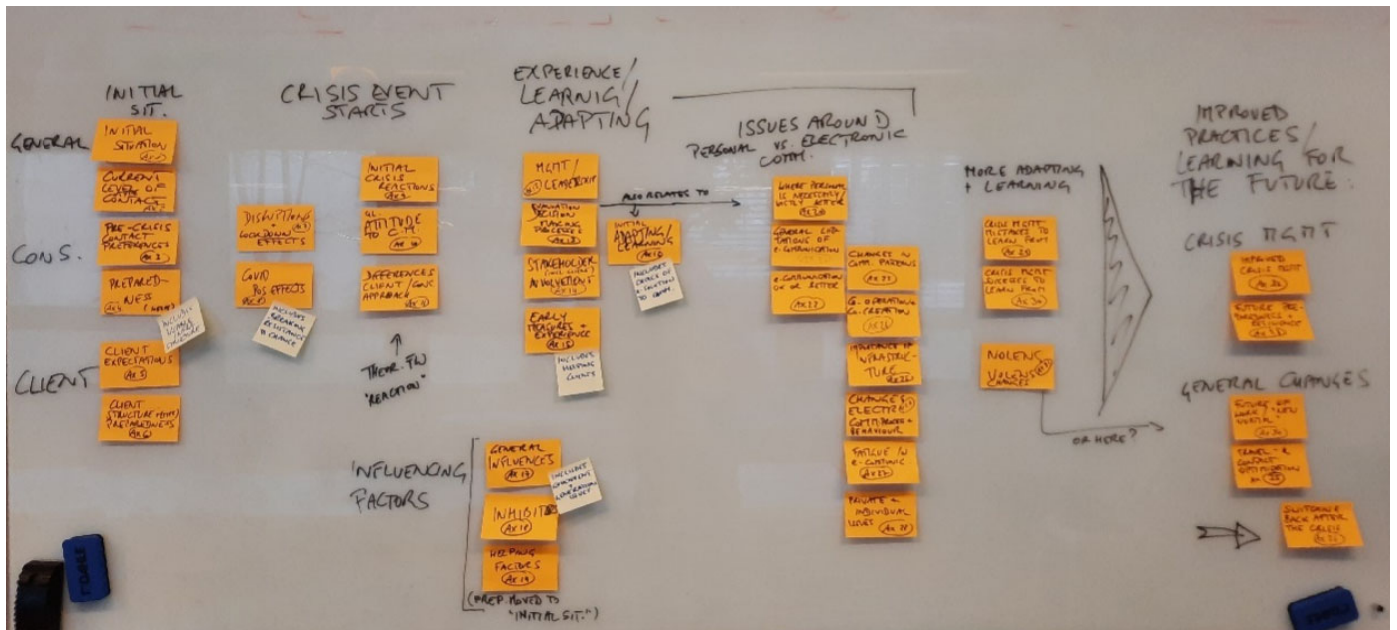

Plate 13: Mapping of the axes to the conceptual framework:

