Analysing textual data in international marketing research

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Abstract

Purpose – To provide guidance for the formalised analysis of qualitative data and observations, to raise awareness about systematic analysis and illustrate promising avenues for the application of qualitative methodologies in international marketing research.

Design/methodology/approach – Conceptually, the nature of qualitative research, globalisation and its implications for the research landscape, text-data as a source for international research and equivalence issues in international qualitative research are discussed. The methodology section applies these concepts and analysis challenges to a real-world example using N*Vivo software.

Findings – A 14-step analytic design is developed, introducing procedures of data analysis and interpretation which help to formalise qualitative research of textual data.

Research limitations/implications – The use of software programs (e.g. N*Vivo) helps to substantiate the analysis and interpretation process of textual data.

Practical implications – Step-by-step guidance on performing qualitative analysis of textual data and documenting findings.

Originality/value – The paper is valuable for researchers and practitioners looking for guidance in analysing and interpreting textual data from interviews. Specific support is given for N*Vivo software and its application.

Keywords Computer software, Qualitative research, International marketing, Knowledge management

Paper type Technical paper

Introduction

Constantly changing business environments in the present age of globalisation are creating new challenges for researchers as well as companies. As a result, established methodologies have to be re-evaluated in view of newer and emerging research options and conditions. We witness technological innovations which revolutionise the way we deal and interact with geographically dispersed organisations and consumers (Craig and Douglas, 2001). Researchers are experiencing methodological and conceptual difficulties when dealing with inter- or cross-national research. The application of established methodologies and practices cannot always be applied successfully in the changing international research settings (McDonald, 1985).

The selection of appropriate research strategies in international marketing research is usually determined by the level of existing information and knowledge in the field (Churchill, 1995). The major portion of the international business and marketing literature is geared towards precise problems, well-defined in scale and scope, which can be easily investigated with rigorous scientific methods. In many situations
however, the available expertise is very limited and little prior research has been
carried out that points to the underlying problems and ambiguities. In international
marketing research and particularly research at the marketing and entrepreneurship
interface, the use of open, creative and flexible research designs is required. A creative
orientation in the research process will help to grasp the non-linear, sometimes chaotic,
development of small and medium-sized enterprises (SMEs). This will also allow
capturing multi-dimensional phenomena in the course of data collection and analysis.

Young et al. (2003) highlight this issue while discussing international entrepreneurship
and the application of theories developed in the field of international business.
Johanson and Vahlne (2003) present an experiential learning-commitment mechanism
focusing on business network relationships in this context. Generally, this will support
the provision of a much broader picture on issues of analysis. Many scholars are
suggesting that the use of exploratory research and qualitative methodologies in these
contexts is more suitable (Ghauri and Grønhaug, 2002). Some extend this view by
arguing that qualitative methodologies can help to find “meaning behind the
numbers”, particularly when many data involves narrow details that blur a clear and
holistic view of the context (Denzin and Lincoln, 1998; Ruyter and Scholl, 1998).

Comparative empirical research methodology has been a subject for discussion for
more than 30 years (Cavusgil and Das, 1997; Knight et al., 2003; Sekaran, 1983). A
significant amount of effort has been devoted to address issues such as research
design, sampling, instrumentation, data collection and analysis, reliability and
validity, and general application of findings (Harris, 2000; Nasif et al., 1991;
Padmanabhan and Cho, 1995; Parameswaran and Yaprak, 1987; Samiee and Jeong,
1994). Coviello and Jones (2004) reviewed the field of international entrepreneurship
and concluded that there is a need for dynamic research design that integrates
positivist with interpretivist methodologies. In spite of this, a debate on methodological
considerations is in qualitative research and the analysis of textual data is scarce.

Problem and purpose
Much has been written about the importance of interpreting qualitative data and the
literature offers a rich repertoire of methods of qualitative inquiry (Bickman and Rog,
1997; Denzin and Lincoln, 1994). However, two of the most important factors
concerning the slow adoption of qualitative research methodologies for international
research have been the “lack of replicability” and the painstaking efforts required to
coordinate international research teams. Nevertheless, qualitative data, and textual
data in particular, are an “attractive nuisance” (Miles, 1979) since they offer real and
full insights into phenomena. In view of this argument and the objective to move
marketing research further away from exclusively quantitative comparative work, we
advocate formalised qualitative procedures. Formalised procedures of gathering,
analysing and interpreting qualitative data are also particularly important in
collaborative international work involving multiple researchers.

This paper is concerned with ways in which qualitative methodologies can be
explored in international marketing and entrepreneurship research. This issue is
particularly relevant to the emergence of computer assisted qualitative data analysis
software (CAQDAS) which helps both researchers and marketing practitioners to
follow formalised procedures and make their investigations more solid and rigorous
(Crawford et al., 2000; Marshall, 2001).
Ongoing academic debate is either of a conceptual nature looking into software-related issues or applying existing qualitative methodologies in particular contexts. Hence, we shall detail issues related to qualitative data analysis in general and shed some light on the formalised analysis of textual data which is most widely used in marketing research. We shall develop arguments for the notion that qualitative research is on the rise, discuss certain methodological issues in the context of international qualitative research and introduce an example to show how software such as N*Vivo can be used for problems with international scope. The illustrative example which is used in this paper is based on a project on “knowledge management” in a multinational SME context. Company managers from international SME-consultancies were involved in in-depth interviews and shared their views on practices and procedures of knowledge sharing and knowledge management. Interview data generated from three different countries in three different languages was compiled, coded and analysed following a formalised approach.

Conceptual background

The nature of qualitative research

Qualitative research involves the use of unstructured exploratory techniques such as group discussions and in-depth interviews. In contrast to quantitative techniques it is more difficult to precisely capture phenomena with qualitative research. As a result, “qualitative research design has often been treated as an oxymoron” (Maxwell, 1997, p. 75). However, if we want to have a holistic perspective and want to obtain in-depth-knowledge about certain objects, qualitative approach is the most appropriate:

Qualitative data are attractive […] they are rich, full, earthy, holistic, “real” and their face validity seems unimpeachable […] (Miles, 1979, p. 590).

