Facilitation of theory and data interaction in qualitative research using CAQDAS

Abstract and Key Results

- Published qualitative research tends to be presented as a linear research process, in which predictable and deliberate decisions are taken at each stage. In reality, however, qualitative research is messy and unpredictable. It requires a constant comparison and updating of theory against existing data which leads to re-negotiation of concepts, updating of theory and perspectives taken before and thus is inherently non-linear.
- In this paper we suggest that for international studies in particular, where we face multiple research environments, multiple research philosophies such as emic/etic perspectives, equivalence issues, and multiple researchers, the use of computer assisted qualitative data analysis software (CAQDAS) may facilitate the interaction between theory and data.
- We present conceptual considerations and guidelines to deal with these challenges. We further offer a view on a messy and non-linear project and demonstrate how the use of software programmes can help to develop and re-negotiate insights from our textual interview data.

Key Words

Qualitative research, Elite-Interviews, Trustworthiness, Progressive Focussing, Reliability, Equivalence, Emic and etic approaches,

1. Introduction

Qualitative research in business and management has been steadily gaining ground in recent years. In the field of International Business (IB), leading journals such as Journal of International Business Studies (JIBS) and Management International Review (MIR) have recently hosted special issues on qualitative methods in IB. In some journals such as International Business Review (IBR) and Journal of World Business (JWB) we witness a more pluralistic methodological approach and qualitative studies are appearing more frequently. Nonetheless, typical depictions of the qualitative research process in these top journals tend to be highly sanitised, generally describing the research process as linear, predictable and deliberate at each stage. The focus on linearity and predictability as judgment criteria is driven by pressures to demonstrate rigour and systematism – principles derived from the long-established quantitative research tradition. However, we argue that pursuing these ideals, presenting qualitative research as a linear process, obscures the key strengths of qualitative methods: flexibility and the emergence of unexpected findings.

In this chapter, we argue for the more widespread recognition of the fluidity and nonlinearity, that is typical of real-world qualitative research, and consider the merits of a 'progressive focusing' approach. At the same time, we believe that acknowledging the 'messy' (Parkhe 1993) nature of real-world qualitative research should not equate to an 'anything goes' attitude. Rather, we argue that instead of trying to constrain or conceal the fluid and often serendipitous nature of their work, qualitative researchers would do well to turn to computer-assisted qualitative data analysis software (CAQDAS) in order to document and manage the research process more effectively. Through the presentation of a specific empirical example from a qualitative research project, we demonstrate how using CAQDAS at each stage of a research project can enhance systematisation, trustworthiness, reflexivity and operational effectiveness in qualitative research (Sinkovics, Penz, and Ghauri 2008), without jeopardising the analytical and interpretive process carried out by the researcher. We also note the particular benefits of CAQDAS for cross-cultural or multilingual research and for working in research teams. Finally, we offer guidelines on how CAQDAS can facilitate robust theory development through the ongoing renegotiation and updating of theoretical concepts and a constant comparison of theoretical building blocks and empirical evidence (Van de Ven 2007).

The chapter is organised in the following way: In the conceptual background we first

introduce the traditional, linear progress in qualitative research. We then outline how this linear progress perspective is increasingly amplified and challenged in qualitative work that is of international nature. We then move away from linearity, towards a non-linear, dynamic, and progressive process in qualitative research and subsequently explain how – in our view – CAQDAS, can help to facilitate this non-linearity while at the same time making the process itself more trustworthy. The ensuing section introduces a qualitative research project, based on comprehensive case studies and exemplifies the conceptual considerations presented previously. We then conclude this chapter by summarising and suggesting avenues for facilitating the theory-data interaction using CAQDAS.

2. Conceptual background

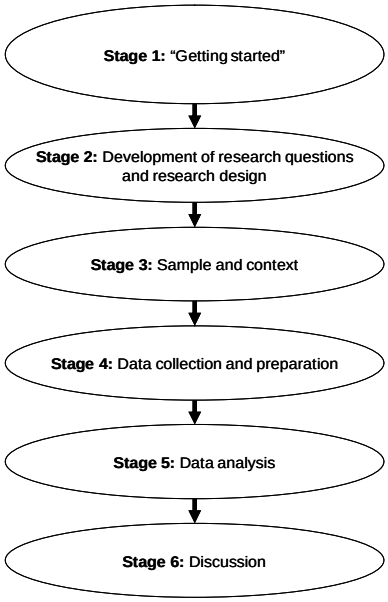
2.1. Traditional, linear progress in qualitative research

Within the methodology literature on research design and process, a six stages approach is commonly acknowledged (see e.g. Eisenhardt 1989; Ghauri and Grønhaug 2005; Lee 1999; Yin 2003). The six stages in this stages model (see Figure 1) are suggested to follow a linear progression. Stage 1, "getting started" refers to the initial preparations for empirical research, such as generating a topic and conducting a literature review. Stage 2 includes the task of developing the underlying research questions and the research design that is deemed most appropriate for investigating these questions. Stage 3 entails choosing a sample and a context (which, in qualitative research, generally means theoretical sampling). Stage 4 is the crucial stage of collecting empirical data and preparing it for further analysis through digitisation and transcription. Preliminary analysis often takes place during this stage. Stage 5 consists of focused, formal analysis of the empirical data and embedding it in the existing theoretical/conceptual background. Finally, Stage 6 involves a discussion of the findings of the research – including the researcher's interpretations – and articulating the contribution of the research to the wider academic field.

The six stages are viewed as following on from one another in an orderly fashion, although the length of each stage may vary considerably. Most qualitative researchers encounter this model early on in their careers, either explicitly in widely used textbooks (e.g. Iacobucci and Churchill 2010; Marschan-Piekkari and Welch 2004; Yin 2003) and articles such as e.g. Eisenhardt (1989), or implicitly in discussions with advisors and peers. The model is commonly absorbed as 'the right way to do research' and often results in

expectations of a linear research process, with seamless transitions between its stages.

Figure 1: A linear model of the qualitative research process (based on Sinkovics, Penz, and Ghauri 2008)



As a result, it is thus not surprising that the majority of published qualitative research is reported in terms of the general stages above. However, it is widely – if only tacitly – acknowledged amongst qualitative researchers that the *actual* course of real-life research seldom runs so smoothly: it is influenced by accidents, serendipity and on-the-spot decisions (Van Maanen 1998), with fieldwork data that often builds up progressively. Whilst this has been explicitly acknowledged by a number of scholars (e.g. Gummesson 2005; McGaughey 2007; Stake 1995), the qualitative research community as a whole still appears to be strongly influenced by expectations to present all academic work as the product of a predictable, orderly and entirely deliberate process, based on *credibility, dependability, transferability and confirmability* (Sinkovics, Penz, and Ghauri 2008)[1]. Ironically, in pursuit of these idealised principles, it is perhaps the most important principles – *integrity* and *transparency* – which frequently end up violated, albeit in ways that are not always discernible from the published pieces. Many researchers feel pressure to obscure the actual manner in which they chose their focal cases, collected their data, interpreted it or arrived at their findings – in some cases,

[1] Sinkovics et al. (2008) point out that reliability and validity have a somewhat uncertain place in the repertoire of a qualitative methodologist (Armstrong et al. 1997), as these dimensions are grounded on a different paradigmatic view and therefore not directly applicable to qualitative research. This is why alternative terms and ways of assessing qualitative research have been proposed, such as credibility, transferability, dependability and confirmability (Denzin and Lincoln 1994; Guba and Lincoln 1989; Kirk and Miller 1986; LeCompte and Goetz 1982).

going as far as not reporting the number of people they interviewed, or disguising the source of their data. There remains a (real or imagined) stigma attached to the concept of nonlinear, fluid research which evolves through the constant re-evaluation and re-negotiation of its boundaries, its key contributions and its place in the wider literature.

