Using triangulation to validate themes in qualitative studies

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Abstract
Purpose – The purpose of this paper is to provide instructional guidance on how to increase validity and reduce subjectivity in qualitative studies, such as grounded theory. The paper also demonstrates how different techniques can help management research by including informants/managers in a time efficient way.

Design/methodology/approach – This paper describes how three complementary triangulation methods can be used for validation and exploration of concepts and themes in qualitative studies. Tree graphs, concept mapping, and member checking are applied in a managerial case study, complementing a conventional grounded theory approach.

Findings – The paper suggests that naturalistic inquiries, such as grounded theory and thematic analysis, can use mixed methods and multiple sources and coders in order to offset biases and to validate and sort findings. The case study presents three different perspectives on how an organization comprehends diversity as a strategic issue.

Originality/value – The paper suggests a mixed methods design that addresses some of the potential shortcomings often found in grounded theory and other qualitative studies, their theory development and their documentation of processes. It positions the approach over the range of the triangulation literature and it argues that it is important to be aware of different triangulation mindsets, and these they are not necessarily contradictory.

Keywords Qualitative research, Management research

Paper type Case study

Introduction
Subjectivity accompanies all data interpretation (Greene and McClintock, 1985; Jick, 1979) and even before interpretation, such as aggregation of data (McGrath, 1982). A typical form of subjectivity, embedded in many thematic analysis and grounded theory studies, appears in a recent study in the Strategic Journal of Management, which stated: “[…]our interpretation of how 54 words [generated from textual analysis] could be placed into conceptual categories […] and the naming of these” (Nag et al., 2007, p. 938).

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We seek to demonstrate in this paper how complementary techniques can help to minimize this form of subjectivity, by involving managers in the development and the sorting of concepts and categories. We seek not to eliminate subjectivity as such, but we focus on describing a systematic process for integrating multiple methods in order to offset researcher biases, decrease process distortions (Greene and McClintock, 1991), and increase validity of the findings (Scandura and Williams, 2000) in the analysis of qualitative studies. We hope to achieve this and make a contribution by using an integrative triangulation approach, where we tackle different steps of the process of theory development in grounded theory and related qualitative methods. This is important because a case study, for example, becomes strong and convincing if the resulting theory or findings at least fits that one dataset perfectly (Borgatti, 2008).

Our key objective is to provide instructive guidance for how to give (some) qualitative methodologies higher credibility, convincability, and validity – a discussion that is often neglected in qualitative research and it has been argued to be especially relevant for international management studies (Andersen and Skaates, 2004). It is important in qualitative research to articulate explicitly how practices transform observations into results, findings and insights (Gephart, 2004), yet researchers often restrict their methods explanation to the bare minimum (Zalan and Lewis, 2004). When reviewing qualitative papers, for example, grounded theory, we often end up asking the question; how did the researcher arrive at these concepts? (as oppose to a different set of concepts) and how did the researcher arrive from the concepts to the final model, aggregated dimensions or theory? (as oppose to different models, dimensions or theories based on the same data). These questions are often prevalent even when we read excellent and frequently cited studies, such as Ely and Thomas (2001); how did the authors arrive from the data to the concepts and further on to the aggregated dimensions? We realize that an acceptance of researcher subjectivity and meaning construction can over-ride these concerns, and that methodological rigor can help a long way. We also realize that, sometimes, explanations and documentations are provided in a separate process. Nevertheless, we acknowledge the frustration that many scholars have, insofar that there are missing guidelines and structure for how to conduct and write up the processes, findings and theories (van Maanen, 1998) – unlike more established universal rules for hypothesis testing and inferences of software aided quantitative methods, being regessions, hierarchical linear modeling, or structural equation modeling.

The phenomenon, we studied is how an organization considers diversity as a potential strategic issue. We had the opportunity to study (describe and interpret) a naturally occurring and contemporary event as it happened and where the emerging theory was transparently observable (Pettigrew, 1988). The capturing of managerial discussions of diversity as a strategic issue, called for innovative use of methodology – whereby multiple sources and coders/sorters help capturing the most essential information in a time-efficient way, increase a case study’s validity and reliability (reliability being a prerequisite for validity), and minimize the investigator effects such as researcher bias. The problem we address here is particularly relevant in managerial studies where contemporary issues and fast-changing decision-making environments open only a short window for studying fleeting moments, and access to (decisive) sources can be limited, let alone investigator resources. Thus, we aim to remedy the extensive time efforts core to ethnographic traditions and interpretive methodologies by showing techniques that have the capacity to involve actors/managers in a relative
short period of time. We agree with scholars such as Currall and Towler (2003), and respond to their call, insofar as mixed methods present an appropriate way forward in dealing with these challenges.

Consistent with our ontological and epistemological stance, and the managerial nature of the issue under investigation, the methodology incorporated contemporary interpretive approaches applied for example by Gioia et al. (1994), Isabella (1990), and Jehn (1997); thematic analysis (Aronson, 1994; Kets de Vries and Miller, 1987); multidimensional scaling (MDS) models (Jackson and Trochim, 2002); and ethnographic decision maps (EDM) (Axelrod, 1976). Ultimately, this study design was chosen in order to best answer the research question and to address the goals of subjectivity reduction, validity increase and documentation of the process.

Adaptation of the methodological approach, such as this, has been recommended by several authors; for example Locke (2001), who stated that researchers selectively integrate the logic and practices of other qualitative research styles. Indeed, Eisenhardt and Graebner (2007) stressed the importance of the combination of rigor, creativity, and open-mindedness. In essence, the key to systematic development lies not in the application of any single technique but in the creative and imaginative pursuit of an elusive truth (Post and Andrews, 1982) which is close to the world of objective reality (Johnson et al., 2006). It is noteworthy that the terminology of truth is troublesome for many nonpositivistic researchers and it has been considered damaging for qualitative theory building itself (Gioia and Pitre, 1990, p. 587). These authors suggest instead the terminology of “searching for comprehensiveness stemming from different worldviews.”