The choice of qualitative methods over quantitative methods can be seen as a function of a particular research purpose. According to Maxwell (1997) there are five research purposes for which qualitative studies are especially useful:

1. Understanding the meaning of events, activities, situations and actions of people observed.
2. Understanding the particular context within which the participants act and the influence which this context has on their actions.
3. Identifying unanticipated phenomena and influences and generating new, “grounded” theories about the latter (Strauss and Corbin, 1998a). This view is in stark contrast to the rather passive acceptance that all “great” theories had been discovered and that the role of research lay in testing these through quantitative “scientific” procedures (Charmaz, 1988).
4. Understanding the processes by which events and actions take place. The ability to get insights about the processes that lead to outcomes is in many cases superior to experimental and survey research that mostly capture outcomes only and are poor in investigating processes.
5. Developing causal explanations.
While the capability of qualitative methods to contribute to the identification of causal relationships has long been disputed, there is now an increasing acceptance of the legitimacy of using qualitative methods for causal inference.

Despite this encompassing view about the nature of qualitative research, discussions almost inevitably develop into a comparison of qualitative and quantitative research. Unfortunately and despite quite early attempts to bridge this historical antagonism (Sieber, 1973), this relationship between qualitative and quantitative research is often seen in a contrasting perspective. Rather than focusing on the benefits, the advantages and merits of each technique, the literature points to dichotomy. This has not always served the qualitative marketing researchers and practitioners well. Dichotomies such as qualitative and quantitative, positivist and non-positivist or numerical and non-numerical tend to limit rather than open up possibilities for researchers (Catterall, 1998). A particularly strong critique which is often raised against qualitative research in this context is that it is lacking in replicability, reliability and validity.

Even a somewhat more relaxed view that qualitative research can be seen as supplementary to quantitative research (Bartunek and Seo, 2002) lacks a full appreciation of the capabilities and merits of qualitative techniques. Any perspective which reinforces the view that qualitative research is “merely” preliminary to “serious” quantitative research implicitly supports the view of superiority of quantitative methodologies over qualitative techniques and prolongs the aforementioned dichotomy. We advocate a less dichotomous paradigmatic view. As a growing number of researchers come to realise that qualitative methodologies offer promising avenues for international research, attempts need to be made to integrate the two schools of thought (Brannen, 1992) and to determine the ingredients of “good” qualitative research.

With respect to the nature of “good” qualitative research many authors argue that it should be easily replicable. This implies that if qualitative data sets are presented to other analysts, they should be able to follow and perform the same analysis and arrive at the same set of conclusions (Griggs, 1987). Regrettably, while quantitative researchers can build on explicit rules for dealing with coding problems such as discussions of how to treat non-response (Marshall, 2002), explicit rules for dealing with coding issues in qualitative studies (e.g. in the context of textual data) are hardly available. Some argue that as one “truth” can never be derived from data anyway, discussions about reliability and validity are inappropriate in the context of qualitative textual data. Others point out that even for two researchers who share a similar orientation (e.g. epistemological) and use the same theoretical concepts it will be difficult to arrive at the same end point from the same data (Marshall, 2002).

Although aiming to be less dogmatic about these perspectives, we support the latter group, which advocates the introduction of some practical rules for the coding and analysis of data. The rationale follows the belief that particularly in an international marketing context the “bureaucratisation of fieldwork” (Miles, 1979) and consequently some sort of replicability is helpful. The generation of good knowledge across national borders is bound to be more difficult than in single-country setting. International research is usually built around the efforts of a number of individuals who engage in interviewing, transcribing and coding data. Consequently, the specific orchestration of collaborative efforts will have to provide for findings that are generalisable.
Globalisation and its implications for international research

“International” matters have been on the rise during the past 25 years and emerged to become a fashion statement. Politicians, business leaders as well as academics have attempted to stay “modern” and accordingly repeated the “global mantra” (Zander, 2002). This has contributed to and reinforced the globalisation phenomenon (e.g. Buckley and Casson, 1976; Levitt, 1983; Perlmutter, 1969). Both the number of publications as well as the proliferation of journals within which international marketing and business research is published underline the continuing relevance and topicality of the phenomenon (Pierce and Garven, 1995). Recently, the literature has gravitated from a strong focus on large companies towards a view that SMEs play an increasing role in the international arena. The launch of a journal specifically devoted to international entrepreneurship illustrates this trend (Acs et al., 2003) and provides justification for investigating the analysis of textual data in the marketing and entrepreneurship context.

The globalisation literature argues that, as far as research is concerned, technological advancements help in reaching out to even the most dispersed country markets with ease. However, “advances in technology both facilitate and at the same time render more complexity towards collection of data on a global basis” (Cateora and Ghauri, 2000; Craig and Douglas, 2001). Consequently methodological and empirical difficulties in analysing international data are becoming more and more demanding (Brislin et al., 1973; Cavusgil and Das, 1997; Mullen, 1995). We are also witnessing that geographical as well as psychological distance (Hallen and Wiedersheim-Paul, 1979; O’Grady and Lane, 1996) continue to pose a challenge for research in management (Evans and Mavondo, 2002).

Market dynamics and qualitative research

Empirical findings suggest that despite all efforts and improvements in research design, the achievement of reasonable response-rates from questionnaire-type studies is becoming increasingly problematic (Fahy, 1998; Harzing, 2000; Harzing, 1997; Schlegelmilch and Diamantopoulos, 1991). There are also practical challenges involved with the implementation of quantitative studies on an international scale. This explains why qualitative research revenues of market research companies are catching up with ones from quantitative research and are expected to grow further in importance. In a study drawing on a convenience sample of market research managers, Zimmerman and Szenberg (2000) illustrate that practitioners increasingly recognise the merits of qualitative research techniques. Managers in SMEs greatly value the versatility and ease with which they can generate insights from, for instance, small sample interviews, and, as standard quantitative techniques become extremely sophisticated and more costly to employ in international markets, they find it beneficial to stick to more creative forms of data-generation. The analysis of textual-data generated from interviews proves beneficial and instrumental to overcome cultural problems in international market research (Maclaran and Catterall, 2002). Therefore, there is a need for a deeper understanding of “how” different markets work and “why” customers from different markets behave the way they behave (Ghauri and Grønhaug, 2002).
Reasons for growing interest in qualitative research

As evidenced by the changes in the distribution of qualitative research revenues, the advancement of qualitative techniques increasingly promises new means of understanding and interpreting trends in various national and cultural contexts (Craig and Douglas, 2001). Qualitative research provides insights into the meaning and the context of consumption and purchasing. It reveals the underlying determinants of the purchasing process, further allowing the prediction of future developments and trends. In addition to the environmental changes, a number of factors help to explain why the interest in qualitative research is set to grow in the decade ahead (see Figure 1):

- **Information overload.** We are witnessing escalating amounts of information ranging from large quantitative databases, scanner information, transaction data and *ad hoc* research information. Managers are sometimes frowned on as being “information-junkies” while researchers, attempting to make sense out of this information are critically acclaimed to be on a “pilgrimage to the ivory tower” (Simon, 1994). Despite technological breakthroughs such as data-warehousing and data-mining capabilities (e.g. offered by companies such as Oracle and IBM), the difficulties to make sense of the data are persistent. One way to deal with the challenges is to turn to qualitative research, to see what is behind all the numbers and to find creative ways to deal with the masses of information (Livingston, 1994).