2.2. Amplification of the challenges to the linear progress model in international research

The traditional, linear progress model in qualitative research reporting is even further challenged through international research. Two specific issues are amplifying the difficulties with the model described above, the emic-etic tension in dealing with international research and bias and equivalence issues.

Emic-etic tension in international research: With increasing interconnectedness of business landscapes (Dicken 2007), qualitative researchers are challenged to transcend political or cultural boundaries and thus make philosophical decisions about the comparative nature of their investigations. However, there is a tension regarding international or more specifically cross-cultural research traditions and the fundamental understanding of how to address comparative issues. Berry (1989) points out that some scholars propose to work intensively within a single cultural context in order to discover and comprehend indigenous phenomena, while others advocate research across cultures that produces results that are valid throughout these contexts. This substantive split in research orientations, which is often seen as dichotomous and contrasting view, is referred to as “emic” versus “etic” approach (Pike 1966). Sinkovics et al. (2008) argue that research should take more emic (i.e. subjectivist/ qualitative/ insider) perspectives, which then could be translated into etic (i.e. objectivist/quantitative/outsider) terms and used as valuable input for further studies. Following this proposition, however, further challenges the traditional linear model of reporting research findings, as comparisons become ever more difficult, multiple data collection units are involved and operational challenges related to the philosophical emic or etic positions are more pronounced. In operational terms, the negotiation and re-negotiation of concepts, the interaction between theoretical position and the qualitative process will be fundamentally more difficult.

Bias and equivalence issues in international research: A bias is indicated by the presence of factors that challenge the validity of cross-cultural comparisons and investigations (Poortinga 1989). Only when there is no bias, is it possible to establish equivalence in

international research. Van de Vijver and Poortinga (1997) discuss biases such as construct bias, method bias and item bias. Sinkovics et al. (2008) provide examples how these challenges related to biased results are pertinent in various stages of the qualitative research process and how CAQDAS may help to deal with these issues.

Given the challenges outlined regarding the interaction between theory and data in qualitative research in general and the challenges for international qualitative research in particular, we call for a move towards a dynamic, progressive and non-linear process model in qualitative research. This is outlined in the subsequent section.

2.3. Towards a dynamic, progressive and non-linear process in qualitative research

In making a call for a more explicit recognition and acceptance of the flexibility and fluidity of qualitative research, we view these characteristics as strengths rather than weaknesses of qualitative methods. We argue that – rather than separate stages – the typical parts of the research process are better conceptualised as steps that follow a general direction, but may be repeated to accommodate emergent questions and concepts. In particular, the close interaction between the development of theoretical and conceptual foci, data collection and data analysis needs to be acknowledged as potentially fluid and emergent. It is well documented that a researcher may start out with *etic* questions and concepts (developed from theory and imposed on the subject of the research), but encounter unexpected *emic* questions and concepts in the field that emerge as more fitting, interesting or appropriate for the research and its context (Buckley and Chapman 1997; Davidson et al. 1976; Morey and Luthans 1984; Pike 1966). Such emic questions and concepts can have a major impact on the subsequent course of the research – triggering the refinement (or even reformulation) of the original research questions and their theoretical and conceptual foundations, re-shaping the initial case boundaries or necessitating a return to the field.

As a result, qualitative findings often evolve continuously via the interaction between theory and data, through a cyclical process of *progressive focusing* (Parlett and Hamilton 1972; Stake 1981, 1995)[2]. The idea behind progressive focusing was first noted by Parlett and Hamilton (1972), who advocated an approach where *'researchers systematically reduce the breadth of their enquiry to give more concentrated attention to the emerging issues'* (Parlett and Hamilton 1972, p.18). This perspective was taken up and refined by Stake (1981, 1995) who

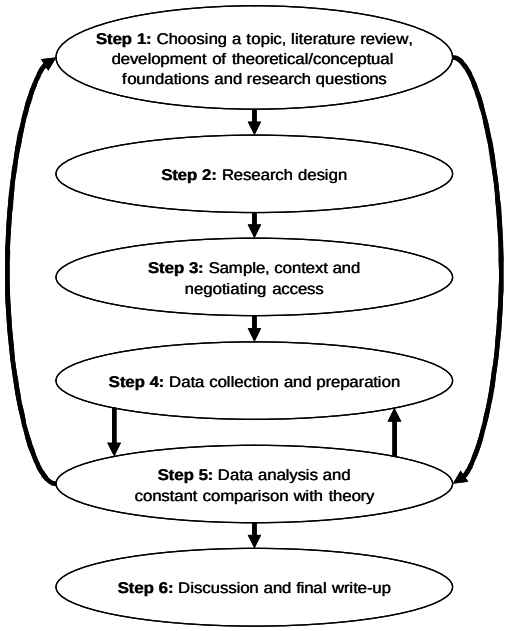
[2] For similar concepts, see also *cycles of deliberation* (McGaughey 2004, 2007), *systematic combining* (Dubois and Gadde 2002), *zipping* (Orton 1997) and *evolution of perspective* (Peshkin 1985).

formally described progressive focusing as follows:

> *'Progressive focusing requires that the researcher be well acquainted with the complexities of the problem before going to the field, but not too committed to a study plan. It is accomplished in multiple stages: first observation of the site, then further inquiry, beginning to focus on the relevant issues, and then seeking to explain.' (Stake 1981, p.1)*

The importance of pre-fieldwork preparation, coupled with openness to emic issues is evident from this description, which we believe accurately portrays the typical experience of qualitative research. Therefore, we argue that the six-stage model of the research process discussed earlier should be refined to accommodate a progressive focusing approach.

Figure 2: A progressive focusing model of the qualitative research process



The progressive focusing model in Figure 2 differs from the original model in a number of ways. Firstly, 'stages' have been replaced with 'steps', to represent the repeatability and iterative nature of various research tasks. In Step 1, "getting started" is broken down in detail to reflect the importance and complexity of the research tasks characterising the beginning of a new research project: choosing a topic, conducting a thorough literature review to build the theoretical and conceptual foundations of the research (including the articulation of basic assumptions, logic and expectations). The task of developing the research questions has also been moved into Step 1, as it is closely intertwined with the literature review – the research questions should be clearly rooted in the

theoretical/conceptual foundations and literature gaps identified through a review of existing research. Once the research questions have been developed, Step 2 focuses on the logic behind their operationalisation: the researcher draws up a 'blueprint' seeking a good fit between theoretical foundations, epistemological assumptions and practical feasibility issues. Building sound logic and a coherence of ideas, with the input of fellow academics, forms an essential part of this step. As before, Step 3 is concerned with moving the research 'out into the field' by choosing a sample and a context. Admittedly, in many cases, sampling and context are influenced by pragmatic issues such as pre-existing contacts or ease and level of access – as a result, Step 3 could involve prolonged negotiations, or alternatively even precede Step 1.