This paper starts with a review of the triangulation literature and a discussion of the methodological assumptions, epistemology and challenges pertinent to grounded theory and this study. Following a brief description of the issue under investigation, which serves as an example for the methods discussions, the mixed methods and procedures that were applied are delineated for the study, in particular the grounded theory approach and each of the triangulation techniques – tree graphs, concept mapping, and member checking – are presented. Finally, the paper discusses the methods applied in relation to the objectives and our assumptions. We position our approach within a range of triangulation mindsets, reflected from the literature review, and discuss how these techniques can be applied in order to satisfy a broader purpose than the one of validation.

**Triangulation: definition and literature overview**

Triangulation is defined as “the combination of methodologies in the study of the same phenomenon” (Denzin, 1978, pp. 294-307 – see also Erzberger and Kelle, 2003), for an overview of triangulation as a methodological metaphor. Denzin later adjusted his position on triangulation to favor sociologists going beyond the personal biases that stem from single methodologies (Flick, 1992). We have for the major parts of this paper adopted a classic view on triangulation speaking to convergence of methods producing more objective and valid results. However, we are not fundamentally opposing subjectivism and we will elaborate on the value of more open and enriching approaches in the discussion section. This will also, conceptually, address Denzin and Lincoln’s (2005, p. 5) contemporary approach to triangulation as an alternative to validation.
Originally, triangulation was a military term from navigation, which uses multiple reference points to locate an object’s exact position (Smith, 1975). Crystalization is another term for using multiple sources, not in order to verify (in case there is no truth […] but rather to crystallize. In essence, there is no standard definition of triangulation and what it should cover (Bogdan and Biklen, 1998). Triangulation is conceptually similar to Campbell and Fiske’s (1959) notion of multiple operationalism with the purpose of strengthening a study’s validity. This also corresponds to the reflexive triangulation used in ethnographic field research (Hammersley and Atkinson, 1983). The essential assumption is that the validity of inquiry findings is enhanced, when two or more methods that have offsetting biases are used to assess a given phenomenon, and the results converge or corroborate (Greene et al., 1989; Scandura and Williams, 2000). In sum, triangulation is supposed to support findings by showing that independent measures of it are in agreement or, at least, it should not contradict them (Miles and Huberman, 1984). Triangulation has been recommended to become the researcher’s way of thinking (Carney, 1990), which includes a constant, habitual cross-check on theories, explanations, methods, data, informants, and the researcher him or herself. The best tests of validity can be whether other scholars find the results illuminating (Post and Andrews, 1982), but often the investigator’s claim to validity rests on a judgment (Jick, 1979).

The most discussed type of triangulation refers to the use of multiple methods in the examination of a social phenomenon (Denzin, 1978, pp. 294-307). Thus, although triangulation can take place throughout a research design, we focus here on the triangulation that is related to analysis. Traditionally, there are several overriding purposes of triangulation (Denzin, 1978; Miles and Huberman, 1984; Morse, 1989; Munhall and Boyd, 1993). The primary purpose is to eliminate or reduce biases and increase the reliability and validity of the study. It is worth noting that the distinction between reliability and validity is not clear, as they can be seen as regions on a continuum (Thurstone, 1937). According to Campbell and Fiske (1959), validity is somewhat closer to the term triangulation than reliability is. The secondary purpose is to increase the comprehensiveness of a study, and thus to provide qualitatively derived richness and achieve a more complete understanding of the phenomenon under study, thus it entails complementarity (Greene et al., 1989). The tertiary purpose is the effect of increased confidence regarding results that triangulation brings to the researchers (Jick, 1979).

All together, a broad definition of triangulation overlaps somewhat with the fundamental objective of mixed methods and the terms are sometimes used synonymously (Hurmerinta-Peltomäki and Nummela, 2004). Mixed methods can serve several purposes (Greene et al., 1989, for an overview), most noticeably triangulation, complementarity, and guidance of further data collection and analysis. The combination of methods often goes beyond the interpretivist paradigm and ultimately rests on acceptance of the compatibility thesis (Howe, 1988), whereby qualitative and quantitative approaches can be combined advantageously.

Furthermore, triangulation techniques can be divided into between-methods triangulation and within-methods triangulation (Brannen, 1996; Brannen and Peterson, 2009; Paul, 1996). By using traditional grounded theory methodology, our study fundamentally captured within-methods triangulation due to the usage of multiple data collection methods, documentation of different perspectives on the phenomenon under study, and repetition of data collection. The additional techniques, the focus of this paper, added complementary between-methods triangulation, which is an attempt
to leverage the strengths of several methods while mitigating their weaknesses and providing a more valid interpretation of the collected data.

**Methodological assumptions**

Qualitative research within management has often entailed epistemological confusion (Prasad and Prasad, 2002) and triangulation is no exception hereof. Thus:

> [...] the most serious problem of the methodological discussions concerning triangulation is that the epistemological and methodological concepts are not sufficiently linked to theoretical considerations about the nature of the empirical phenomena under investigation (Erzberger and Kelle, 2003, p. 484).

Perhaps, this is due to a frequent negligence, not only of thought processes and reflexivity (Johnson and Cassell, 2001), but also a lack of clarity and guidance for describing this in ways that makes sense to the readers. This has been emphasized frequently in relation to both qualitative studies and ethnography, for example by Werner and Schoepfle (1987, p. 41): “Ethnography and epistemology should be constant companions.” We have no magic formula for this, but acknowledge the importance of the matter and shall attempt to describe, briefly, our thinking behind the study and its design. This is important because it guides the researchers’ objectives and indicates the boundaries to the methods chosen, and because it guides the reader to better understand the researchers (authors) and why they went about the study the way they did.

The influence for this case study investigation into how diversity is treated as a potential strategic issue in an organization is rooted in various research traditions, positioned within the realist paradigm (Bhaskar, 1975). The objects of knowledge are seen as real structures that endure and operate independently of our knowledge, our experience, and the conditions. That is, they exist not only in the minds of the actors but also in the objective world, and this is evidenced in patterns by which researchers can induce the underlying constructs of social life. The realist paradigm necessitates a methodology that enables researchers to collect and analyze available data that transcends detail and thereby provides for the emergence and conceptualization of latent patterns (Glaser, 1998). Grounded theory was chosen as the principal method that could satisfy this and has been recommended as a strategy for sensemaking when a priori theory does not exist (Langley, 1999). In brief, grounded theory is an inductive methodology for generating new theory from data (Goulding, 2002; Locke, 2001). The inductiveness of the study was determined by the research question for which no existing theory offers a feasible answer (Edmondson and McManus, 2007; Eisenhardt and Graebner, 2007). However, the triangulation methods we propose, and have applied to this study, seem appropriate for a variety of interpretative studies, and are thus not linked solely to grounded theory.

