Using Grounded Theory Method for Theory Building in Operations Management Research: A Study on Inter-firm Relationship Governance

Mario Binder and **John S. Edwards**

Purpose Qualitative theory building approaches, such as Grounded Theory Method (GTM), are still not very widespread and rigorously applied in Operations Management (OM) research. Yet it is agreed that more systematic observation of current industrial phenomena is necessary to help managers deal with their problems. Hence, the aim of this paper is to provide an example to help guide other researchers on using GTM for theory building in OM research.

Design/methodology/approach A GTM study in the German automotive industry consisting of 31 interviews was followed by a validation stage comprising a survey (110 responses) and a focus group.

Findings The result is an example of conducting GTM research in OM, illustrated by the development of the novel Collaborative Enterprise Governance framework for inter-firm relationship governance in the German automotive industry.

Research limitations GTM is appropriate for qualitative theory building research, but the resultant theories need further testing. Research is necessary to identify the transferability of the Collaborative Enterprise Governance concept to other industries than automotive, to other organisational areas than R&D and to product and service settings that are less complex and innovative.

Implications The paper helps researchers to make more informed use of GTM when engaging in qualitative theory building research in OM.

Originality/value There is a lack of explicit and well-informed use of GTM in OM research because of poor understanding. This paper addresses this deficiency. The Collaborative Enterprise Governance framework is a significant contribution in an area of growing importance within OM.

Keywords Operations Management, Grounded Theory, Qualitative Research, Theory Building, Methodology, Automotive Industry.

Paper type Case study

1. Introduction

1.1 The need for more Grounded Theory Method in Operations Management research

A fundamental question, probably as old as the discipline itself, is whether Operations Management (OM) research should be attempting to originate novel ideas or rather continually seek a research/practice reconciliation, being instead an applied and practice-driven research area (Slack *et al*., 2004). In this context, recent developments within OM research reflect a desire to address the longstanding criticism of missing theory construction, which can be observed in an increased topicality of qualitative research issues in OM (Pilkington and Fitzgerald, 2006). Hayes (2000) has already acknowledged that today's complex and dynamic world calls for less hypothesis testing and more systematic observation to help managers deal with their actual problems. This is especially true for OM as it is an applied discipline setting out to answer concrete problems that emerge within both industry and services (Filippini, 1997). Hence, OM would benefit from theories that help to explain current phenomena and the relationships between their relevant building blocks. This calls for the application of qualitative research methods to develop models and theories rather than to test them (Coughlan and Coghlan, 2002). However, when looking at qualitative theory building research in OM three main deficiencies can be identified.

Firstly, although OM shows a trend towards more qualitative research (Craighead and Meredith, 2008 observe an increase in interpretive research from 27% in 1995 to 34% in 2003 mainly due to IJOPM), the majority of studies are still based on quantitative survey work despite the continuing calls for more case-based research (Craighead and Meredith, 2008; Voss et al., 2002).

Within this qualitative stream, there is relatively little evidence of rigorous and explicit use of Grounded Theory Method (GTM) in OM research, even though it has been described as a "touchstone" for scholars conducting qualitative theory building research in management (Suddaby, 2006). This is shown by a literature search conducted by the authors on GTM in OM. The databases Web of Knowledge, ProQuest and Ebsco Business Premier were searched

using the keyword terms "grounded theory" and at least one of "operations management", "operations strategy", "supply chain management", "production management" or "logistics", over the ten year period to November 2008. Articles whose topic was from another discipline such as marketing or organisational behaviour and which only mentioned the OM-related terms in passing were then excluded. This approach returned 134 papers, which might appear to give the impression of relatively widespread use of GTM in OM. However, the figure is misleading due to the lack of rigour and consistency of terminology. The authors divided the 134 papers into five types, showing that at most 28 in total might be considered as an explicit and rigorous attempt to use GTM in OM research (see Table 1). Note that there was some doubt about whether seven papers should be classified as type 4 or type 5, through lack of sufficient information about the method used; these were included in type 5.