- **Fragmentation.** According to Firat (1997), the globalisation process which has become of great interest to scholars is not a uniform and “universalising” process, but a fragmented one. With the emergence of new consumer segments rapidly transforming in increasingly multilayered cultures, researchers and companies need to address these new segments with new methodologies. Qualitative approaches provide a rich set of methodologies (e.g. ethnographic issues, projective and elicitation techniques) to address these issues.

- **Flexibility.** Related to the problem of information overload is the lack of flexibility with established statistical techniques. Dependence multivariate techniques are limited by their statistical assumptions and, to the same extent that small sample
sizes pose problems for quantitative analysis, large samples are problematic. Qualitative methodologies are incredibly flexible (de Ruyter and Scholl, 1998; Denzin and Lincoln, 1994) and can be applied as if tailor-made to suit the underlying research problem without requiring large samples (Sykes, 1990).

- **Professionalism.** Qualitative research methods have developed to become very powerful in providing insights and revealing meaning where problems may offer the possibility of not only one answer. Increasingly researchers turn to qualitative methods after they experience that quantitative methods cannot provide for answers to selected problems. Further, educators and managers are learning more and more about qualitative methods, thus becoming increasingly confident about the multitude of different tools and techniques.

- **Hyper reality and multimedia.** The dominance of written words is quickly diminishing as far as research methodology is concerned. While most of the information available for interpretation and analysis is still converted into text data, there is an increasing interest in techniques which manage to capture the complexity of hyper reality and intangible elements. Audio-visual information can now be used for computer-aided analysis, sound can be transformed into numerical data and post-modern researchers use pictures and collages for interpretation (Brown, 1995a, b). Qualitative methods clearly are leading the way in the representation of our hyper reality environments.

- **Information technology.** Qualitative research has been influenced by advances in information technology. Especially in view of the multitude of new options for collecting qualitative data (Lee and Fielding, 1991), where, for example, teleconferencing can be used to integrate expert-opinions from remote locations. Web-interfaces can help in setting up group-discussions for new products or new markets. With respect to qualitative data analysis itself we witness an increasing number of software solutions (Miles and Huberman, 1994; Titscher, 2000; Weitzman and Miles, 1995).

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**Text-data as data-source for international research**

Qualitative data can be used for description and interpretation of social behaviours, values and norms, or structures. As indicated, we focus in this paper on textual data which are widely used in marketing research. Textual data encompasses “any text which constitutes a relevant and necessary source material for answering the questions one is interested in” (Melina, 1998). Specifically text data can comprise of open responses to questionnaires, newspaper editorials, commentaries, titles, articles, different kinds of reports, e.g. company annual reports, memos, etc. Numerous approaches are offered in the literature to analyse textual data in a structured, formalised way. For a comprehensive review of these approaches see Melina (1998). In the context of our example (i.e. a formalised analysis of knowledge management), we shall follow the approach which has been referred to as “qualitative text analysis” (Kelle, 1997; Weitzman and Miles, 1995). We shall also illustrate the practicalities involved in analysing text-data. These entail converting the text-based string-variables into useful, codified information. The code-base can be achieved by “coding by hand” or the use of computers[1]. The basis for text analysis, i.e. the text data or corpus,
consists of spoken texts. Taped interviews with managers in five companies have been transcribed into written text. In developing a categorisation scheme for the material involved (Berelson, 1952) a “data driven approach” was pursued. This approach has been labelled “grounded-theory” approach (Strauss and Corbin, 1998a) and implicated the construction of a categorisation scheme a posteriori (Sinkovics and Holzmüller, 2001). In contrast to the “theory driven approach”, where relevant categories are developed based on a theoretical understanding of the underlying concept or construct, the categorisation scheme is constructed on the basis of the textual material alone. Hence the researcher attempts to generate the categories from the appropriate text which is relevant for the particular analysis.

In the context of our subsequent study a structured and systematic of codification will be undertaken using the computer-package N*Vivo[2] (Richards, 2000). A multiple-rater mechanism will be employed in order to increase the validity of the actual categorisation scheme.

Comparability and equivalence in international qualitative research
The issue of comparability is one of the most challenging for international marketing researchers. Respondents from different countries are ingrained in distinct cultures, comprising of unique patterns of socio-cultural behaviours, relevant values, psychological attitudes and traits. Consequently, their response-patterns to inquiries and expressions of agreement or disagreement over specific concepts and constructs vary significantly. This implies that responses may not be comparable across different national units (Brislin et al., 1973). On the other hand, where there is commonality between countries, comparable constructs and concepts can be identified, although inevitably the development of equivalent and standardised measures will be related to some loss of precision and accuracy in any given nation (Craig and Douglas, 2000). This methodological dilemma has been addressed by two alternative approaches in the social sciences, the “emic” and the “etic” schools of thought (Pike, 1966). These can be seen as two extremes on the continuum of cross-boundary, international research methodology. The etic school is mostly concerned with the identification and assessment of universal attitudinal or behavioural phenomena. Predominantly quantitative methodologies are used in an attempt to establish pan-cultural or “culture free” measures (Elder, 1976). Conversely, the emic school holds that attitudes and behaviour are unique to a culture and best understood in their own terms. Researchers generally need to make a decision upfront on whether to follow the etic or the emic school of thought[3]. The limitations as well as the specific advantages of both approaches have left international researchers with a strong desire to bridge the schools of thoughts, allowing for the assessment of etic constructs and measures while in the process of identifying emic characteristics. Berry (1989) suggested a mechanism to operationalise emics and etics, arriving at a “derived etic”, which allows for useful comparisons.