**A muddy field**

Grounded theory has often been viewed as transdisciplinary and has been applied across many fields of science, from its roots in the medical and nursing field (Hutchinson, 1984; Kearney et al., 1994) to management-oriented scholars such as Dutton and Dukerich (1991), Gioia et al. (1994), Jehn (1997), and Sutton (1987). Although grounded theory provides a systematic process for abstract conceptualization of latent patterns of social reality (Glaser and Strauss, 1967), its techniques are inherently
“messy” (Parkhe, 1993) and it is considered a peculiar mix of subjectivity, interpretivism and science (Denzin, 2001) – with philosophical roots ranging from positivism to constructivism (Charmaz, 2000). The subjectivity is inherited by the role of the researcher, and Glaser and Strauss (1967, p. 251) mention explicitly “the root of all significant theorizing is the sensitive insights of the observer himself.” Although this observer-importance cannot (and should not) be eliminated, it calls for supplementary validation if and when possible.

In this light, it is important to notice that many grounded theory studies apply different variants of methodology. The researchers make choices as to which methodological “schools” they follow, e.g. Glaserian which is considered “orthodox” or Straussarian which is considered “revised” (for overview, see Jones and Noble, 2007), and the way coding, categorization, and analysis are applied varies to a great extent. This is exemplified by Sutton and Callahan (1987, p. 411) when they explicitly mention, “some variation of method was used in all stages in the research.” Thus, methodological adaptability and bricoulage of grounded theory, comes somewhat close to that of ethnography, in which not all steps can be carefully planned (sampling is one example). Researchers have to adjust to their environments and pragmatism is often a guiding principle. Considering and accepting the above, we are still often left in a vacuum when it comes to descriptions and validations (if any) of what goes on between the data collection and the findings or so-called “results”.

Juggling between coding levels
For the sake of simplicity we can think of coding levels as a data reduction process. An important question arises with regard to the transition between the coding levels. Especially, there is little transparency in how and when authors move from one coding level to the next (e.g. open coding to the selected second-level categories). This puzzle is often neglected in the grounded theory research and adjacent streams of literature. Thus, Constas (1992) concluded that the existing guidelines are general and their applications are subject to the situational demands of a given study.

The answer may lay in the epistemological assumptions of grounded theory and the researcher him or herself as the tool. Glaser (1978) addressed this as an issue of seeing the prospect for a theory and has described it as a drugless trip. The drugless trip refers to the (often frustrating) period in the coding process when the researcher turns and twists the maze of codes from a rather mechanical exercise into a creative, sensemaking endeavor for which there is no magic formula. One can analyze each dimension to death, but the development of a relevant set of distinct, yet related, core categories is an individual and imaginative process with many “attempts,” each time with verification that must validate or disconfirm to which point the categories are well grounded in the data. This theory-generating process becomes rather elastic (Jones and Noble, 2007) and, like most mind-trips, they are hard to share! This therefore calls for the usage of complementary triangulation methods which can help ensuring that we are indeed capturing “the right” concepts and that these concepts generate “the right” model, aggregated dimensions or theory; let alone methods that can help document this process.

Epistemological verstehen
Grounded theory does not have an easily recognizable research paradigm for anchoring the several operations that constitute it (Schatzman, 1991). As a naturalistic inquiry, the
processes used in grounded theory are largely the same as in the qualitative fields of phenomenology and ethnography (Morse, 1994), but the uniqueness is in the way the steps are applied. For example, within grounded theory the interest is not in the stories and narratives themselves, rather these are means of eliciting information (Suddaby, 2006), since the objective is to “lift” data to a conceptual level. In addition, grounded theories rarely have interviews as their sole form of data collection (apart perhaps from nursing studies), and the literature specifically recommends using multiple sources, with Glaser’s (1978) dictum all is data in mind. This pluralistic methodological approach together with our striving for increased credibility and validity, as well as reduced subjectivity, places our approach within the positivistic sphere of philosophical assumptions (Johnson et al., 2006). Not so much in the traditional sense of deductive hypothesis testing, or quest for causality, but rather because of the reification and atomization of facts (Bhaskar, 1989); a reduction of our knowledge to a neutral observational language that can be verified through triangulation. An external real world exists. Our knowledge of it is defined in terms of its usefulness to us and we can utilize various criteria in order to determine whether a claim is meaningful. Because of the nature of the study itself and our fundamental embracement of verstehen (perhaps best translated as interpreted understanding), the mode of engagement could appropriately be characterized as neo-empiricism (Johnson et al., 2006). Key personas, especially within ethnography and anthropology such as Boas (1858-1942) and Malinowski (1884-1942), have been categorized within the same boundaries of inductive approaches. This relies on observation of human behavior including direct contact, as opposed to a more indirect measurement of meaning, such as lab studies and related deductive approaches more linked to causality and hypothesis testing (Hammersley, 1992). Moreover, the verstehen is applied, or assumed, in grounded theory when ascribing an “act meaning” (Kaplan, 1964), which happens in the conceptualization and analytical phases of the coding process.

The choice of techniques that we used had to fulfill four fundamental assumptions. The first assumption was that the techniques had to comply with our epistemological stance and guiding principles, in particular striving for a true representation of the native’s view (insofar that exists). The second was that the techniques had to be proven in connection with other studies, but not limited to one particular field (such as ethnography). The third assumption was that the techniques had to be applicable by spending only a reasonable amount of time conducting them, in particular due to restricted access to busy managers. This emphasized one of the fundamental principles of interpretation whilst acknowledging and paying respect to insiders’ views through extensive usage of managers’ feedback and involvement. The fourth assumption was that the techniques should be able to provide alternative explanations or categorizations in the case of non-validation, for example by providing new and overlooked concepts.