Type	Description	Number of papers	Examples
1	Citing GTM literature as a reference for other forms of qualitative research, e.g. case study	47	Lockamy (1998)
2	Referring to GTM as a method used by others	15	Lewis and Suchan (2003)
3	Using "Grounded Theory" as a general term referring to a theory that is grounded rather than GTM	19	Coughlan and Coghlan (2002)
4	Using an approach related to GTM, or some ideas from GTM, but not actually GTM in the sense of Glaser and Strauss (1967)	25	Field and Sroufe (2003)
5	Claiming to be an explicit attempt to use GTM in OM research	28	Giunipero *et al*. (2006), Ford *et al*. (2004)

Table 1: Results of literature search on Grounded Theory in OM

Of these 28, no fewer than 12 are co-written by one or more of just four authors (Flint, McAdam, Mentzer, and one of the co-authors of this paper). In addition, not all appear "within" the OM literature: five papers are in Marketing journals, and only 15 appear in Operations & Supply Chain Management journals, as defined for the analysis in Table 2 below. Thus there are few teams of researchers publishing in the OM literature using GTM. It is also significant that, despite these publications and earlier guidance such as that of Ellram (1996) two recent papers (Lee *et al.*, 2007; McAdam *et al.*, 2008) still set out to provide advice on how to "do" GTM in OM, and arguably neither of these is in the most mainstream OM journals.

Secondly, the contribution of empirical research to bridge the gap between theory and practice in OM is dependent on the rigour of its applied methods and techniques (Filippini, 1997). In this context, authors argue that qualitative theory building research in OM often lacks empirical rigour in its practical application (Cousins *et al.,* 2006). This results in the overly

generic use of terms such as 'Grounded Theory' (cf. types 3 and 4 in Table 1). A recent example of this methodological 'slurring' is provided by Kiridena *et al*. (2009) who claim that their study "decided in favour of a combined 'grounded theory – case study' approach" (p. 392) in which they aim to modify and refine an *a priori* developed conceptual framework by means of empirical insights gained from nine selected cases (cf. their Figure 2 on p. 393).

Suddaby (2006) has pointed to confusion surrounding GTM and qualitative theory building in management research generally. Ironically, this also illustrates a typical point of confusion. Suddaby himself uses the phrase "grounded theory" to refer to a research method, called GTM in this paper. As Bryant (2002) has pointed out, grounded theory is strictly the result of a study, whereas GTM is one way of doing it.

Thirdly, in order to become an established scientific discipline there needs to be more discussion on research problems and methods in OM. In the past, OM literature has tended to focus more on content (i.e. what is done) rather than process (i.e. how it is done) (Barnes, 2001) which is supported by the absence of any significant papers on methodology in OM research in leading journals such as IJOPM, POM, or JOM over the past five years..

The authors of this paper aim to help address these deficiencies by providing the reader with an example of using GTM for theory development in OM research. This requires an extensive case where theory building is needed. The next sub-section explains the choice of topic.

1.2 Inter-firm relationships within the Operations Management domain

Several authors (e.g. Pilkington and Fitzgerald, 2006; Slack *et al*., 2004) have recently considered the nature of OM. Common among their findings is the insight that much research in OM derives its impetus from other disciplines (Slack *et al*., 2004) due to a high degree of interaction with other subject areas (Pilkington and Fitzgerald, 2006). Defining the boundaries of OM research is thus difficult. Slack *et* al (2004) explain in detail how the importance of topics in OM research may be different from that in OM teaching and practice. It is intriguing therefore that reviews of OM research often define the boundary of OM on the basis of the topic headings in major OM textbooks (Craighead and Meredith, 2008; Young *et al*, 1996). This works well at a high level: for example, the practice-led concept of Supply Chain

Management (SCM) appears as at least one chapter heading in virtually every OM textbook, and so SCM is clearly part of OM.