Particularly in the context of international qualitative research, the emic/etic discussion is vital. Compared with domestic market research, international market research is often found to be less formal and unstructured (Cavusgil, 1987). Consequently this raises methodological and theoretical challenges in comparing international data. Comparative research issues have a long tradition in the sociological, anthropological and social sciences. They have been incorporated in marketing and international
business texts with varying degrees of comprehensiveness (e.g. Craig and Douglas, 2000; Holzmüller, 1995; Jain, 1993; Usunier, 1999).

Particular attention needs to be paid to construct equivalence to ensure that the phenomena and dimensions or constructs being studied are equivalent in all national settings. Similarly, measure equivalence must be sought in the translations of the relevant questions in the qualitative study. These must be equivalent and henceforth comparable (Salzberger et al., 1999).

Following a hierarchical view of relationships and stages in the empirical research process (Churchill, 1995) four stages can be identified (see Figure 2):

(1) problem definition;
(2) data collection;
(3) data preparation; and
(4) data analysis.

Within all these stages equivalence issues are pertinent and have to be addressed in order to ensure comparability and consequently reliable and valid results.

At the problem definition stage (stage 1), the equivalence of research topics represents the minimum requirement for eventually meaningful comparisons across national or cultural borders. This implies that the researcher must assess whether a given concept or behaviour serves the same function in the relevant international contexts. In their widely quoted example of functional equivalence, Craig and Douglas (2000) point out that bicycles in the USA are predominantly used for recreation, while in The Netherlands, China and other countries their main function is that of transportation. Equivalence of research topics further implies that concepts which are used in the study have to be interpreted in a similar way. Concepts such as “materialism” or “patriotism” may be decoded differently in different countries and cultures. Consequently comparative efforts will have to take these differences into consideration. In our example, knowledge-management will be elaborated in an

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**Figure 2.**

Equivalence in international research

*Source: Adapted from Salzberger et al. (1999)*
international context. It will be illustrated that within the study efforts were undertaken to maintain conceptual equivalence.

After the research problems and related constructs to measure these have been finalised it is important to consider the comparability of data collection procedures (stage 2). The hierarchical relationship between the stages necessitates continuous consideration of related issues in prior and subsequent stages. Equivalence can never be taken for granted. As indicated by Zimmerman and Szenberg (2000), international researchers are well aware of distinct cultural problems which they may face in completing international qualitative research. In such qualitative research the sample-size is usually much smaller than in quantitative research. However, the fundamental problem persists. This is the trade-off between intra-nationally representative samples on the one hand and internationally comparable samples on the other hand. Finally, the qualitative research needs to be administered in such a way that no specific time-related factors affect the equivalence of the internationally collected datasets. These may be political circumstances and climate, economic conditions or technological settings.

Following data collection, measures need to be taken to ensure equivalence in the preparation of data (stage 3). This involves the data being handled equally and feedback from respondents coded in a systematic and standardised way. In focus-group discussions or expert-interviews the issue of equivalence of data handling is particularly significant. Especially when multiple language and multiple researcher settings are involved, data preparation can become extremely cumbersome and time-consuming.

Finally, the goal of international research lies in the comparison of international data which necessitates equivalence of data (stage 4). This is the “holy grail” of equivalence and can be seen as a function of all prior equivalence aspects.

Having discussed conceptual issues and equivalence issues in the context of international qualitative research, we shall introduce an empirical research project on knowledge management to demonstrate the use of software and formalised procedures for checking, analysing and comparing international data in the form of textual data.

Methodology – a formalised analysis of knowledge management

Knowledge management: rationale and purpose of the study

Managers are increasingly concerned with information overload. Too much information about too many things has to be absorbed quickly and in a short period of time. In globalising markets the levels of uncertainties, aggravated by cultural and political dissimilarities, add to this pressure. The literature has approached this problem from a number of perspectives, with knowledge and knowledge management recently playing a major role in the discussion of international companies (e.g. Bennett and Gabriel, 1999; Buckley and Carter, 2000, 2002; Mudambi, 2002) and SMEs (Magnusson and Nilsson, 2003; McAdam and Reid, 2001).

Considerable efforts have been made to investigate the role of knowledge resources in developing and maintaining sustainable competitive advantages (Davenport and Prusak, 1998; De Geus, 1988; Kim, 1993; Prahalad and Hamel, 1990; Stata, 1990) or the flows and transfer of knowledge within multinationals (e.g. Foss and Pedersen, 2002). As far as the individual level of knowledge management is concerned, there is a shortage of empirical work on employees’ willingness to share knowledge. Knowledge
sharing can be seen as a function of interpersonal relations between managers and employees. Hence it is presumed that these are determined by situational, environmental, organisational and social factors. However, people may also be somewhat naturally reluctant to share their most precious assets, knowledge and experience.

Consequently, this study aims to address this paucity of research on knowledge-management and interpersonal relations. A knowledge-based industry context is chosen to empirically investigate the company-manager-employee interactions. A formalised, qualitative approach will be used to identify antecedents of successful knowledge management practices and to obtain a holistic understanding of knowledge management. The specific research questions are:

- What kind of relationships do knowledge managers perceive between a company’s goals and culture, and knowledge management?
- How important is the motivation of employees and which motivational techniques are used? With what success?

A qualitative design was pursued since it was felt that a holistic perspective of knowledge sharing, of motivational issues to share knowledge and of managers’ perspectives on knowledge management within their company environment could not be gained otherwise. We concentrated on textual data which were collected through interviews and used a grounded theory (Strauss and Corbin, 1998b) approach to develop a theory. As indicated above, the purpose was to develop insights into the relationship between company, manager and employees regarding knowledge management and knowledge sharing.

**Instrument development and data collection**

An interview guideline was developed which covered issues discussed previously in the literature considering the international application of the semi-structured format. To ensure functional and conceptual equivalence, the interview guideline began with a question on how knowledge management was seen in the company and what it involved. With respect to data collection we standardised the process in such a way that equivalence of research methods, units and administration was ensured. The interviewers were trained to interact professionally with their respective interview partners and measures were taken to ensure standardised and comparable interview situations. Cross-cultural issues were discussed in two extensive training meetings and it was felt that the interviewers were satisfactorily equipped with the knowledge needed. A laddering-type interview process was encouraged to facilitate the clarification of issues, verification of interpretations of answers during the interview, and persistence in following up on emerging topics and themes arising during the interview (Arksey and Knigth, 1999; Kvale, 1996; Lee, 1999; Rubin, 1995; Strauss and Corbin, 1998b).