Case example: diversity in question

Workforce diversity, and the management thereof, has been characterized as a strategic issue in the widest sense (Maxwell et al., 2001; Wilson and Iles, 1999), crucial for economic and competitive success, and the penalty for not welcoming diversity was considered serious already in the mid-1990s (Carnevale and Stone, 1994). Increased globalization, changes in workforces, and increasing representation of minorities have fueled the consideration that the diversity debate has moved beyond issues of legal and
moral obligations to become an inevitable reality inside and outside today’s organizations (Kwak, 2003; Merrill-Sands et al., 2000). However, if diversity is indeed such a “reality,” one wonders why we keep studying if heterogeneity is better than homogeneity (Horwitz and Horwitz, 2007).

The purpose of the case study was to comprehend how diversity is considered a strategic issue. Whilst focusing on strategy implementation or effect sizes, most investigations have neglected both the strategy formulation and many of the contextual issues. Thus, we often take for granted that diversity is a strategic issue, but for many companies, in particular outside North America, the decision is not so clear cut. Many European organizations are in the midst of discussions with half of companies having no diversity policies or active diversity management (European Commission, 2005). In fact, Joshi and Roh (2008) have questioned the relevance of existing research on diversity. The authors claimed that research has not been “market-oriented” enough and that the overall mandate for diversity in organizations may come under threat.

Strategic issues can be defined as events, developments, or trends that are perceived by decision makers as having a major impact on their organization and its performance (Ansoff, 1965; Dutton et al., 1983); the term often refers to developments or events that have not yet reached the status of a decision event (Dutton and Duncan, 1987). We focused on diversity as a potential strategic issue for several reasons. First, diversity has the potential to have a major impact on a firm’s performance (Catalyst, 2004). Second, there has been a growing tension between the promise and the reality of diversity in team process and performance, and scholars have warned that this has serious implications for the credibility of the field, for future adoption by practitioners, and for future theory building (Jayne and Dipboye, 2004; Joshi and Roh, 2008; Mannix and Neale, 2005). Third, the organizational discussion and interpretation stage of diversity prior to decision making has not been covered well, if at all, by previous research. In essence, what is needed is to take a step back and look at some of the discussions leading to choices, rather than focusing on the choices themselves. The relevance of this perspective is supported by Westley (1990), who argued that we pay far too much attention to strategic choices than to the conversations shaping them.

**Methods overview**

The guiding principles for this study were rooted in a position of philosophical pragmatism (Howe, 1988) which favors methodological appropriateness, as advocated by Patton (1990) and others, in order to seek the best match to the intended evaluation user’s information needs. Pragmatism has often been viewed as a philosophy underpinning mixed methods (Greene and Caracelli, 2003; Maxcy, 2003). Moreover, and in practical terms, the guidance was especially centered around:

- Aggregation of data following well-explained studies (such as Beck, 1993; Gioia et al., 1994; Hutchinson, 1984; Isabella, 1990; Kearney et al., 1994), a procedure that has been recommended by several, e.g. van Maanen (1998, p. xxv), “examples must be our guide”.

- A humble, non-superior perspective that respects and tries to articulate the informants’ views and their subjective understanding at their level of meaning (Geertz, 1973; Gioia et al., 1994).

- “What’s going on here?” in the eyes of the researcher as participant-observer.
The last point is applied without compromising the respect for the sensemaking experience of the insiders, which might happen when engaging in too deep-level subjective interpretations. The study design with its methods choice is an attempt to support these principles.

Data were collected from multiple sources (Appendix 1) in a European-based petrochemical company, with 5,000 employees, called Polypo (surrogate name). The organization was studied for a period of 12 months, and the researcher’s identity was known to all participants – known as overt research (O’Reilly, 2005). One of the authors, as observer and participant-observer, used several primary and secondary sources, specially structured interviews with managers, textual analysis of reports and documents, listening and observing and task-force observation-participation. The task force, who effectively became the issue sellers, had six months to work on the assignment, “Does Polypo need a diversity strategy?”

The individual interviews with a cross-section of managers were centered on diversity awareness, meaning, and benefits. The coding was ultimately condensed into 24 concepts that represented the arguments and logics that were used in the diversity discussions. These concepts were validated by asking each top manager to draw tree graphs of questions related to the subject matter. Subsequently, the concepts were sorted into a few categories by the researcher following grounded theory. These themes were validated by asking a sample of managers from the case study organization (thus, multiple source coders) to sort them. This provided one single framework of three categories, which was positioned and interpreted by comparing it to the relevant literature pertinent to this study and its objectives. This framework was validated collectively by the top management team (TMT).

In combination, the methods applied can be categorized as “concurrent triangulation design” (Creswell et al., 2003, p. 229), which uses different methods to confirm, cross-validate, or corroborate findings within a single study. The trilogy of validation techniques that make up our triangulation, in combination with the grounded theory approach, will be accounted for in more detail in the following sections. These techniques are tree graphs, concept mapping, and member checking. Conceptually, they correspond somewhat to contend-related validation, interpretive validation, and theoretical validity (Johnson and Turner, 2003, for an overview). They also serve the purpose of easing the classic pain of grounded theory and ethnographer researchers to convey convincingly how the interpretation process takes place, i.e. from field notes and “thick descriptions” to inferences (Curall and Towler, 2003).

### Arriving at concepts

The categories (Table I) were formed by a total of 24 concepts that pertained to the same phenomenon (Corbin and Strauss, 1990), and they became more abstract (higher level) than the concepts they represent. They were developed and pattern-coded following, for example, Miles and Huberman (1994) and van Maanen (1979) for first-and second-order coding (sometimes referred to as selective or theoretical coding). As an illustrative example, see Corley and Gioia (2004), in which a number of second-order themes aggregated into three dimensions.