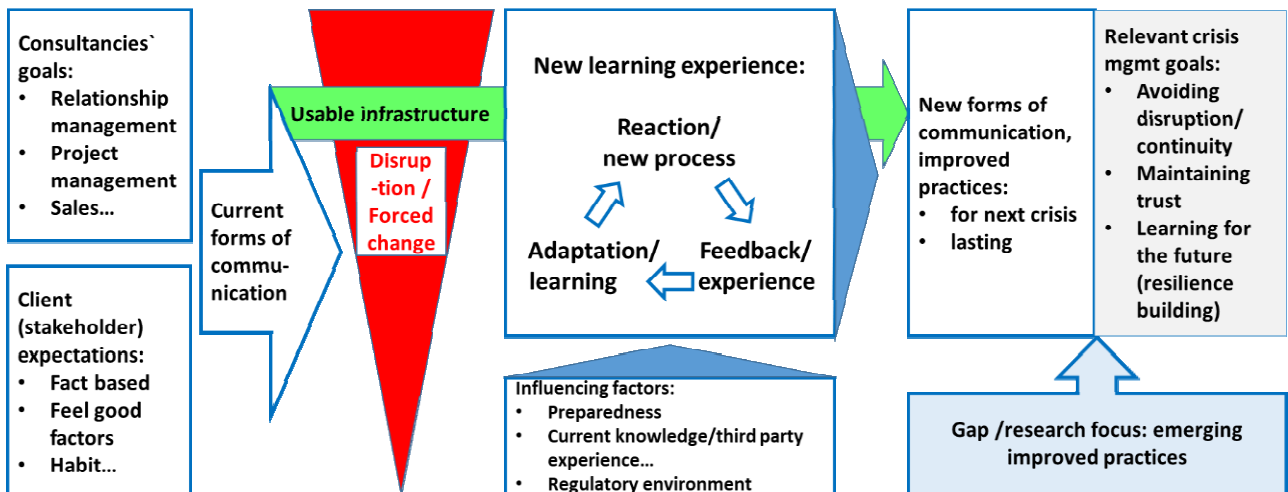The study's conceptual framework (for comparison purposes):

Figure 4. The conceptual framework of the original study

Appendix (2): NVivo-Report: Axes for Coding Before Starting Theme Definition

Plates 14 and 15 (above): manual axial re-coding and finalisation of axis codes, leading to the following list (Plates 16 and 17):

| Code Structure			
Thesis Axial Coding			
06.12.2021 11:33			
Hierarchical Name	**Nickname**	**Aggregate**	**User Assigned Color**
Node			
Nodes			
Nodes\\AX 1 Importance initial situation		No	None
Nodes\\AX 10 Gl attitude towards crisis mgmt		No	None
Nodes\\AX 11 Client and consultant approach different		No	None
Nodes\\AX 12 Management or leadership issue		No	None
Nodes\\AX 13 Evaluation and decision making process in crisis mgmt		No	None
Nodes\\AX 14 Stakeholder incl. client involvement in crisis mgmt		No	None
Nodes\\AX 15 a Early measures incl. helping clients		No	None
Nodes\\AX 15 b Experience with early measures		No	None
Nodes\\AX 16 Adapting and learning incl. on electronic solution		No	None
Nodes\\AX 17 Gl influences incl. govt. and generation issues		No	None
Nodes\\AX 18 Inhibitors to crisis mgmt success		No	None
Nodes\\AX 19 Helping factors for crisis mgmt		No	None
Nodes\\AX 2 a Current Level of Contact		No	None
Nodes\\AX 2 b Current type of contact		No	None
Nodes\\AX 20 Personal contact is necessary or vastly superior		No	None
Hierarchical Name	**Nickname**	**Aggregate**	**User Assigned Color**
Nodes\\AX 21 Gl limitations of e-communication		No	None
Nodes\\AX 22 e-communication in these cases better or OK		No	None
Nodes\\AX 23 Change in communication patterns		No	None
Nodes\\AX 24 Change in co-operation or co-creation		No	None
Nodes\\AX 25 Importance of infrastructure		No	None
Nodes\\AX 26 Change in e-comm process or behaviour		No	None
Nodes\\AX 27 Fatigue in e-comm		No	None
Nodes\\AX 28 Private or individual issue		No	None
Nodes\\AX 29 Crisis mgmt mistake to learn from		No	None
Nodes\\AX 3 a Pre-crisis contact preferences personal		No	None
Nodes\\AX 3 b Pre-crisis contact preference other		No	None
Nodes\\AX 30 Crisis mgmt success to learn from		No	None
Nodes\\AX 31 Change to adopt nolensvolens		No	None
Nodes\\AX 32 Improved crisis mgmt around comm		No	None
Nodes\\AX 33 Future preparedness or resilience		No	None
Nodes\\AX 34 Future of work in gl., new normal		No	None
Nodes\\AX 35 Contact optimisation and travel		No	None
Nodes\\AX 36 Switching back after the crisis		No	None
Nodes\\AX 37 Other improvements post COVID		No	None
Nodes\\AX 38 Changes in crisis management by COVID wave		No	None
Nodes\\AX 4 a Preparedness helps - other		No	None
Nodes\\AX 4 b Preparedness helps - infrastructure		No	None
Nodes\\AX 5 Client expectations		No	None
Nodes\\AX 6 Client preparedness - relationship with structure and type		No	None
Nodes\\AX 7 Disruptions through lockdown effects		No	None
Nodes\\AX 8 Positive effects through COVID incl. breaking resistance to change		No	None
Nodes\\AX 6 Client preparedness - relationship with structure and type		No	None
Nodes\\AX 7 Disruptions through lockdown effects		No	None
Nodes\\AX 8 Positive effects through COVID incl. breaking resistance to change		No	None
Nodes\\AX 9 Initial crisis reactions		No	None