At the outset 18 managers from nine international SME consulting companies were approached via telephone or physically during company events to participate in the project. The companies were selected on the basis of size and their core businesses. Technology-based companies such as ones engaged in technical consulting, computer hardware and software, or electrical equipment were selected. Their potential level of involvement in intra-firm knowledge management activities was assessed. Particular attention was given to international SMEs with a foothold in more than two markets,
as their extended geographical reach suggested the implementation of certain procedures regarding knowledge management. Furthermore the core business of companies and their expertise in the field of knowledge management was relevant: seven companies were willing to participate, which ultimately resulted in nine interviews conducted in three different countries, Austria, Germany and Italy. In two companies, more than one individual was interviewed which allowed for intra-firm comparisons of views on knowledge management. The respondents were recruited from top and middle management. They were responsible for knowledge management in addition to other tasks. With respect to the physical context, this was standardised to the managers' offices, and the interviews lasted between one and two hours each. English, German and Italian was used. The interviews were tape-recorded and transcribed afterwards.

In addition to the semi-structured interviews, interviewers noted contextual factors of the interview situation. These were physical factors, the company building, company entrance, the reception and the notification to the interview partner. The infrastructure of the office was observed, taking note of informal spots where employees could meet and talk, coffee machines, open offices and the behaviour of employees within the building, as when having lunch together or having meetings. Visual materials, such as advertisements, rules and regulations for employees on the respective company web sites and so on were also included in the analysis after codification of the information as text.

Taken collectively, rich textual material was collected and subsequently analysed using N*Vivo. In the following sections the different stages in the analysis are described and illustrated. The empirical study of knowledge management in international SME consulting companies serves as a demonstration of formalised text-analysis in a cross-border context. We argue that the use of CAQDAS provides for certain procedural advantages compared to traditional means of text analysis. It is further argued that these advantages ultimately helped in the formalisation of processes which otherwise would have had to be carried out by labour-intensive traditional means. In order to substantiate this claim, we outline the differences between qualitative text analysis by traditional means and by CAQDAS in Table I.

The procedure which was pursued in this formalised approach to text analysis is illustrated in Figure 3. Using the empirical data we aimed for a holistic perspective of the company, manager and employee relationship for theory building. Two bi-lingual researchers, one fluent in Italian and English, the other in German and English, were involved in the coding process, which helped to safeguard against the criticism of subjectivity, hermeneutics and value-load. The categorisation scheme was developed in English and continually monitored, sharing ideas and concepts and updated by questioning with the co-analyst. This procedure safeguarded against the danger of a purely uniform coding scheme as in the “etic” school of thought which would not have allowed for the identification of country specificities. At the same time, this safeguarded against biases and ensured equivalence of data handling.

Analysis using N*Vivo
N*Vivo’s group coding feature was used for analysis purposes. N*Vivo is a very versatile and user-friendly program which on start-up introduces the Project Pad to the
researcher and provides an overview of central elements and such options as “documents”, “nodes”, “attributes” and “sets”. Also the analytical processes of linking, coding, modelling and searching are graphically illustrated within the pad.

The analytical steps which facilitated the formalised approach to the analysis of our textual data using N*Vivo are illustrated in Table II. In total five core analytical processes were identified:

1. organising;
2. linking;
3. coding;
4. searching; and
5. modelling.

In Table II the core processes are sub-divided into several steps and discussed in terms of advantages and problems respectively.

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<td></td>
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<td>Browsing documents to show selected sections without losing the full document</td>
</tr>
</tbody>
</table>

Note: Based on Marshall (2001)
<table>
<thead>
<tr>
<th>N*Vivo steps</th>
<th>Illustration (KM project)</th>
<th>Advantages</th>
<th>Disadvantages/problems</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organising processes</strong></td>
<td></td>
<td><strong>Theoretical sampling</strong></td>
<td><strong>Interviewer subjectivity</strong></td>
</tr>
<tr>
<td>Step 1:</td>
<td><strong>Input data:</strong> Interviews with managers; documents from companies (e.g. “golden rules”); Picture (e.g. illustrating a company’s history)</td>
<td><strong>Open interview technique</strong></td>
<td><strong>Selection of interviewees</strong></td>
</tr>
<tr>
<td>Source of data/selecting data types</td>
<td><strong>Technique:</strong> Interviews and secondary research</td>
<td><strong>Association technique</strong></td>
<td><strong>Interview techniques are different</strong> when multiple interviewers are involved</td>
</tr>
<tr>
<td><strong>Result:</strong> Rich text format document</td>
<td><strong>Other textual and non-textual material is included</strong></td>
<td><strong>Other textual and non-textual material is included</strong></td>
<td><strong>Which additional material is relevant?</strong></td>
</tr>
<tr>
<td></td>
<td>with sub-headings, links to documents and pictures</td>
<td><strong>Already existing material can be incorporated</strong></td>
<td></td>
</tr>
<tr>
<td>Step 2:</td>
<td><strong>Input data:</strong> Rich text format document with sub-headings, links to documents and pictures</td>
<td><strong>Aspects which might not be relevant at first sight are stored together with the raw data</strong></td>
<td><strong>“Noise” or irrelevant information might be included</strong></td>
</tr>
<tr>
<td>Describing the data</td>
<td><strong>Technique:</strong> Description of interviews: protocols/memos of interviewers about the context, the situation, the person, the outcome, ideas about categories or concepts</td>
<td><strong>Increased comparability of data</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Result:</strong> Extending dataset with descriptive textual data</td>
<td><strong>Helps to understand respective situation in which data were collected</strong> (from international perspective)</td>
<td></td>
</tr>
</tbody>
</table>