The result of this analysis (Table I) has yielded three categories (taxonomies) that indicate different considerations and the bedrock of the diversity discussions: the instrumental perspective, the integration perspective, and the normative perspective.
Instrumental

Globalization
“Better reaction to a multi-cultural world”
“A pre-requisite for further globalization”
Adaptability
“We benefit from capturing the full potential of the workforce if it is
diversely composed. You are better prepared to run business in an
international, multicultural environment, you are better prepared for
changes in the environment and you are more flexible to adapt to new
situations or needs”
“Recognizing and valuing diversity as a resource for the organization
to create a competitive advantage and increased adaptability”
Enhancing quality
“Diversity is about […] and ways of working to enhance the quality
and outcomes of our work”
“Benefits are clear it will enhance the quality of work”
Decision making and
performance
“I believe it leads to better performance, decisions […]”
“What is the impact and what are the numbers”
“Studies show that diverse teams accomplish better results than
homogeneous teams”
Creativity and innovation
“A diverse staff profile will enhance […] the creation of ideas and
solutions”
“Different approaches will result in greater innovation, more creative
solutions”
“Nationality diversity only exist at aggregated level, especially RandD
is lacking innovation”
Market and customer
understanding
“Increasingly diverse workforces are required to understand and
respond to the needs and aspirations of increasingly diverse
customers”
“Anticipating and Responding to Customer Needs – Market
knowledge”
Aging workforce
“Diversity as a broader topic is only recently on the agenda, and very
much needed in view of the age profile of the organization”
“Age will be a problem when retirement boom”
Talent and recruitment
“We need a richer source of talent”
“Managing diversity has become an agenda point due to changing
workforce demographics, and a challenge for international
corporations across Europe and the world to seek the best talent”
Integration

Values and principles
“Business case can be either ‘in the pocket’ or supporting values and
strategies”
“We have examined Borealis values, people principles and strategy to
determine in which areas management of diversity could be of benefit
to Borealis”
“Link diversity with existing values”
Conservative
“We will build on our successes in the past”
“We can learn from other companies, so we get the late mover
advantage”
“Not yet enough discussion among people, and not yet an issue”
“Take a look at the board of directors”
Anticipated difficulties
“Senior management guys don’t have great listening skills when it
comes to women. They think of them as mothers and wives”
“Stimulate it, but don’t force quotas”
“Today in control room bunkers there are only men’s toilets”
“Prejudice and bias – people need training to understand and became
aware of its bias”

Table I.
Data structure and representative quotations

(continued)
“In our culture it will be a long way to go to implement diversity in a right form”
“White males are threatened”
“It should be stated clearly as goal and promoted, but it shall not be a target and be measured”
“Do not push diversity. It is often seen as a threat”
“Diversity is good but not at any price”

Integration
“We have carefully reviewed core high level documents (Polypo strategy, Values, People principles) to define which key challenges Polypo face in the future and where diversity management could make an impact”
“The only way a [diversity] focus can be defined would be through our existing strategy”
“If we are to go ahead, we’d do a full Monty, thus full time Diversity mng. position maybe with a link to another initiative LCD (late career development)”
“Main issue is to get it anchored into the organization”
“In a way a firm decision on it is postponed in order to integrate with other and coming initiatives”

Conflict avoidance
“With the aim to avoid unnecessary conflicts”
“Our conflicts mostly avoided”

Previous initiatives
“There was no initial business case. John [CEO] believed in it. There were statistics ‘out there’ that could have made a good business case but it wasn’t needed to begin with”
“This [safety] started as the CEO’s initiative, it makes a hell of a positive difference for the implementation”

What else is going on
“On the business side it rings in way low on the list of things we need to do, and other things are going to be far easier to implement”
“They all see the importance of the issue but they do not rank this as a number one issue”
“We cannot tackle everything at the same time”

Normative
Industry norms
“A web-search has been performed by the project group to get a more detailed overview of how diversity is addressed in companies within the chemical/polyolefin industry”
“Polypo has a low degree of gender diversity which is characteristic for the industry. The industry is clearly male dominated, both in management and production environments. Also age diversity follows the industry”
“We’re not worse off than any other company or industry”

What other companies do
The companies interviewed, Shell, Hewlett-Packard and Honeywell, were selected with focus on “who are already leaders in diversity today” and “who are working in the same or similar industry”
“Another woman – Another American. Why does it always have to be American Ladies leading diversity initiatives”

Legal compliance
“Polypo does not discriminate in employment opportunities or practices on the basis of race, color, religion, sex, national origin, age, disability, or any other characteristic protected by law”
“Corporate compliance to legal imperatives for diversity is also of importance”
“Only question from other ExBoard members was about the legal requirements”

(continued)
A qualitative data analysis tool, Nvivo, was used to facilitate the data reduction and coding procedures.

Looking for categories: the researcher’s drugless trip

The objective of the latter part of the analysis was to aggregate the codes into significantly fewer second-order concepts, and hereafter divide these into a few categories (themes). Categories have been defined by Rosch (1978) as cognitive classifications that group objects, events, and the like with similar perceived attributes. This definition is important for several techniques applied in this study, but in particular because they are considered the cornerstones of theory generation. Categories can also stem from the analyst’s insights to explain what is going on, or they can be inspired by the literature (Strauss and Corbin, 1998).

The “drugless trip” refers to the period in the coding process when the researcher turns and twists the maze of codes from a rather mechanical exercise into a creative, sense-making exercise for which there is no magic formula, as mentioned earlier. Yet, process guidance from the grounded theory literature was followed, i.e. coding families and constant comparisons.

The categories in Figure 1 have emerged as overarching themes from the coding process, the drugless trip and the concept-sorting by the managers; they constitute the outcome framework. The analyst must look for these from the very beginning when coding data; key categories (or main themes) are already formed from an early phase,
but only later is it verified which ones are “cored out” (Glaser, 1978). This is not a straightforward task. It is about playing one analytic scheme against another to see what best captures the essence of what the research is about, or, phrased differently, “One must choose among them which best captures the whole shebang” (Corbin and Strauss, 1990, p. 14).

The framework, with its core categories, is well anchored in the sources used for this study. It basically constitutes a response to the question: what is the main analytical idea in the research? (Corbin and Strauss, 1990), and the researcher is supposed to be able to derive from it the findings of the study in a few sentences: when an organization considers workforce diversity as a potential strategic issue, it uses three distinct lenses: the instrumental, the integration, and the normative.