Appendix (3): Pictures from the Process of Initial Theme Definition (TA Phase 3)

Plates 18 and 19, first stage: assigning references to groups and these to axes from the second cycle of coding. This stage included rearranging, some groups of references could be assigned to more than one axis.

Colour codes were used: Original axes pink, new and split ones blue. All reference snippets were assigned to groups of references, based upon and similar to the codes from the initial coding, but not identical. Yellow groups only pertain to one axis, green ones to more than one. Orange marks items which have to be reflected upon again after completion of assigning references to axes.

Plates 20 and 21: the pink post-it, for example, shows axis number 13 on the importance of the decision making process. To this axis were assigned reference groups number 23, 38, 77 and 84. The right post-it shows the reference group number 115 on forming task forces as a response to the crisis, first assigned to axis 15 on positive experiences with responses to communication restrictions. It was also assigned to axes 9 and 32.
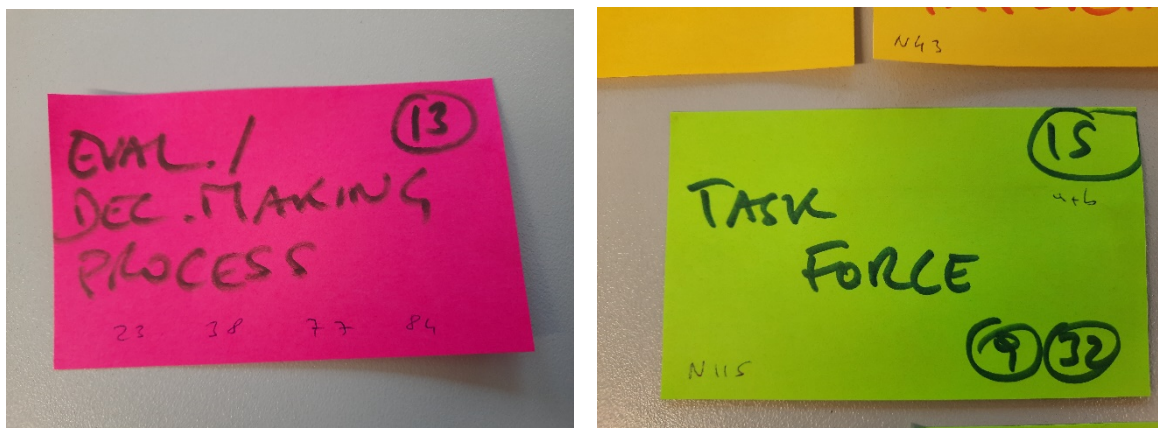
This colour coding and numbering helped in the following steps, especially when it came to finding supporting evidence in the references and spotting relationships between axes.