*(continued)*
<table>
<thead>
<tr>
<th>N*Vivo steps</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Step 3: Changing and viewing data</td>
<td><strong>Input data:</strong> N*Vivo documents (memos) and node system</td>
<td>Structure the document and highlight relevant sections while clearing irrelevant sections</td>
<td>Context information might get lost</td>
</tr>
<tr>
<td><strong>Technique:</strong> Code the document in browsed text (selection mode) and edit the text</td>
<td><strong>Result:</strong> Clarification of relevant text</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 4: Grouping</td>
<td><strong>Input data:</strong> N*Vivo documents (memos) and node system</td>
<td>Structuring of relevant data</td>
<td>Wrong documents/nodes are grouped together but are handled as similar</td>
</tr>
<tr>
<td><strong>Technique:</strong> Putting together documents or nodes in any number of sets</td>
<td><strong>Result:</strong> Sets (document and node)</td>
<td>Reducing textual data temporarily</td>
<td></td>
</tr>
<tr>
<td>Step 5: Storing information and including attributes</td>
<td><strong>Input data:</strong> Quantitative information (e.g. company size, number of employees)</td>
<td>Importing already existing spreadsheets, also from secondary market research</td>
<td>Too much emphasis on numerical data</td>
</tr>
<tr>
<td><strong>Technique:</strong> Create and edit attributes from spreadsheets or statistical packages</td>
<td><strong>Result:</strong> Extending dataset with descriptive numerical data</td>
<td>Filtering documents based on attributes</td>
<td>Easy-to-import feature could lead to enormous database which is difficult to handle</td>
</tr>
<tr>
<td><strong>Linking processes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 6: Linking documents and nodes</td>
<td><strong>Input data:</strong> N*Vivo documents (memos) and node system</td>
<td>Qualitative linking</td>
<td>Difference between links and codes might be unclear and confuse (inexperienced) researcher</td>
</tr>
<tr>
<td><strong>Technique:</strong> Create links to other documents or nodes in the same or different project or to external data</td>
<td><strong>Result:</strong> DocLinks and NodeLinks; linkages</td>
<td>Enables the researcher to link documents and nodes prior to coding or When coding is not possible</td>
<td></td>
</tr>
</tbody>
</table>

(continued)
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Coding processes</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Step 7: Coding and autocoding | *Input data:* N*Vivo documents (memos) and node system  
*Technique:* Create nodes (free, tree and case nodes); explore what's coded  
*Result:* Node system; browsing node system | Saves time  
Increased reliability, e.g. by reducing human error  
Potential for unexpected insights through re-contextualising material | Potential of mechanical errors  
Danger of superficial analysis  
De-contextualising material |
| Step 8: Revising and refining | *Input data:* Node system-browser  
*Technique:* Delete, refine, change nodes; use other techniques to trace the process (memos, links)  
*Result:* New node system | Keeps node system alive by enabling easy change of coding  
Allows new ideas to be integrated | Easy way of dealing with nodes may lead to a never-ending coding process (when to stop coding?) |
| **Searching** |                               |                |                            |
| Step 9: What to ask? | *Input data:* N*Vivo documents (memos) and node system  
*Technique:* Operators (node and attribute lookup, text, Boolean and proximity search, vector and matrix searches)  
*Result:* Matches | Range from easy to very tailored and comprehensive search  
Speed of search  
Handle large numbers of nodes  
Store searches in various ways  
Restrict searches  
Deal with multiple and overlapping codes  
Conduct multiple search | Researcher needs to know questions in advance  
Knowledge about operators necessary |
| Step 10: Where to ask it? | *Input data:* N*Vivo documents (memos), attributes and node system; sets (documents and nodes)  
*Technique:* Using assay tool prior to search; choosing scope of search (specific documents, nodes); compare and rerun searches  
*Result:* Report on the scope item; matches | As per Step 9  
As per Step 9 | |

(continued)
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</table>
| **Step 11:** What to do with the answer? | **Input data:** N*Vivo documents (memos) and node system; sets (documents and nodes)  
**Technique:** Collect finding into nodes; store separately, apply assay tool  
**Result:** Matches | As per Step 9 | As per Step 9 |

**Modelling processes**

**Step 12:** Drawing and linking models  
**Input data:** N*Vivo documents (memos) and node system; sets (documents and nodes)  
**Technique:** N/A  
**Result:** Visual representation of ideas (models)  
Use in early stage to design the project and its development  
Clarify nodes and documents  
Clarify concept  
Cognitive map and causal network  
Category development  
Time sequence model  
| “Live” models | N/A |

**Step 13:** Managing models  
**Input data:** N*Vivo documents (memos) and node system; sets (documents and nodes); models  
**Technique:** Delete parts, refine, change models  
**Result:** Adapted models  
“Live” models  
Easy switch between all parts of the N*Vivo project  
Show different levels of interpretation  
Represents progressive discovery process  

**Step 14:** Layering and grouping items  
**Input data:** N*Vivo documents (memos) and node system; sets (documents and nodes)  
**Technique:** Include layers  
**Result:** Layered models  
Show different levels of interpretation  
Represents progressive discovery process  

**Source:** Table based on concepts adapted from Marshall (2001), Coffeey et al. (1996) and Richards (2000)
Organising processes

After data collection (Step 1, Table II), organisation (Step 2), changing and browsing (Step 3), grouping (Step 4) and storing information about the data (Step 5) analytical steps followed. Subsequent to the creation of a new project, data had to be assigned to the project. Documents were data files which could be created directly using N*Vivo as a text editor or alternatively imported from existing data files created by word processors and saved as rich text files. In the present study, the data files comprised of nine interview transcripts and the observations made during, before and after the interview. Original interview language was retained in the program but a common English coding scheme was developed. Additionally, memos could be included and attached to the project. These were important elements of the coding and interpretation process, particularly when dealing with multiple coders (see Figure 4).

Another element of the project, called attributes, helped to organise characteristics of the documents such as company figures, information about the respondent and characteristics of the coding system which were descriptions of nodes. These thus combined qualitative and quantitative data. Attributes can be established using statistics software (e.g. SPSS) or from any software that generates tabular output (e.g. Excel).

We included factual data about the company such as the number of employees, fields of operation and number of offices world-wide in our analysis (Figure 5). Additionally information from the interview partner was included, such as his or her
Linking and coding processes

Next to the coding procedure, N*Vivo offered another way of outlining relations between various parts of the project. Linking documents and nodes (Step 6, Table II) could serve as an alternative to coding, but it could also supplement it. The linking feature created links from one document to another or to external data. In the case of the knowledge management system employed by a particular SME, we created links between manager interviews and observations, as recorded by the interviewer. Hence we linked observations about management behaviour in the interview, guiding tours around the company premises and management-employee interactions with the textual data from the interview.