The main categories are not mutually exclusive and relate to each other in the process. The categories have not been analyzed as predictors or conditions of long-term success (Ely and Thomas, 2001). That is, the categories summarize the important arguments and logics from the interpretation and consideration leading to a decision; they are not intended to serve as independent variables in a cause-effect model or as correlations to implementation success or sustainability of initiatives. This work therefore differs fundamentally in purpose from key studies in corporate social responsibility and diversity, such as Weaver et al. (1999), Ely and Thomas (2001), and Wentling (2004).

**Triangulation technique I: using tree graphs to triangulate concepts**

One method chosen for this study in order to reduce subjectivity (as the Nag et al., 2007, example in the introduction alluded to), and to support the classic triangulation and validity was the use of tree graphs. This was initiated in particular to compare concepts from the researcher with concepts directly from managers. Tree graphs are rooted in decision trees and cognitive maps; a cognitive map is designed to capture the structure of a person’s causal assertions and to generate the consequences that

![Figure 1. Framework for consideration of diversity as a potential strategic issue](image-url)
follow from this structure (Axelrod, 1976). Several authors recommend combining the
techniques of grounded theory and EDM or schema analysis (Conrad, 1982; Miles and
Huberman, 1994; Ryan and Bernard, 2000) and it has been applied in a few significant
studies (Jehn, 1997). The method is also in line with the quest for taking the emerging
codes/categories/concepts and asking questions subsequently, including analysis
(Wilson and Hutchinson, 1991). For example, Gladwin (1976) validated her decision
model work by expanding her sample and matching the combined models of the two
samples.

While observational data can be regarded as “microanalytical glimpses” of short
periods of activity, the tree graphs provide perhaps a more sensemaking picture of
what is going on, seen from the point of view of the actors themselves – the decision
makers – as opposed to the researcher. Thus, the tree graph technique can help
counteract the subjectiveness effect of the researcher that is inherently embedded in
observation techniques and interpretation. Axelrod (1976) states that its strength is to
employ the concepts of the decision maker who is being predicted, rather than the
congcepts of the person who is doing the predicting. This principle also corresponds to a
recommendation from Barton and Lazarsfeld (1972) to present as clearly as possible
the respondent’s own definition of the situation.

The tree graphs in this study were collected from top managers, based on several
questions around the topic, in order to investigate their cognitive schemas surrounding
diversity. They were compiled with the primary purposes of identifying common
concepts (process described in Gladwin, 1989) and comparing these to the existing core
concepts as verification to the extent that they would fit in. The secondary objective
was to identify possible new (or neglected) concepts as part of the theoretical coding.

The questions for tree graphs (Appendix 2) were revised numerous times and tested
by asking a random sample of managers from other companies to fill out drafted
versions. This gave valuable feedback to the preliminary phrasing of questions. The
key learning points of the testing were the following:

- Make sure the questions are so narrow, thoughtful/difficult, and perhaps even
  “tricky” that they generate a good but limited selection of important concepts, as
  opposed to long “laundry lists.” This was done by testing various questions prior
to the final composition.
- Explain well the usage of causal arrow. A simple guidance model sheet was
developed by the author for this purpose (Appendix 3), as the literature contains
very few examples.

Results. Tree graphs were used to confirm/disconfirm the intermediary results by
matching the 24 concepts from the coding procedure (researchers’ labels) with the
concepts drawn by the top managers themselves, individually.

The conceptual match between the compilation (aggregation) of top managers’ own
concepts from questions around the subject and the core concepts of the coding
analysis ranged between 59 and 88 percent. This match was considered satisfactory,
based on typical intercoder reliability levels (where > 80 percent is acceptable and > 90
percent very good, e.g. Cohen’s $\kappa$), as there was no interaction between coders to
resolve differences. Intercoder reliability is the widely used term for the extent to which
independent coders evaluate a characteristic of a message or artifact and reach the
same conclusion. Although this term is appropriate in its generic use as an indication
of measurement consistency, the more specific term for the type of consistency required in content analysis is intercoder (or interrater) agreement. Intercoder agreement is needed in content analysis because it measures the extent to which the different judges tend to assign exactly the same rating to each object. As this exercise was based on conceptual match, rather than ratings, a simple percentage agreement was used.

In particular, the most central question to represent the issue under investigation yielded concepts from respondents themselves that to a great extent matched the ones of the coding procedure (88 percent). The question was “What criteria are critical when establishing the strategic priority of workforce diversity?” 21 out of the 24 tree graph concepts were in line with (either identical to or approximately) the 24 second-order concepts from the coding procedure and thus supported the content of the framework. The few tree graph concepts that were not in line with the second-order coding were rereviewed with the literature to see to which extent they had any generic bearings. This exercise did not attempt to confirm or disconfirm the grouping and labeling of the three overarching categories (taxonomies), which were validated as follows.

**Triangulation technique II: using concept mapping to triangulate categorization**
Concept mapping was applied following the guidelines of Jackson and Trochim (2002). Concept mapping is based on the assumption that language is the key to mental models (Carley and Palmquist, 1992) and that we can use language as a window through which to view managers’ minds (Stryker, 1980). When using this technique, concepts are presented to a number of managers, who, according to instructions, do the sorting. There is no pre-established category structure to which to conform, and each sorter makes his or her own judgment about how many categories to create, what each category contains, and what each category should be called. Concepts can be single words or phrases (Carley and Palmquist, 1992) extracted and generalized by the researcher. These are the units of analysis. Afterwards an aggregation of the different inputs (concept maps) can be performed using MDS models. MDS is comparable to other interdependence techniques such as factor analysis and cluster analysis (Hair et al., 1998, p. 526), and the uses of perceptual mapping and MDS in particular are:

- as an exploratory technique to identify unrecognized dimensions of a construct; and
- as a means of obtaining comparative evaluation of objects when the specific bases of comparison are unknown or unspecified (Hair et al., 1998, p. 527).

Perhaps, most important, the MDS provides a visual representation of the pattern of proximities. Finally, the labels given by the respondents can be used either for centroid analysis (selecting labels from each cluster using the names given by respondents) or for inspiration for or reflection of labels constructed by the researcher.