However, at the specific topic level, headings are of little use for definitional purposes. SCM, as it is understood today, is a fragmented amalgam rooted in various antecedent theoretical concepts such as production economics, industrial dynamics, transportation and inventory decisions, social theory, marketing and purchasing (Burgess *et al*., 2006; Cooper *et al*., 1997). This leads to differing definitions in both theory and practice (Chen and Paulraj, 2004). Nevertheless, most definitions have a common focus on the coordination of activities and processes between the organisation and its external environment in order to create customer value (Cooper *et al*., 1997). Inter-firm (buyer-supplier) relationships and their governance are an important element of this.

The rest of this paper concerns an empirical research study on the governance of inter-firm supply relationships, conducted in the German automotive industry from October 2003 until January 2007. Its primary focus was on issues of upstream inter-firm (buyer-supplier) relationships. In particular it involved governance aspects such as building (partner selection, evaluation, involvement) and managing (partner integration, coordination, collaboration, communication) collaborative inter-firm relationships in an R&D context. Hence, the study combines increasingly important subject areas within the OM domain as identified by Pilkington and Fitzgerald (2006), such as SCM, strategic sourcing, and product development.

1.3 Research on inter-firm relationships

The relevant literature on inter-firm relationships goes beyond the OM discipline. A list of 40 crucial journals seems to provide the main population or *lebensraum* (Vastag and Montabon, 2002) for research on the topic, and they can be clustered into five different disciplinary groups as shown in Table 2.

Group	# Journals	Journal Examples
Operations & Supply Chain Management	14	International Journal of Operations & Production Management Journal of Operations Management
Technology & Innovation Management	6	Journal of Product Innovation Management Technovation
General & Strategic Management	11	Academy of Management Journal Strategic Management Journal
Marketing Management	4	Industrial Marketing Management Journal of Marketing
Management Science	5	OMEGA – International Journal of Management Science Organization Science

Table 2: Literature base for research on inter-firm relationships

All publications in the period from 2000 until 2007 within each of the 40 journals were evaluated for their relevance to the topic: nearly 600 papers were selected for a detailed reading. A content analysis was then used to identify 160 articles deemed relevant in terms of one or more of four themes in the context of inter-firm relationship governance (adapted from Cousins, 2002; Olsen and Ellram, 1997a):

(i) building and developing inter-firm relationships,

(ii) managing inter-firm relationships,

(iii) performance impacts and benefits of inter-firm relationships

(iv) specific studies of inter-firm relationships in the automotive industry.

These 160 were categorised according to the unit of analysis, the theoretical perspective and the methodology applied, as shown in Table 3.

Unit of analysis		Theoretical perspectives		Applied methodology	
Individual firm[1]	10	Resource based view (RBV)	30	Case study	46
Buyer firm	92	Dynamic capabilities view (DCV)	4	Questionnaire survey	49
Supplier firm	9	Knowledge based view (KBV)	9	Longitudinal study	4
Dyad	39	Competence theory	4	Conceptual	44
Network	10	Transaction cost economics (TCE)	24	Action research	2
		Contingency theory	24	Interview	27
		Relational view	30	Observation	1
		Interaction model	5	Secondary data	11
		Complexity theory	1	Correlation analysis	23
		Strategic sourcing	23	Regression analysis	17
		Supply chain management (SCM)	12	Factor analysis	3
		Organisational learning	7	Structural Equation Modelling	18
		Portfolio modelling	4		
		Resource dependency theory (RDT)	15		
		Not identified	7		
Total	**160**		**199**[2]		**245**[3]

[1] Not specified as buyer or supplier
[2] Multiple entries were possible
[3] Multiple entries were possible

Table 3: Classification of Literature on Inter-Firm Relationship Governance

The review revealed the following gaps in the literature:

Unit of analysis: Only ten papers consider the scenario of network vs. network (or chain vs. chain) rather than firm vs. firm. Although inter-firm relationships are essentially dyadic exchanges, to understand them greater attention must be directed to the context in which these dyadic relationships exist (Gulati, 1998). Hence, if research is to act as a guide to practice, inter-firm relationships have to be studied as situated dyadic buyer-supplier practices in the context of the network as the overall unit of analysis. This is a rather neglected view on inter-firm relationships within the reviewed literature.