Coding textual data was probably the most crucial step in the analytical process (Step 7, Table II). The coding process could be seen as an ongoing interpretation and examination of textual data from different perspectives and would also depend on the number of researchers involved. Two coding strategies were used: (a) a priori and (b) a posteriori categorisation of data. A priori categorisation involved the use of theory, literature or exploratory interviews with experts in the field to develop categories which would subsequently be used for the analysis. A posteriori categorisation meant that empirical indicators would be obtained directly from the data and henceforth coded. Considering the specific paucity of relevant literature in our area, knowledge management including employer to employee relationship, a posteriori coding was applied. This was strategy (b).

Heading styles could be used to facilitate a first, “rough” coding, which is also called autocoding. The present project started by using the heading styles of the interviews which were defined in line with the interview guideline. Each of the interviews was roughly coded into sections and a structure of textual data was established (see Figure 6). The Node Browser within N*Vivo allowed us to inspect coded sections of the document.

Next each text-section was analysed with more scrutiny, following open, axial and selective coding processes, as suggested in the literature[4]. Therein concepts were established and statements used to explain the phenomenon of interest. The textual data were reduced and, as suggested by Lee (1999) or Strauss and Corbin (1998b) a certain level of abstraction was reached.

In the coding process, the researcher attempted to identify the right “container” for ideas and concepts. Ultimately this quest for structure resulted in a node system, which could be updated throughout the coding process. A node system might have consisted of connected node groups with child and sibling nodes or of different trees. By making a decision about the size of the node system the researcher had to find a balance between breadth and depth. The node system could always be seen as a function of the stage of the research process and would evolve over time. Since coding was an ongoing process that theoretically never stopped. Practically, the coding process only stopped when the researcher had reached “theoretical saturation” and no new themes emerged.
In our study for each of the sections obtained from rough coding up to 36 nodes were created. Two trees were created to facilitate management of the nodes. The question regarding “Origin of knowledge management” for example produced 18 nodes in the beginning, given that interview partners expressed their experience differently or simply used different levels of abstraction. Some managers mentioned real problems they faced in the beginning. A technology manager commented:

There was a day, when the knowledge management tool was there. We sent an e-mail to everybody, but this did not necessarily mean that the job was finished. Quite on the contrary, it just had started.

A consultant talked more about the company’s behaviour:

The Company has been considering knowledge management as very important for a long time.

We were also dealing with different languages and the coders used different codes which were aligned subsequently for reasons of equivalence.

After inspecting the nodes and discussing the node system, the two coders merged several nodes following an open coding strategy. Subsequently axial coding was applied to inter-relate the categories and sub-categories. As a result, nodes which expressed the same concepts were merged and the number of child nodes was reduced to 11. In a similar manner the other nodes were initially created independently, discussed among the coders, and finally a common categorisation system was applied[5].
Selective coding was applied to develop a theoretical understanding of the company to manager to employee relation and its influence on knowledge sharing. Therefore, we used this feature and linked nodes with other nodes or nodes with memos that emerged during coding. Nodes coded under the section “origin of knowledge management” were linked to nodes coded within the section “company culture” such as the concept of “communication” which appeared several times. Regarding the managers’ understanding of knowledge management, many different views were identified. They ranged from the managerial task to the inter-personal view of sharing something proprietary. Many managers were concerned about the loose ties between employees and regarded knowledge management as a tool to increase contacts and facilitate communication.

After the right container for ideas has been identified, the researchers wanted to inspect the containers to find out and theorise about its content. With the search process, N*Vivo offered a deeper analysis of textual data. This enabled researchers to pose whatever question they might want to ask and the software would provide for the text-based answer immediately.

**Searching processes**
Starting point for project-based search were research questions relating to the textual data. The research questions guided the researcher through the search process and finally helped in the identification and build-up of a theory (Richards, 2000). At this stage in the project, the data comprised documents, interview transcripts, observations made during interview, a refined node system, the supplementary attributes of quantitative data and a series of memos of textual data.

To put it simply, the first question was to ask “what am I looking for in the project?” This lead to the decision whether coding-combinations, text, values of attributes, or relations (Boolean, proximity) were looked for (Step 9, Table II). Second, “where am I looking for this in the project?” selected the documents and nodes that would be screened (scope tool). Additionally the assay tool helped to point to interesting sections within the documents, undertake comparisons, rerun searches and evaluate different outcomes. By using the assay tool certain features of documents and nodes could be checked prior to the real search process (Step 10, Table II). Finally, the question, “what do I want to do with the results?” determined whether only certain sections of the documents were displayed or also the context, where the information found would be included (Step 11, Table II).

In our study we were looking for data which illustrated the company to manager to employee relation. Additionally we were interested in different perceptions of knowledge management, depending on the positions of consultants or technology managers. Therefore, nodes such as “importance of employee”, “communication”, etc. were searched and a matrix intersection between nodes and companies was produced. All documents were included into the analysis and the results were displayed as a node. Figure 7 illustrates the number of documents where the nodes were found, separated into four fields (1 = E-Business, 2 = Consulting, 3 = Electronic Equipment, 4 = Computer). The importance of building up networks was only relevant for companies that specialised in e-business. For consulting companies employees were important for knowledge management. In addition, the number of characters coded or coding references could be displayed. Cells with high frequencies were automatically...
highlighted and frequency tables could be exported into SPSS-data files and used for further analysis.

We were also interested in potential cross-country differences. Consequently we searched for the co-occurrence of the company’s view that communication played an important role within an ideal knowledge management environment and company culture. The results revealed that only for an Italian consultant the issues “knowledge management” and “team orientation” were linked together. This particular interviewee’s specific statement reinforced perceptions such as his SME being a “people’s company”, a “spirit of togetherness” within the company and the notion that “closer alignment with the international goals” might threaten to make the workplace “less enjoyable”. In all the other statements, knowledge management was closely linked to issues of organisational structure, “flat hierarchy” and the conflict between “technicians and management”. It appeared that these perspectives, although probably limited in their generality, pointed out differences pertaining to the different national contexts involved in the study.