Plate 22 (above): n a next stage, the axes and supporting reference groups were prepared for the first round of theme definition. Plates 23 and 24: in order to make sure the meaning of the data was always clear, reference groups were ready for examination and verification. For each group, there also was a transparent pocket available which contained all reference snippets.
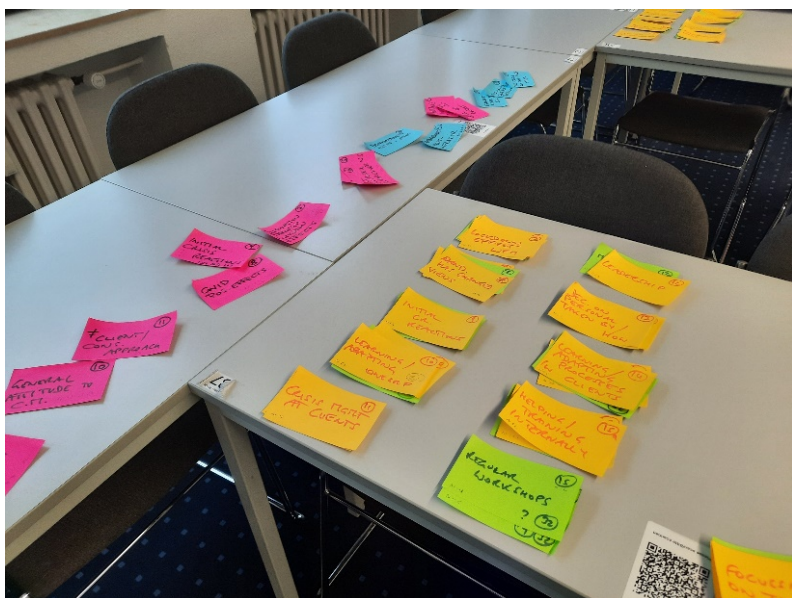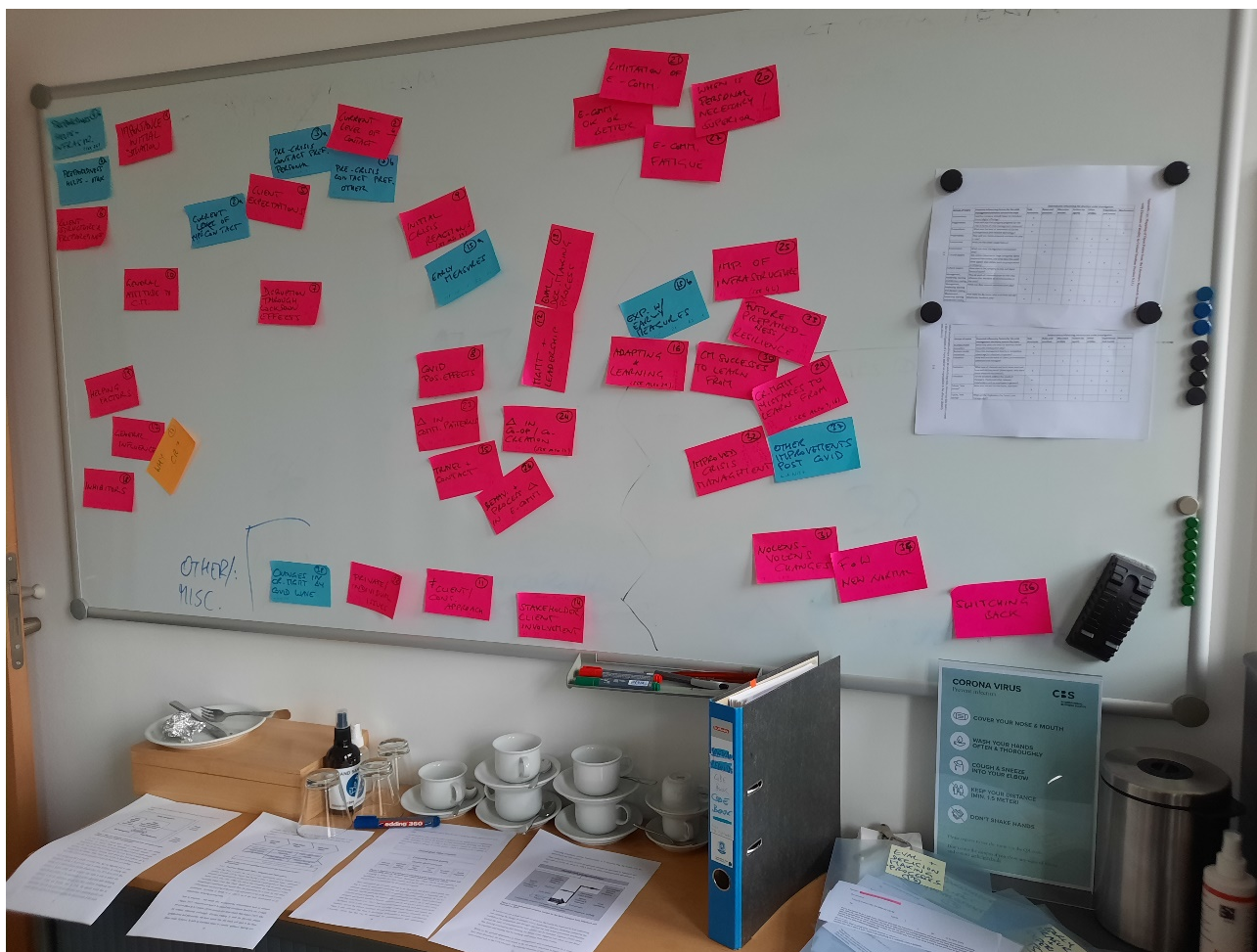