Once the first three steps have been taken, it is time for the researcher to enter the field in earnest. Steps 4 and 5 contain the task of collecting and preparing primary data, and the task of formally analysing the data, respectively. In our model, these steps are tightly linked not only with each other, but also with Step 1. The arrows linking these three steps highlight the *constant comparison* of data with literature, a key aspect of a grounded approach (see Glaser and Strauss 1967; Strauss and Corbin 1998). We argue that this constant comparison has considerable potential to influence the completion of tasks carried out in Steps 1, 4 and 5. If the data – collected in Step 4 and analysed in Step 5 – is found to have sufficient fit with the theoretical and conceptual framework and research questions developed in Step 1, the researcher may move on to Step 6, which involves developing and articulating the key arguments and overall contributions of the research. However, if in-depth analysis in Step 5 reveals that the data does not fit sufficiently with the framework and questions developed in Step 1; or if the data is found to contain a large emic component that calls for further investigation, then it may make good sense for the researcher to return to the field for more data and/or to refine the underlying theoretical and conceptual foundations – thus repeating any or all of Steps 1, 4 and 5 before finally moving on to Step 6. Depending on the complexity of the data, the researcher's interpretation and the emergent theoretical framework, these steps may be repeated more than once, in a nonlinear process best described as progressive focusing (see Parlett and Hamilton 1972; Stake 1995).

Arguably, progressive focusing can be seen as an intuitive task. If the researcher feels that crucial data or insights are missing, or that the theoretical framework developed in Step 1 is inadequate to explain the phenomena that really seem to matter in the field, it is logical to return to the tasks outlined in Steps 1, 4 and 5, perhaps more than once. The goal of

theoretical saturation (Glaser and Strauss 1967; Strauss and Corbin 1998) and practical constraints (such as the availability of interviewees) also means that qualitative researchers may end up alternating between the three steps, until such a point where they are satisfied that their theoretical focus, empirical data and potential contribution are in line with one another. The point at which this is achieved – and the number of iterations between Steps 1, 4 and 5 that are required – differs across research projects, due to the complexities of qualitative research and the varying degree of experience and skill amongst qualitative researchers.

2.4. CAQDAS facilitation and assisting the dynamic, progressive and non-linear qualitative research process

Whilst we advocate that our refined model (Figure 2) captures the 'true' nature of qualitative research more accurately than previous models, there are is an inherent danger that a call for acknowledging flexibility and progressive focusing in qualitative research may be misinterpreted as a call for leniency towards lack of rigour or systematic research procedures. In fact, qualitative research is rife with accusations of lack of rigour, misuse of concepts such as grounded theory and opacity in describing research methodology (Jones and Noble 2007; Suddaby 2006). To tackle these kinds of criticism, we encourage the use of CAQDAS during each of the six steps in our model. The use of CAQDAS is suggested to accommodate for the non-linear and evolving process of interaction between qualitative data and the theoretical and conceptual backbones of research, while helping in the operational management and formalisation of the research. To this end, CAQDAS is simply seen as a meritorious tool, that helps in legitimising the acknowledgement of complexity and 'messiness' in the reporting of qualitative research, and encourages greater transparency and credibility, otherwise called "trustworthiness" (Ghauri and Firth 2009; Sinkovics, Penz, and Ghauri 2005, 2008).

In our view, CAQDAS provide a toolset for the analysis of abundant qualitative data that can be understood similar to *decision support systems* used by practitioners (Shim et al. 2002). Following Little's "decision calculus", we believe qualitative research will benefit from a "[...] set of procedures for processing data and judgements to assist [...] in decision making." (Little 1970). These procedures are to be "simple, robust, easy to control, adaptive, complete on important issues and easy to communicate" (Little 2004, p.1855) and we believe that, when used appropriately, CAQDAS allows qualitative researchers a "dialogue with the computer" and thus a greater degree of effectiveness and rigour at each step of the research process. This is achieved through documenting the interactive process of going forwards and

backwards between theory and the field – in effect, creating an auditable 'footprint' of the progressive dialogue between the researcher and their data. In doing so, we believe that CAQDAS can help researchers define the space in between the two opposing views that dominate qualitative research debates today: the highly inductive grounded theory approach promoted by Glaser (Glaser 1992; Glaser and Strauss 1967), and the highly structured, deductively oriented, linear qualitative analysis advocated by e.g. Eisenhardt (1989) and Yin (Yin 2003). In essence, the debate between these opposing views is a debate about the relative importance of creativity versus formalisation, of meaning versus validity. We believe that the two are equally important and achievable through an emphasis of strong research logic, flexibility and thorough documentation. In particular, CAQDAS can assist qualitative researchers in managing each step of the research process and in making their methodology more accessible to peers and reviewers, whilst accommodating progressive focusing.

The pursuit of rigorous (but not rigid) procedures will encourage qualitative researchers not only to formally articulate their fundamental research logic and underlying assumptions, but also to engage in greater self-reflexivity and awareness. It will force them to think critically about the justifications for each decision made during the research process. Such decisions may involve including or excluding particular literature streams; focusing on particular theoretical concepts; imposing limits on the boundaries of the research; and even the triangulation of conflicting or inconclusive findings. Critical reflections on these issues and the explicit consideration of possible alternative choices and explanations may be regarded as the cornerstone of good qualitative research (Lincoln and Guba 2002; Seale 1999).

It should be noted that, like any other tool, CAQDAS can be used well or used badly. It is up to the individual researcher – and those involved in their training and guidance – to ensure that expectations are appropriate and realistic. We believe that CAQDAS is neither a shoehorn for forcing grounded research into a set of mechanistic criteria, nor a cover-all for superficial research or an 'anything goes' attitude. It is a tool for enhancing transparency and openness when generating theory from qualitative data. Thus, on the one hand, we would urge researchers to acknowledge the nonlinearity, fluidity and 'moving goalposts' that characterise the qualitative research process – whilst on the other hand, we encourage the careful and detailed documentation of that process. Many qualitative researchers – particularly those who are new to academia – fear that by closely documenting the often unexpected twists and turns of their research, they are laying themselves open to criticism from quantitatively oriented

peers (whose research tends to follow more linear paths). However, it should be recognised that in qualitative research, the realistic purpose of a systematic audit trail is not to *ensure replicability*, but precisely to highlight and explain the idiosyncrasies of each qualitative research project that *preclude replicability*. As such, we argue that CAQDAS may enable the production of robust and defensible qualitative research that can stand up to close scrutiny.