The specific objectives for adding this technique to the analysis were:

- To explore the ideal number of categories.
- To explore the insiders’ (managers from the case study organization) view on how the concepts should be sorted.
- To compare with the researcher’s own framework or model to see if there is a match, or if other clusters emerge.
This methodology allowed the managers themselves to sort the concepts into meaningful piles that could then constitute a model or a framework. Respondents are recommended to be the subjects studied, but proxy sorters can be used when practicalities prevent access to “the natives.” The methodology is in line with the epistemological stance for this study and has a validity strength, as it allows meaning to emerge by aggregating biases or constructions of many coders, instead of arbitrary bias and potentially forcing the values of the researcher with *a priori* categories and labeling thereof (Jackson and Trochim, 2002).

The process was applied as follows:

1. Write the final list of second-order concepts on small index cards – each card with only one concept or idea. The concepts in this case are logics or arguments for what is important in dealing with diversity as a potential strategic issue, such as “creativity” or “legal compliance.”
2. Ask a minimum of ten managers (Jackson and Trochim, 2002) from the case company under investigation to individually sort index cards into a number of piles of their choice (up to five) of similar statements (see Appendix 4 for instructions). All cards had to be placed in a pile; no miscellaneous pile was allowed.
3. Code the sorted data in a matrix and double-check for coding errors. Run the MDS analysis, using Euclidean distances and scaling model (SPSS 14.0).
4. Analyze the output files graphically (with two or three-dimensional plots) and assess fit and reliability scores.
5. Compare the findings to the objectives (listed earlier).

*Results.* Proximities generated a three-factor solution, as clusters were identified from the Euclidean distance plots. Kruskal stress = 0.18992, RSQ = 0.85333. These levels were considered acceptable (Kruskal, 1964) as no respondent outliers were erased, and both test-statistics improved appropriately with an increasing number of iterations and by increasing the number of dimensions (Hair *et al.*, 1998, p. 557). The two-dimensional plot in Figure 2 is an example suited for interpretation, simply because additional dimensions significantly decrease the readability. The proximity of the clusters represents how similar the statements in them were judged to be by the coders. The position of each cluster on the map is not meaningful, only the spatial relationship between them.

The basic interpretation of this kind of analysis is an emerged theory-based representation of the categories (Jackson and Trochim, 2002). In this case, there are three clear patterns with no evident subpatterns. The three categories are almost
identical to the framework suggested by the researcher, as they contain the same group placement of 23 out of the 24 concepts. The one concept that had a different placement was “aging workforce,” which the respondents grouped together with other internally oriented drivers. This exercise did not attempt to validate the entire framework as an entity, which was done as follows.

**Triangulation technique III: using member checking to triangulate framework**

Consistent with one of the central and most recommended triangulation techniques for validation and credibility, the actors (managers) were presented with the theoretical framework that resulted from data analysis and interpretation (Figure 1). Thus, the informants acted as “judges,” evaluating the major findings of the study (Bronfenbrenner, 1976; Denzin, 1978; Guba and Lincoln, 1989; Wilson and Hutchinson, 1991). In other words, validation through informant feedback (member checking), to ensure the credibility and consistency of the interpretation, is important and well recognized in the literature (Goulding, 2002; Miles, 1979). It also satisfies the validation technique from Lazarsfeld et al. (1967), and member checks have been used very recently by Nag et al. (2007). After all, an alert and observant actor in the setting is bound to know more than the researcher about the realities under investigation (Blumer, 1969).

**Results.** The TMT verified the category framework findings collectively, during a meeting with one of the authors. The main perspectives corresponded well to “their reality,” and they made sense to them across the board. Excerpt:

**Researcher:** These are the three key elements that I saw you using when discussing whether diversity is a strategic issue or not. [Researcher explained the three perspectives]. Does that make sense to you as a conceptual model?

**All:** Yes. [all nodded, and subsequently these explicit issues were discussed at the meeting.]
For example, the following are selected quotes from this meeting with the top management:

[ Diversity] is exactly what you say — it is a choice.

[ Diversity] has to support our strategy.

We have to look to see if [ diversity] is a business imperative.

**Discussion**

When a topic requires to be studied within a relatively short window of time, mixed methods can help establish a more complete and valid picture of such fleeting moments, compared to using one single method. Ethnographic traditions (Malinowski, 1922) that have been followed by some researchers in the social sciences prescribe spending a considerable amount of time, i.e. years, studying the people or companies under investigation (Chapman *et al.*, 2004). This serves several purposes, such as becoming part of daily routines in order to limit the outsider’s effects on the research, building relationships, learning to “understand” things like an insider (also culture and language), and having time to add and develop new questions and guide the research in alternative directions. In essence, “anthropologists are somewhat skeptical about more casual engagements” (Peacock, 2001, p. 76). Although ethnographical principles were followed to some extent in this study, the time spent with the company was considerably less than that of traditional ethnographic research and recommendations. Not out of lack of respect for “thick descriptions” and other ethnographical traditions, since they can never be replaced, but rather complying and adapting to contemporary managerial issues in a time-compressed world.

We have fulfilled the basic purpose of both triangulation (Seale, 2004) and validation (Eisner and Peshkin, 1990), whilst remaining close to what Cho and Trent (2006) call the transactional approach. This conservative approach represents methods whereby informants are engaged in making sure their realities correspond with the interpretations brought forth by the researcher. At the same time, we acknowledge that all techniques we have applied can indeed also be used in a more transformational approach (Cho and Trent, 2006), which provides a more recursive open process, for example when member validation is used primarily to revise the original claims of the researcher (as suggested by Seale, 2004). The distinction is important in the literature, as it represents fundamentally different views on triangulation, from one of pure reliability increase and validation to one of deeper understanding and greater sophistication (Silverman, 1993).

Figure 3 shows some differences in triangulation mindsets. In a narrow classic sense, the triangulation helps to validate existing findings. And in our case it did. By using a more transformational mindset, triangulation can be used for enriching and enhancing study findings. One axis represents the depths in explanations one can seek. For example, by using tree graphs it is possible to investigate more causal explanations to the phenomenon, that is; if \( x \) happens, this will lead to \( y \). The other axis represents convergence vs contradiction. For example, by using multiple sorters (and MDS) one can imagine different models or frameworks evolving, based on the same concepts. These differences can be looped back into the research and followed up by further interviews or literature reviews. This approach can also reflect different groups of people in an organization and how they see the world in, perhaps, different ways.
For example, groups of employees that produce either different concepts (by using tree graphs) or different models or frameworks (by concept sorting and MDS). Or, finally, the member checking can be used for capturing both in depth explanations of the phenomenon and/or providing contradicting or complementary perspectives. Therefore, and in this study’s context, we do not see these purposes as necessarily contrasting, as often argued (Erzberger and Kelle, 2003), since an additional method in principle can help to both verify existing findings and add complementary perspectives or categories.