Plate 25: theme definition – starting with initial grouping of the axes into a kind of "proto-themes":

The results already showed some novelty in the grouping, but was still to a certain extent influenced by the timeline. Some axes could not be allocated to groups as of yet.

Plates 26 and 27: this result was then mapped against both the topics from the open points from the literature review and the crisis management phases:
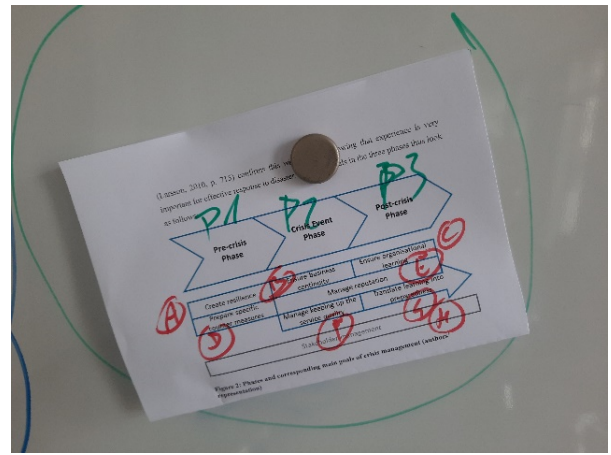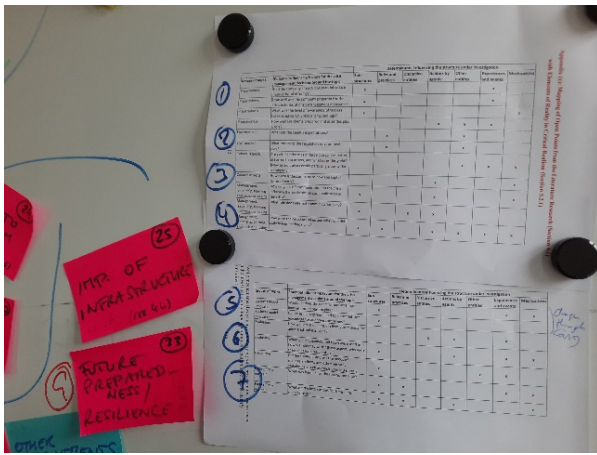
The result of this mapping as well as some validation with groups of references led to a clearer view and some re-assigning, see plate 28 below.