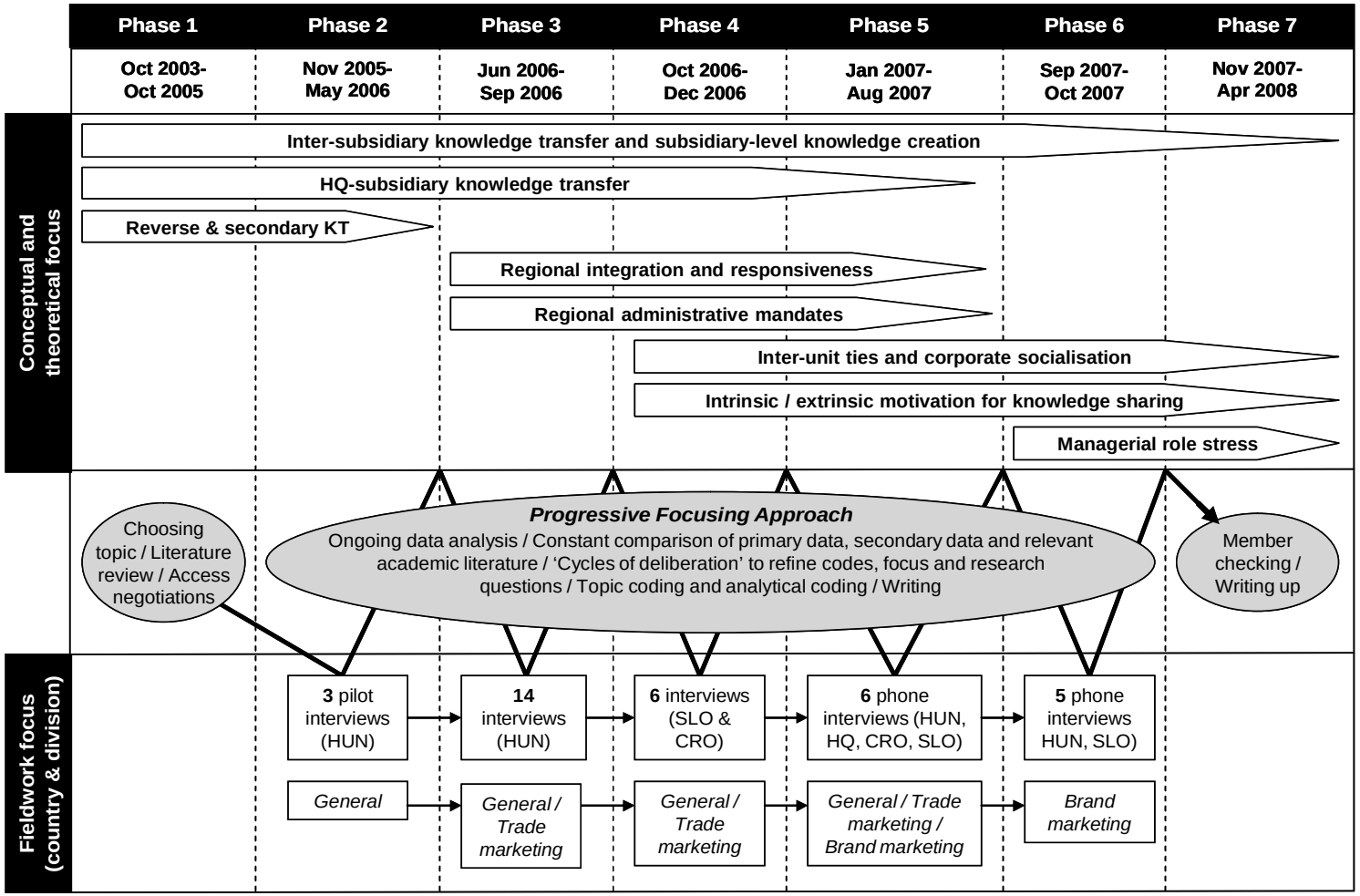
3. Methodology and application to data

In this section, we use the example of case study research conducted by one of the authors (Alfoldi 2008) to illustrate the practical application of CAQDAS (in particular, the NVivo software) during each step of the progressive focusing model in Figure 2. The research, which consists of a single in-depth case study of knowledge transfer and regional governance in a large multinational company, provides an illustration of progressive focusing and shows how CAQDAS can assist the systematic management of the research process as well as enhancing overall trustworthiness and credibility. Figure 3 shows a timeline of the study, with the actual research process divided into seven distinct phases of varying lengths.

3.1. Timeline of the qualitative research project

Phase 1 of the study encompassed Steps 1, 2 and 3 of the progressive focusing model shown in Figure 2. Most of this phase consisted of a thorough review of theories of the multinational enterprise, subsidiary management, knowledge transfer and management and organisational learning (Step 1). Based on this, research questions were developed concerning the nature of knowledge transfer in multinational companies, with particular focus on two phenomena: *reverse knowledge transfer* (knowledge created at the subsidiary, then transferred to headquarters (HQ)) and *secondary knowledge transfer* (subsidiaries adapting knowledge received from HQ and transferring it to other subsidiaries in the intra-company network). Given the scarcity of extant research on these types of knowledge transfer and the exploratory nature of the research questions, a qualitative case study methodology was designed, based on social constructionist epistemology (Step 2). A constructionist approach is particularly appropriate for exploratory qualitative research, since it views data as jointly constructed and interpreted by the respondent and the researcher, and focuses on the *meaning* of phenomena rather than seeking to prove or disprove *'the truth'* (Crotty 1998; Stake 1995).

Figure 3: Timeline of research process (Alfoldi 2008)



Hungary was chosen as the geographical context for the study, partly because of its status as a favoured 'regional hub' of Western multinationals seeking to gain a foothold in Central and Eastern Europe (CEE); and partly because of the researcher's competence in the Hungarian language, which allowed interviews to be conducted in respondents' mother tongue. Initially, a multiple case study design was envisaged and a theoretical sampling process was conducted (Step 3). This entailed contacting the local subsidiaries of the 40 largest foreign multinationals present in Hungary and seeking out those that claimed to be engaged in local knowledge generation and transfer to the headquarters (reverse knowledge transfer) as well as transferring knowledge to other subsidiaries in the CEE region (secondary knowledge transfer). After a short negotiating stage and with the help of some pre-existing contacts, three companies agreed to participate in pilot interviews. Phase 2 of the research consisted of conducting and transcribing these pilot interviews, and analysing and comparing them with the theoretical literature. The analysis of pilot data led to a substantial revision of the conceptual background and research questions developed during Phase 1, as empirical evidence for the etic (researcher-imposed) concepts of reverse and secondary knowledge transfer was relatively weak at each of the three companies. This was a clear case of the original etic questions proving unsuitable in the field. In such cases, Stake (1995) notes that *'initial research questions may be modified or even replaced in mid-study by the researcher'*. In addition, the pilot data also revealed that in two of the three companies, the links between subsidiaries within the CEE region were either weak or limited to a small part of the organisation. Only one company indicated extensive, ongoing links between its Hungarian unit and other subsidiaries in the region. As a result, a decision was made to amend the multiple case study design to a single in-depth case study. Although this may seem like a major change in terms of research design, it did not entail major changes to the underlying research logic. Since the research was still in its early stages, with fieldwork yet to have progressed beyond pilot interviews, it was considered acceptable to eliminate the anticipated comparison element, thus simplifying and focusing the research design.