Some problems, of course, arise when a researcher finds only little convergence and strong contradictions by applying a transformational mindset and related techniques. As noted by (Hurmerinta-Peltomäki and Nummela, 2004), existing literature offers only limited guidance to how the contradictory data should actually be weighted and when the research process should end – if not limited by practical considerations such as time, money and access to organizations. While this is a direction for future research, we hope to have sparked an interest in different methods of using triangulation and how this may be applied in management research and case studies by including insiders such as managers.

Conclusion
This paper describes how multiple methods were used, in order to produce convincing findings of a single case study: an organization investigating diversity as a potential strategic issue. We applied a mix of existing techniques such as tree graphs, concept mapping, and member checking. The combination of these techniques supported the findings and did, largely, not contradict them or reveal any other plausible rival explanations or categorizations. Through a systematic integrated process of triangulation techniques, we have tried to offset subjectivity and researcher bias, and to increase validity of the findings. There is no magic stick for this (Cho and Trent, 2006), but we have engaged informants (managers) at different levels of the process in making sure their realities correspond with our representation of the data, thus respecting “the view of the natives.”

Although triangulation has been used in many different ways and for many purposes, all to a point where the term has been accused of having no meaning at all.
(Sandelowski, 2003), we believe the methodology as we have presented it by providing practical guidance around triangulation, has great potential for qualitative researchers. Specifically, we have tried to provide some ideas, inspiration and detailed guidance, in particular for between-methods triangulation. We have provided an overview of the triangulation literature and we have discussed the philosophical paradigms associated with triangulation and the grounded theory that we applied it on. Our claim is that this guidance can help overcome some of the barriers to the acceptance of grounded theory as well as other thematic and qualitative approaches.

Additionally, our study contributes with means to alleviate the extensive time efforts that classically characterize ethnographic traditions and interpretive methodologies. By showing techniques that have the capacity to involve actors/managers in a relative short period of time, we believe that managerial studies can be improved by applying the proposed methods. The present approach probably contributes less to studies of more critical, postmodern, and constructivist nature, but that was not the intension given our epistemological and ontological stance. In fact, our reflections related to these underlying philosophical assumptions helped us clarify objectives and boundaries regarding our place on the positivism – constructivism/postmodernism continuum.

Qualitative research is inherently multimethod in focus (Brewer and Hunter, 1989) and the researcher is widely seen as a *bricoleur* (first used by Lévi-Strauss, 1966) who patches or knits pieces of information together in order to produce a solution to a problem, often guided by the criterion of what works (Howe, 1988). The *bricoleur* and the knowledge, the wisdom, and the interpretive skills he or she possesses are strongly correlated to the outcome of a case study and the possible theory generation. Edmondson and McManus (2007) explicitly encourage field researchers to get exposure and develop their skills by using both qualitative and quantitative techniques in order to gain a larger toolbox and be better able to judge what method is the most suitable for any research problem – just as a photographer changes lenses to capture different motives (analogy from Peacock, 2001, p. 74). The researcher must not only be aware of this but also account for it as well as possible, which we have tried. Indeed, Kuhn (1962) showed that the most important precondition for science is that the researchers possess a wide range of practical skills for carrying out scientific work. The mixed methods triangulation applied in this study was nested in grounded theory, but we propose this methodological approach as a recipe for a variety of qualitative studies. In summary, we have provided detailed guidance and procedural suggestions for the application of triangulation techniques. We sincerely hope that this systematic *bricolage* can be an important contribution to our field and that management scholars can now take more qualitative trips in naturalistic settings.

Note

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Validate themes in qualitative studies


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Appendix 1

<table>
<thead>
<tr>
<th>Data collection method</th>
<th>Source of information</th>
<th>Analysis and coding</th>
</tr>
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<tbody>
<tr>
<td>Structured interviews</td>
<td>Individual</td>
<td>Text, Charts, Text</td>
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<tr>
<td>Tree graphs</td>
<td></td>
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<tr>
<td>Archival information</td>
<td>Organizational material (policies, value statements, etc.)</td>
<td></td>
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<tr>
<td>Open interviews</td>
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<tr>
<td>Observation – generic</td>
<td>Individual + group</td>
<td></td>
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<tr>
<td>Personal narratives</td>
<td>Individual</td>
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<td>Observation – specific (work group</td>
<td>Group</td>
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<td>meetings)</td>
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<td>Observation – specific (presentations</td>
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<td>to management)</td>
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<tr>
<td>E-mail and shared drives</td>
<td>Individual + group</td>
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Table AI. Data collection overview

Appendix 2. Question guideline for tree graphs

- How do you know if (when) workforce diversity is a strategic issue?
- What leads to immediate action regarding increased workforce diversity?
- What hinders immediate action regarding increased workforce diversity?
- What criteria are critical when establishing the strategic priority of workforce diversity?

Appendix 3. Guiding example for tree graph exercise

Tree graph - Example

Which tools do you use to get your work done?

Tools

Information systems

PC

Reports

To/Fro work

Long distance

Phone calls

Thinking

Audio books

Meetings

Priority-setting

Inform people

Confrontations

Disagreements

Angry employee

Cost cutting

Info gathering

Division reports

Info sharing

Group

Notes/memos

Notes

(noncoded)

Text

(noncoded)

Table AI.

Validate themes in qualitative studies
Appendix 4. Instruction for concept mapping exercise
In front of you, there are 24 index cards with logics or arguments for what is important when an organization such as Polypo deals with diversity as a potential strategic issue. Please sort these into piles of similar statements. Please also provide each pile with a name that most accurately represents the statements in it (stick one post-it on top of each pile). All cards have to be distributed; there can be no miscellaneous pile.

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