Plate 29: after two more iterations, phase three of thematic analysis was completed (see the initial themes in figure 1):

Appendix (4): Finalising the Thematic Map, Allocating Axes/Reference Groups to Themes and Sub-Themes (TA Phases 4 and 5)
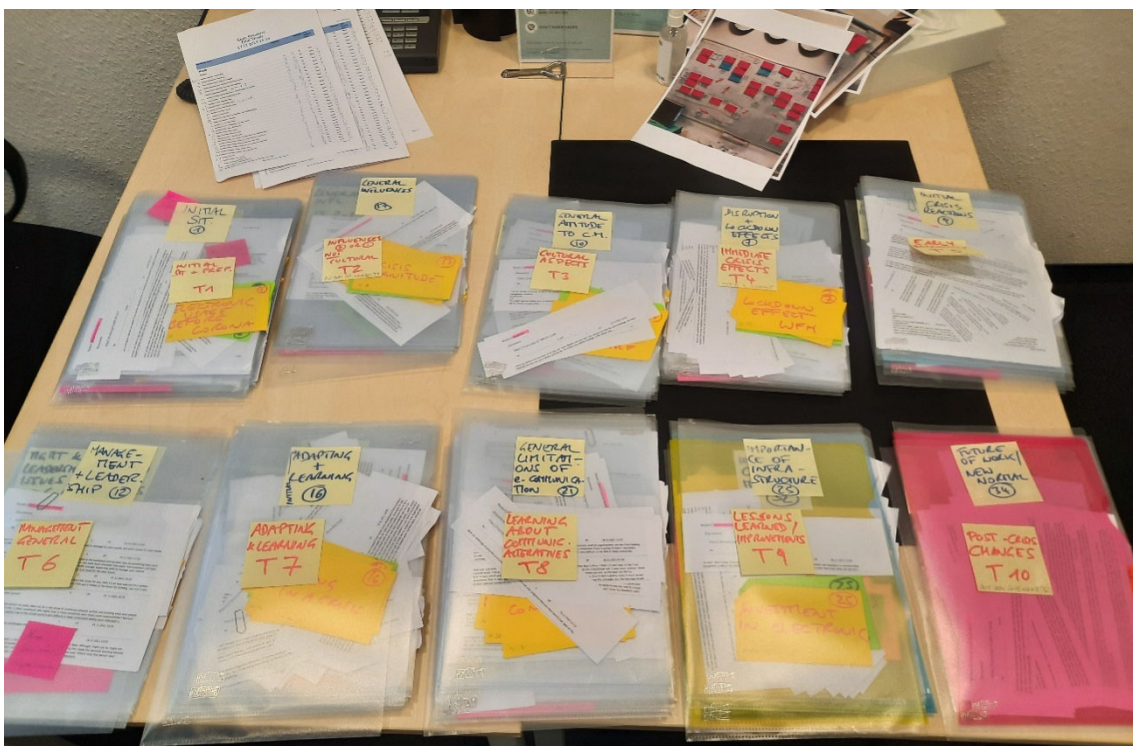
Plate 30: reviewing and refining the themes identified in phase 3:

Plate 31: allocating the reference groups to the axes, forming (superordinate) themes and sub-themes:

Plate 32: this exercise led to the final thematic map (see section 8.1.2) as well as to one pouch per theme, containing sub-themes and related axes and references:

This example shows the hierarchy of data: first the superordinate theme, then three sub-themes followed by the axes (pink post-its) and the allocated groups of references (yellow and, if shared with other axes, green).

Plate 33. The transparent pockets contain all relevant snippets in order to facilitate writing up:

When the snippets were missing, as was then case with the reference groups on the green post-its at the bottom of the picture, the numbering showed that the references could be found with the pockets for Axes 24 and 11 respectively.

Plate 34: thus, for each theme all the references were readily available, which simplified the process of writing up the findings:

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