Phase 3 of the research process involved conducting several interviews at the Hungarian subsidiary of the focal company. Faced with the considerable size and complexity of the subsidiary's overall operations, the empirical focus was narrowed to a specific division, *trade marketing* (a division that provides services to retail

customers and also acts as a link between the sales and brand marketing divisions). The rich data generated from these interviews also revealed a complex, formal regional hierarchy between the Hungarian unit and two other subsidiaries in Slovenia and Croatia (forming what was termed a *cluster*). This inspired a literature review of previously unexamined theoretical areas: *regional integration and responsiveness* (Lehrer and Asakawa 1999) and *subsidiary mandates* (Birkinshaw 1996) and fostered theorising about new concepts such as *regional administrative mandates.*

Having gathered and analysed data from Hungary, Phase 4 involved data collection from the company's units in Slovenia and Croatia, which were formally linked to the Hungarian unit. Not only did this data provide an alternative empirical perspective on the issues investigated so far, but also highlighted the relevance of other related concepts such as *inter-unit ties* (Hansen 1999), *corporate socialisation* (Björkman, Barner-Rasmussen, and Li 2004) and *motivation for knowledge sharing* (Osterloh and Frey 2000). This triggered a return to the theoretical literature and a search for conceptual linkages with knowledge transfer and regional management. Subsequently, Phase 5 entailed telephone interviews aimed at following up and extending the previous findings to another division, *brand marketing*, which was emerging as a contrast to the trade marketing division in terms of reporting structure and knowledge transfer links. There was also some hard-won input from the company HQ on wider regional perspectives, but not enough to justify a continued focus on HQ-subsidiary knowledge transfer without the danger of biased representation. As such, the 'natural boundaries' of the case were discovered (and to a certain extent, imposed by the researcher) in a progressive manner. Phase 5 involved major refinement of the research focus, since by this point (even though some unsuitable etic concepts had been shed) the growing number of complex, interconnected emic concepts was threatening the manageability of the research. Thus, a decision had to be made to tighten the focus of the research and concentrate solely on the concepts and issues that most directly affected knowledge transfer between subsidiaries.

The final data collection took place in Phase 6 and primarily focused on the brand marketing division, in order to further strengthen the contrast with the trade marketing division. In addition, the final interviews provided insights suggesting the presence of *role stress* (Wong, DeSanctis, and Staudenmayer 2007) as a factor in the units' difficulties in sharing knowledge effectively. This prompted an investigation of

the role stress literature and its links to knowledge transfer, as well as a careful re-examination of previously collected data for references implying role stress. The final theoretical and empirical analysis showed a degree of theoretical saturation that was deemed sufficient to move on to Step 6: articulating the arguments and contributions of the research. Accordingly, the concluding phase (Phase 7) consisted of writing-up and *member checking* (asking respondents' to review the material for accuracy (Stake 1995)).

Our example illustrates the complex, emergent and idiosyncratic nature of a typical qualitative research project and progressive focusing characterised by phases of cyclical interaction between theory, data collection and data analysis. We argue that non-linear approaches are more common than the reporting of qualitative research in top journals would suggest, and concur with other scholars urging qualitative researchers to '*reveal the actual course of decision-making, breakthroughs and dead-ends in conceptualization'* (Silverman 2000).

3.2. Application of CAQDAS during each step of the research process

We further use specific examples from the project described above to illustrate how CAQDAS may be used to manage and document rich data and complex analytical processes during each of the six steps of the progressive focusing model.

3.2.1. Step 1: Choosing a topic, literature review, development of theoretical and conceptual foundations and research questions

One of the first tasks facing a researcher embarking on a new project is creating a title for the intended contribution. A good title serves a dual purpose: it communicates the researcher's intent to others, but more immediately, it also shapes the researcher's own thinking by temporarily demarcating the boundaries of the core topic (Peshkin 1985). As we have argued, the focus and perspective of qualitative research evolve progressively, so the title of a qualitative study rarely stays constant throughout the research process. Peshkin (1985) recommends filing and dating each version of the title, in order to allow the researcher to reconstruct the evolution of key perspectives and conceptual drivers and to aid as well as evaluate progress. Although this may be achieved by saving several word-processed drafts of the research, the evolution of the title can be more formally and reliably documented via the use of

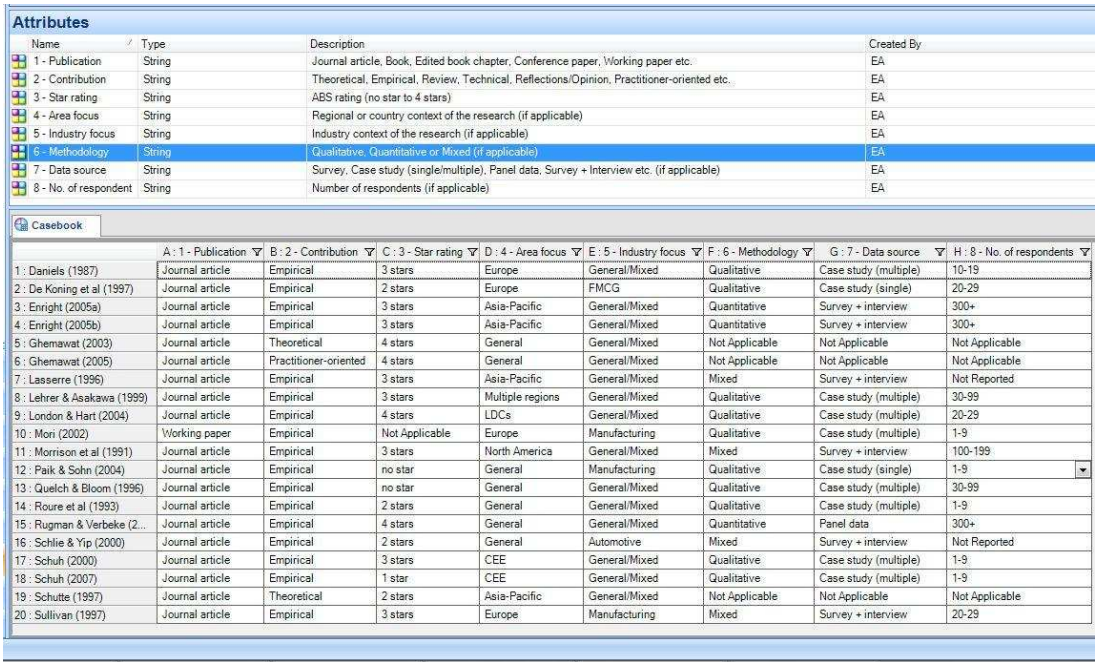
CAQDAS such as NVivo (Richards 2000). We advocate filing and dating successive versions of the title as well as the evolving research questions (see Andersen and Skaates 2004) in the form of a project memo, which allows the progression of the researcher's thinking and intended contribution to be documented and tracked in a transparent manner.

During the first step of the qualitative research process, the researcher's principal task is to conduct a thorough, critical and rigorous literature review. Such a review is crucial for building up a robust theoretical basis for the study, accurately defining a gap in the literature and developing the core topic and research questions of the study. In the business and management discipline, *narrative reviews* are the norm, which are *'singular descriptive accounts of the contributions made by writers in the field, often selected for inclusion on the implicit biases of the* researcher' (Tranfield, Denyer, and Smart 2003, p.208). This convention is in stark contrast with the *systematic reviews* found in medical science and healthcare, where there is a strict *'hierarchy of evidence'* (Davies and Nutley 1999; Tranfield, Denyer, and Smart 2003) and explicit procedures for including or excluding previous studies, to minimise bias and error. However, the *soft, applied, rural* and *divergent* nature of business and management research (Tranfield and Starkey 1998) often precludes this kind of systematic approach. Although quantitative studies in business and management may lend themselves to meaningful meta-analysis, qualitative studies are generally ill-suited to this purpose – the sheer diversity in methodologies and contextual idiosyncrasies makes reliable comparisons and quality assessments very difficult.