Modelling processes
Models of graphical illustrations of the underlying textual data could be created at every stage of the project using the Model Explorer. There was no automatic generation of models in N*Vivo. However, the researcher could build models using documents, nodes, attributes and memos (Step 12, Table II). This could help to build nodes and to facilitate the visual construction of a nodal system. Furthermore it assisted in the development of a categorisation scheme which could be used in the subsequent coding process. Modelling was also instrumental for the conceptualisation of ideas that arose during the ongoing coding and search process. Modelling helped to design the project but was also helpful for the illustration of the research progress. Various models which might evolve during the research process could be drawn separately and then graphically linked together.
Models in N*Vivo could be seen as living entities. They were evolving, continually changing, refined by the researcher and updated according to the research progress (Step 13 and step 14, Table II).

The nodes concerning the “origin of knowledge management” are displayed in Figure 8, allowing visual analyses. Nodes representing the employee, for example “must activate employee” and “building up networks” as well as nodes relating to the experience managers felt in the beginning of knowledge management were grouped. “Unclear beginning”, “first reactions +”, “bad experience – ” were included. The nodes were then transformed and enriched with researchers’ ideas and interpretations. The role of management for example influenced whether knowledge management was implemented “top-down” or “bottom-up”. Since different layers and groupings could be used in the graphical presentation, the perspectives of different researchers could be viewed simultaneously.

Conclusion
Managers were commenting much about the initial stages of implementing knowledge management systems. Yet consultants, particularly those operating on an international level, did not consider knowledge management to be a novel thing. They simply felt it was important. This was in line with the finding that more international SMEs attributed a higher importance to knowledge management issues. Similarly, within the more internationalised SMEs individuals were less likely to abstain from participation in the process of knowledge sharing and dissemination. In contrast, managers of technical innovations within the SME context felt that knowledge management generated problems. According to their view, knowledge management did not always help the employees whose careers were built on knowledge and consequently they were not completely convinced of that the idea had significant benefits.

When asked about the company’s goals, managers mentioned that the most important intellectual capital from a company’s perspective was the employees. This particular node was coded 12 times throughout the interviews. It comprised statements referring to the enhancement of knowledge sharing on a personal level, entrepreneurial personality traits and individual characteristics. It was felt that knowledge

Figure 8. Model explorer
management could develop into an accepted practice only if innovative employees endorsed this idea and communication between the management and employees was facilitated.

Consequently, issues of “communication” and “facilitation of interaction” could be considered as key factors for the successful implementation of knowledge management within SMEs. These issues will be important to consider in relation to future studies. It is interesting that our finding goes beyond the scope of earlier studies in the context of knowledge management which predominantly focused on systems and tools of knowledge management. Taking a formalised view on textual interview data, we were able to identify those relational dimensions and exchange-processes within the organisation which are even more important. Hence, a holistic view of the relationship between company, managers and employees was provided. We were able to transcend the mere quantitative description of why some knowledge management systems work while others do not.

Implications and future outlook
Qualitative research methodology, including that in the growing body of work at the marketing and entrepreneurship interface, is often criticised for high levels of subjectivity and low reliability and validity. On a substantive level this criticism is unfair because qualitative research offers holistic perspectives on phenomena which cannot be achieved otherwise. However, the criticism is often due to a low quality of documentation and reporting of the findings and cannot be ignored. While quantitative studies follow a rigorous organisation and presentation in how results are presented, qualitative studies are often reported in a descriptive and narrative way. Following a formalised procedure of organising a particular kind of qualitative research as in the analysis of textual data, we attempted to overcome this criticism. Hence we presented methods and procedural steps which when employed may help to add to the credibility of the findings. As suggested by Lee (1999), above and beyond sound conceptual background and literature, a detailed and clearly organised way of presenting empirical findings is warranted. Therefore an illustrative research example on knowledge management in an international SME context was presented and organised accordingly.

Computer software programs such as N*Vivo help and support researchers in making the analytical process of coding and analysing textual data more accessible for other researchers. Further formalised procedures will help to ensure that issues of equivalence are addressed in the international context. Particularly when many researchers are involved, the formalisation and continuous interaction of computer system and researcher encourage the “questioning” and challenging of the fundamental assumptions made while coding. Therefore this interaction will lead to better research results particularly at the marketing and entrepreneurship interface.

Formalised processes promise to make the qualitative inquiry based of textual data more logical and replicable. This is encouraging since the replicability of research findings is generally considered to be the “holy grail” of scientific research in that it ensures scientific knowledge by continually challenging it. Within this paper, we focus on one specific form of qualitative analysis – the analysis of textual data. The argument of following formalised procedures and their suggested merits may not necessarily be transferable to other qualitative methods. Nevertheless we hope that a
more formalised approach to the analysis of textual data will help to cross paradigmatic borders on different types of inquiry and alleviate certain prejudices in the adoption of these methodologies.

Notes
1. Although some researchers express concern related to the potential theoretical and methodological costs of computer use in qualitative research (Coffey et al., 1996), we believe that the danger of methodological biases and distortions arising from the use of certain software packages is overemphasised in the discussion (Kelle, 1997). In fact, the application of computer software makes life easier for the researcher. Moreover, it formalises the way in which a researcher can look at the text body. Hence, qualitative software has the potential to increase the reliability of research findings by making the process of analysis more systematic and transparent.

2. We reviewed and ranked a number of different software packages (Atlas.ti, C-I-Said, Ethnograph, HyperResearch, N*VIVO, Nudist and MaxQDA) by looking at developers’ homepages. We decided to use N*Vivo because of particular coding features and group-features, which were deemed necessary for our research.

3. In relationship to the empirical study within this paper the approach was to aim for comparisons but allow for cultural idiosyncrasies. A coding scheme was therefore developed which was not purely uniform.

4. Open coding is usually used for the discovery of categories and the identification of new concepts. Axial coding applies categories and concepts to empirical data. Here, categories are related to their subcategories and intersections of related categories are identified. The objective of axial coding is to add depth to categories. Finally, selective coding is the process where categories are integrated and refined in order to build a theory (Step 8, Table II).

5. It has to be noted that national specificities were retained, i.e. nodes were only merged into one common categorisation system, provided that the underlying concepts were equivalent.

References
Berelson, B. (1952), Content Analysis in Communication Research, Free Press, Glencoe, IL.
Brannen, J. (Ed.) (1992), Mixing Methods: Qualitative and Quantitative Research, Avebury, Aldershot.