We believe that even if fully systematic literature reviews are not achievable in qualitative business and management research, there is room for enhancing the credibility of narrative reviews. Greater rigour can be achieved by meticulously documenting literature searches, keeping a record of keywords and key arguments, and systematically extracting information to build a *'casebook'* of references, known as *descriptive coding* (Richards 2005). In Figure 4 below, a list of the key journal articles related to regional management in multinational companies was compiled by importing abstracts and document links into NVivo and coding them as individual cases. A number of key attributes were defined (journal star rating, study methodology etc.) and values assigned for each case. This approach not only allowed the researcher to keep a reliable, searchable record of the literature used, but also

enabled a matrix data display (see Miles and Huberman 1994) of the articles in NVivo and filtering by attributes. Figure 4 suggests that multiple case studies are the dominant method used in the area of regional management, which facilitates more robust arguments about the state of the art in the field than anecdotal citations alone. In addition to enhancing credibility, casebooks also make it easier to find pre-existing measurements and remain alert to the background assumptions of the research (see Potter 1996). The initial time outlay on importing abstracts and assigning attributes is more than compensated by the benefits of an organised, searchable database of theoretical inputs which can be coded and constantly compared with the empirical data. We recommend using Endnote (Thomson Reuters 2010) and NVivo concurrently to manage references and document the development of the theoretical foundations of the study.

Figure 4: Example of a literature review casebook



Attributes

Name	Type	Description	Created By
1 - Publication	String	Journal article, Book, Edited book chapter, Conference paper, Working paper etc.	EA
2 - Contribution	String	Theoretical, Empirical, Review, Technical, Reflections/Opinion, Practitioner-oriented etc.	EA
3 - Star rating	String	ABS rating (no star to 4 stars)	EA
4 - Area focus	String	Regional or country context of the research (if applicable)	EA
5 - Industry focus	String	Industry context of the research (if applicable)	EA
6 - Methodology	String	Qualitative, Quantitative or Mixed (if applicable)	EA
7 - Data source	String	Survey, Case study (single/multiple), Panel data, Survey + Interview etc. (if applicable)	EA
8 - No. of respondent	String	Number of respondents (if applicable)	EA

Casebook

	A : 1 - Publication	B : 2 - Contribution	C : 3 - Star rating	D : 4 - Area focus	E : 5 - Industry focus	F : 6 - Methodology	G : 7 - Data source	H : 8 - No. of respondents
1 : Daniels (1987)	Journal article	Empirical	3 stars	Europe	General/Mixed	Qualitative	Case study (multiple)	10-19
2 : De Koning et al (1997)	Journal article	Empirical	2 stars	Europe	FMCG	Qualitative	Case study (single)	20-29
3 : Enright (2005a)	Journal article	Empirical	3 stars	Asia-Pacific	General/Mixed	Quantitative	Survey + interview	300+
4 : Enright (2005b)	Journal article	Empirical	3 stars	Asia-Pacific	General/Mixed	Quantitative	Survey + interview	300+
5 : Ghemawat (2003)	Journal article	Theoretical	4 stars	General	General/Mixed	Not Applicable	Not Applicable	Not Applicable
6 : Ghemawat (2005)	Journal article	Practitioner-oriented	4 stars	General	General/Mixed	Not Applicable	Not Applicable	Not Applicable
7 : Lasserre (1996)	Journal article	Empirical	3 stars	Asia-Pacific	General/Mixed	Mixed	Survey + interview	Not Reported
8 : Lehrer & Asakawa (1999)	Journal article	Empirical	3 stars	Multiple regions	General/Mixed	Qualitative	Case study (multiple)	30-99
9 : London & Hart (2004)	Journal article	Empirical	4 stars	LDCs	General/Mixed	Qualitative	Case study (multiple)	20-29
10 : Mori (2002)	Working paper	Empirical	Not Applicable	Europe	Manufacturing	Qualitative	Case study (multiple)	1-9
11 : Morrison et al (1991)	Journal article	Empirical	3 stars	North America	General/Mixed	Mixed	Survey + interview	100-199
12 : Paik & Sohn (2004)	Journal article	Empirical	no star	General	Manufacturing	Qualitative	Case study (single)	1-9
13 : Quelch & Bloom (1996)	Journal article	Empirical	no star	General	General/Mixed	Qualitative	Case study (multiple)	30-99
14 : Roure et al (1993)	Journal article	Empirical	2 stars	General	General/Mixed	Qualitative	Case study (multiple)	1-9
15 : Rugman & Verbeke (2...	Journal article	Empirical	4 stars	General	General/Mixed	Quantitative	Panel data	300+
16 : Schlie & Yip (2000)	Journal article	Empirical	2 stars	General	Automotive	Mixed	Survey + interview	Not Reported
17 : Schuh (2000)	Journal article	Empirical	3 stars	CEE	General/Mixed	Qualitative	Case study (multiple)	1-9
18 : Schuh (2007)	Journal article	Empirical	1 star	CEE	General/Mixed	Qualitative	Case study (multiple)	1-9
19 : Schutte (1997)	Journal article	Theoretical	2 stars	Asia-Pacific	General/Mixed	Not Applicable	Not Applicable	Not Applicable
20 : Sullivan (1997)	Journal article	Empirical	3 stars	Europe	Manufacturing	Mixed	Survey + interview	20-29

3.2.2. Step 2: Research design

The aim of Step 2 is to develop a robust research design that fits the underlying research questions and logic. This should be underpinned by a sound understanding of the relevant epistemological conventions and the explicit articulation of what the study is trying to achieve. Source materials on methodology can be

catalogued in NVivo in much the same way as items in the theoretical literature review (Section 3.2.1). This makes it easier to search for specific references, keywords or arguments when discussing the suitability of, and justifications for, a particular research design. Importing abstracts of methodological and empirical papers within the same NVivo project file and filtering them by attributes also allows quick and systematic access to exemplars, i.e. side-by-side comparison of how other researchers have applied a specific methodology or technique in a given context. This facilitates comparisons and encourages ongoing awareness of how the developing research design fits with the designs used in previous research. In addition, NVivo's modelling function can be used to visualise various aspects of the research design, and external documents such as drawings and sketches can be linked to a central 'hub'.

3.2.3. Step 3: Sample, context and negotiating access

Although theoretical sampling, choosing a suitable context and negotiating access tend to be largely 'hands-on' tasks, the organising capabilities of CAQDAS such as NVivo may also prove useful for the qualitative researcher during this step. In particular, first impressions and observations during access negotiations and initial rapport-building with specific companies or respondents can prove a rich source of useful data later on (Lee 1999). NVivo allows observations, notes and e-mail conversations to be recorded in memos, which can be linked to particular documents and coded alongside other items For example, if a gatekeeper at a company expresses a specific concern or attitude during the initial access negotiations, this can be highlighted and stored in memos linked to materials from the company in question. Such memos may inform the approach taken during subsequent data collection, or provide vital clues and insights during data analysis. In this sense, we argue that far from constraining the flexibility of qualitative research, the data storage and organisation capabilities of CAQDAS can even facilitate *'Eureka!'* moments.

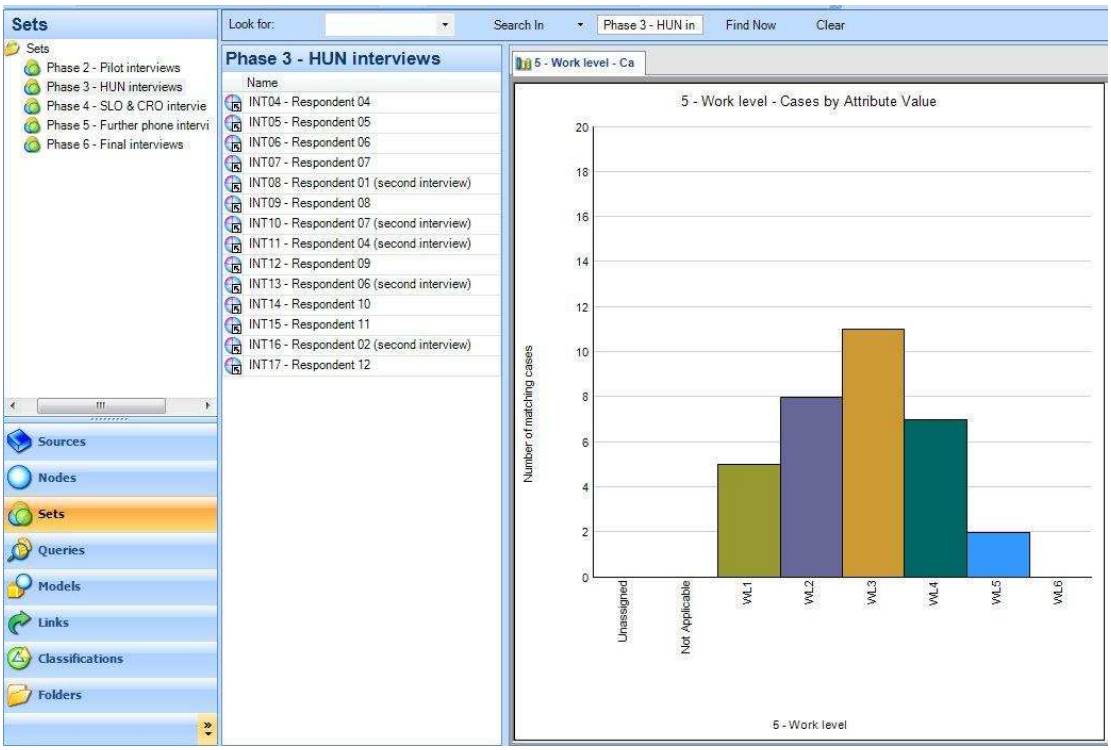
With regards to choosing and managing the context of the research, NVivo can be particularly useful for cross-cultural or inter-industry comparative studies where empirical data is collected from different sources. Firstly, it allows the researcher to collate and code information about multiple contexts (e.g. country/company statistics from secondary sources) and document the selection of context(s) in a transparent manner. Secondly, once a particular context has been

chosen, the existing materials stored in NVivo can be regularly updated or supplemented with new information (such as press reports or company materials).

3.2.4. Step 4: Data collection and preparation

During this step, Andersen and Skaates (2004) advocate creating a diary for tracking emergent themes and changes in theoretical focus, a task that can be greatly assisted by the use of CAQDAS. There are a number of ways to collate data from primary sources in a single place using NVivo. Word-processed data such as interview transcripts can be directly imported into the project file; observations can be recorded in memos; and visual or aural data (sketches drawn by interviewees, voice files etc.) can be linked to the project file externally. Figure 5 shows an example of the descriptive coding of data sources such as interviews as cases, creating and assigning key attributes (such as respondent nationality, functional division etc.) and charting cases according to certain attribute values.

Figure 5: Example of charting cases by attribute value



In the above example, the chart shows the overall distribution of respondents according to their official work level in the company. It can be seen that the largest number of interviews was conducted with respondents at the middle manager level

(WL3 in the case company), followed by operational-level managers (WL2), country group-level directors (WL4), junior employees (WL1) and finally regional or HQ-level directors (WL5). Since middle managers are often seen as critical 'roadblocks' for transferring knowledge within multinational companies (Mäkelä and Seppälä 2005), charts like these can be used as a gauge between periods of data collection to decide which 'snowballing' leads (Patton 1990) to follow and what level of respondents to approach next, given resource and access constraints. The ability to keep track of the balance of respondents, maintain searchable descriptive casebooks of respondents and chart them according to researcher-defined attributes can be especially useful for large projects with considerable diversity amongst respondents.

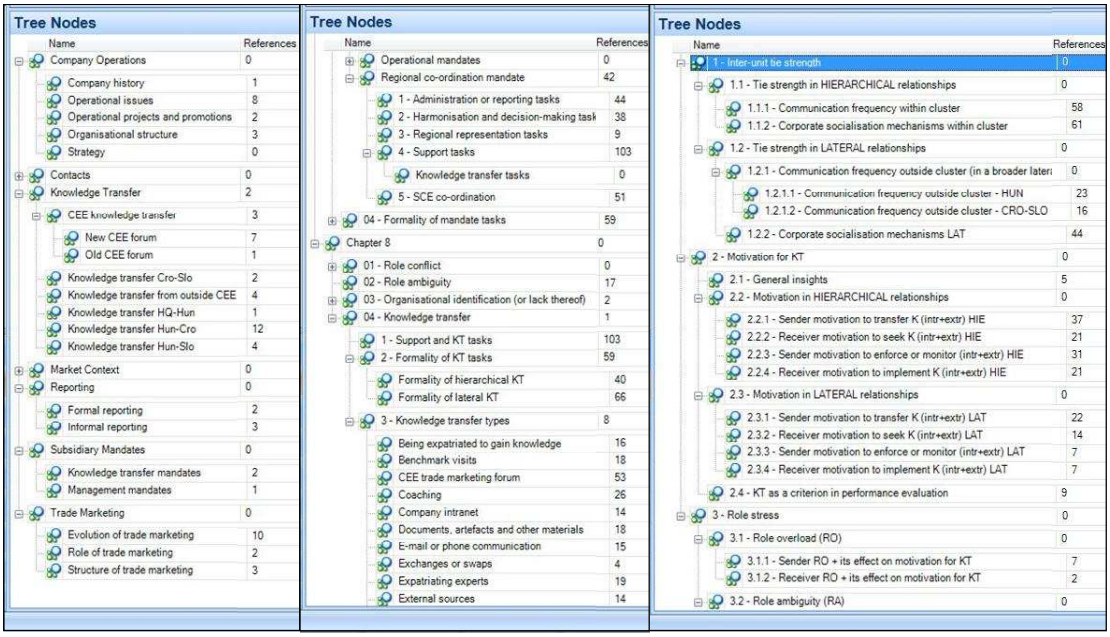
3.2.5. Step 5: Data analysis

Amongst all six steps of the qualitative data analysis process, data analysis is perhaps the most obvious task to benefit from the application of CAQDAS such as NVivo, and a lot has been written about the use of CAQDAS for data analysis (see e.g. Ghauri and Firth 2009; Lindsay 2004; Maclaran and Catterall 2002; Sinkovics, Penz, and Ghauri 2005). During this step, the competent and systematic use of software such as NVivo can strengthen construct validity by establishing a chain of evidence (Yin 2003) that truthfully represents the formalised tasks contained in the process of data analysis: organising and coding the data, searching for patterns and modelling emergent frameworks. By systematically linking and organising multiple sources of data, it can also aid in tackling the problem of *anecdotalism* that qualitative research often suffers from (Silverman 2005). As noted already in Step 1, NVivo can greatly assist the constant comparison or triangulation between theory and data (Denzin 1989; Strauss and Corbin 1998) and allow the researcher to effectively manage the alternating sequences of data collection and analysis which are the hallmarks of progressive focusing. Using CAQDAS enables the documentation of the ongoing evolution of complex and closely interlinked components of the study, such as the interview protocol (for an example from our focal study, see the appendix) and the study's key concepts and themes, be they *etic* (derived from theory/imposed by the researcher) or *emic* (emerging from the empirical data generated by respondents). Perhaps most importantly, NVivo is a useful platform for formally articulating and defining codes and themes that form the backbone of qualitative data analysis.

In our example, as shown in Figure 3, the cyclical process of going back and forth between the theoretical foundations of the study and the field yielded emergent themes and concepts that were significant both in their number and in their influence on the study. Data was analysed in an ongoing manner using two basic analytical strategies: *topic coding* and *analytical coding* (also known as axial coding, see Strauss and Corbin 1998). Topic coding refers to the coding of material into a *subject-based* structure and is recommended as the first step in the formal analysis of newly gathered data (Richards 2005). Topic coding follows a primarily grounded and data-driven logic: its main purpose is to allow the researcher to make sense of the rich, complex data collected during fieldwork and create an organised record of all the themes in the data that are considered (potentially) illuminating. In contrast, analytical coding refers to coding the data into an evolving structure based upon the analyst's *ongoing interpretation* of the action (Richards 2005). In addition to the empirical data, analytical coding also relies heavily on the theoretical and conceptual inputs into the research. Since analytical coding is structured around the intended contribution of the study, its purpose is to generate a refined, integrated and theorised coding scheme. As such, it builds on the outputs of the topic coding process and the progressive interaction between theory and data.

Both of these coding strategies form an integral part of qualitative data analysis (Richards 2005). Figure 6 shows two versions of the evolving topic coding scheme from Phases 4 and 6 of the research process, consisting of a total of 37 and 93 codes, respectively. These are contrasted with the analytical coding scheme in Phase 7, consisting of 30 final codes. The topic coding schemes are derived largely from the data and include themes that were left out of the final research output (e.g. regional co-ordination mandates) or became part of the background/context section (e.g. reporting structure), as well as showing the emergence of new emic concepts (e.g. role conflict and role ambiguity). In contrast, the final analytical coding scheme is organised around the key theoretical findings and contributions of the study (inter-unit tie strength, motivation for knowledge transfer and role stress).

Figure 6: Topic coding schemes (2006, 2007) and analytical coding scheme (2008)



The ability to save evolving versions of the research project within NVivo provided crucial assistance in documenting the ongoing development of the analysis and interpretation of empirical data, signposting as well as facilitating the progressive focusing approach taken in this study. As such, our example demonstrates the major role that CAQDAS can play during this step of the qualitative research process.

3.2.6. Step 6: Discussion and final write-up

It has been argued that the central problem of presenting qualitative findings is the lack of accessibility to the interpretation process itself (Andersen and Skaates 2004, p.479). To an extent, this problem can be alleviated by careful attention to the explanation and illustration of research methodology in the final output. The inclusion of examples of data displays and coding schemes, as well as a clear and consistent explanation of the procedures followed during each step of the research process can go a long way to enhancing the credibility and authenticity of the research, as well as the soundness of its underlying logic – without obscuring or distorting the emergent, nonlinear nature of the process. To this end, CAQDAS can play a significant role in constructing the methodology section of the final research report. In addition, the logic and contribution of the study must be explicitly summarised and embedded within the literature, with special attention to any contradictions between the study's

findings and previous research (Andersen and Skaates 2004). During this step, the researcher must consider questions such as the theoretical generalisability of the findings, the limitations arising from the study's unique context and the impact of the idiosyncratic nature of the research process on the results. To this end, having a well-documented, searchable record of each step of the research process can be a vital tool for insightful discussion and thoughtful evaluation of the research findings. In the case of cross-border research teams, NVivo's merge function can facilitate and simplify the writing-up task by synchronising research materials (Sinkovics, Penz, and Ghauri 2008).

4. Conclusions for qualitative researchers employing CAQDAS

This chapter argues that the use of CADQAS such as NVivo can facilitate the qualitative research process and enhance the trustworthiness of qualitative research (Sinkovics 2009; Sinkovics, Penz, and Ghauri 2008). As suggested in the conceptual background of this chapter and the subsequent methodology section, where the ideas are applied to a specific data example, this is done in two ways: (1) by assisting the interaction of theoretical and empirical inputs into the research; and (2) by laying down an *audit trail* or *chain of evidence* (Yin 2003). Our experience is that, if used appropriately, CAQDAS can enable a logical and systematic approach without constraining the emergent nature of qualitative data collection and analysis. Through systematising and documenting the research process, CAQDAS may be seen as a way to apply some of the strengths of quantitative research, without importing its weaknesses such as lack of flexibility.

Despite concerns about CAQDAS fostering a temptation to quantify, fragment or over-simplify qualitative research (Bryman and Bell 2003; Hesse-Biber 1996; Jack and Westwood 2006), our experience leads us to concur with Kelle (1997) that these dangers have been exaggerated at the expense of an appropriate acknowledgment of the possibilities that are opened up by the dialogue and interaction between human and computer (Little 2004) and computer-assisted formalisation and record-keeping (Ghauri and Firth 2009; Sinkovics, Penz, and Ghauri 2005, 2008). We believe that the acronym 'CAQDAS' is somewhat of a misnomer: to the untrained ear, the use of the word *analysis* may convey an inappropriate sense of the software 'taking over the

analytical process'. Nonetheless, it has long been recognised that such software was never intended to replace the researcher's unique skills in analysing and interpreting complex data (Catterall and Maclaran 1998; Gordon and Langmaid 1988; Gummesson 2005). Instead, CAQDAS is designed to facilitate the organisation and processing of data and enhance the dialogue between researcher and textual data (Sinkovics, Penz, and Ghauri 2008). Thus, far from claiming to eliminate the inherently 'messy' nature of qualitative research, CAQDAS is simply aimed at making the analysis of large volumes of data more manageable and transparent, through systematic comparison and record-keeping.

The empirical context provided in the chapter relates to a project of inter-subsidiary knowledge transfer and subsidiary-level knowledge creation that spanned over a number of countries and years. With a view on the methodological purpose of this chapter, the discussion of underlying conceptual and theoretical perspectives was purposefully concise. Nevertheless, the key message that we are conveying in this chapter, as developed in the methodology section and depicted in Figure 3, is that CAQDAS can facilitate the move from a traditional, linear progress in qualitative research towards a dynamic, progressive and non-linear process in qualitative research. In this chapter this is referred to as "progressive focussing" approach which comes to life in a dynamic interaction between concepts/theories and analysis of data. The role of CAQDAS in this fluid and dynamic interaction is to aid a more formalised process that potentially makes qualitative inquiry of textual data more logical, transparent and trustworthy. To this end, we hope that this chapter contributes to overcome the artificially linear reporting of qualitative research towards a more 'real-world' presentation, dynamic and fluid, without sacrificing requirements of rigour and trustworthiness in data and reporting.

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