Theoretical perspective: As can be seen from Table 3, many studies on inter-firm relationships take an isolated view of single theoretical concepts and neglect the necessity for using a multi-perspective approach widely postulated in the literature. For example, De Toni and Tonchia (2003) argue that traditional 'outside-in' and 'inside-out' views of the firm need to be integrated, complemented and balanced. However, a simple conceptual framework addressing this in the context of inter-firm relationship governance is currently absent from the literature (Narasimhan and Nair, 2005).

Methodology: Although the majority of the studies reviewed can be allocated to the empirical rather than theoretical research domain based on case studies or questionnaire surveys (cf. Table 3), much knowledge on the nature of inter-firm relationships either remains unexplored or is not supported by reliable empirical evidence (Goffin *et al*., 2006). This can be explained by the lack of qualitative theory building research on the topic (Handfield and Melnyk, 1998) and hence the necessity for more exploratory research that proposes models and frameworks that can be further tested and modified (Burgess *et al*., 2006; Olsen and Ellram, 1997a).

Taken together, only five of the "network" papers consider empirical evidence, and none of these develops theory using a multi-perspective approach. For example, adopting a knowledge based view as core theoretical viewpoint within the in-depth case study of Toyota, Dyer and Nobeoka (2000) find that a network with its greater diversity in knowledge is more effective than the firm at the generation, transfer and recombination of knowledge. Bititci *et al*. (2003) similarly focus on one single case study to demonstrate the validity of their developed collaborative architecture for extended enterprises. Using competence theory as main building block they argue for the necessity of a meta-level management process for this architecture in

order to create and sustain competitive advantage for collaborative systems. Like the study in this paper, Noori and Lee (2004) investigate product development processes within networks of organisations from a social network point of view. However, rather than developing a concise framework they produce guidelines on how to manage product development processes in what they call networked enterprises based on empirical insights gained from six cases. Vonderembse *et al*. (2006) apply case study research to develop a framework for categorising and selecting different supply chain types according to certain product characteristics and the stages of the product life cycle. Finally, Johnsen *et al*. (2000) use findings from two extensive case studies to identify nine important networking activities related to the process of establishing and operating supply networks. Drawing on the relational view they argue that these activities are mutually supportive in that they are concerned with the tying of resources and bonding of actors.

This gap in the literature led to the overall aim of the research study to develop a framework and practical guidelines on how to govern, i.e. design and manage, inter-firm relationships in a sustainable way to create a competitive advantage for the whole relationship and its individual members.

In trying to achieve this general purpose, four specific research objectives were identified:

- Explore the current practice of R&D collaboration within inter-firm relationships in the German automotive industry
- Determine strategic factors and contingencies that influence the creation and management of inter-firm R&D relationships and the development and management of the related inter-organisational governance structure
- Determine operative practices and tools that influence R&D transactions and collaborative activities within inter-firm relationships
- Develop guidelines for achieving sustainable competitive success of inter-firm R&D relationships

The remainder of this paper is structured as follows: The next section comprises a brief review of the characteristics of GTM. This is followed by the detailed description of why and how GTM was applied by the authors in their empirical study to derive a novel conceptual framework. Lessons learned about GTM in OM from this study and the other "type 5" papers

are then combined to help give guidance and practical insights on conducting GTM research in OM. Finally, the main aspects of this paper are summarised.

2. Grounded Theory Method

Grounded Theory Method (GTM) offers a "compromise between extreme empiricism and complete relativism" (p. 634) by articulating a middle ground in which systematic data collection is used to develop theories that address the interpretive realities of actors in social settings (Suddaby, 2006).

It is particularly appropriate when

(i) research and theory are at their early, formative stage and not enough is known on the phenomenon to state hypotheses prior to the investigation;

(ii) the major research interest lies in the identification and categorisation of elements and the exploration of their connections within social settings (Auerbach and Silverstein, 2003).

GTM research uses the basic principles of (1) questioning rather than measuring and (2) generating hypotheses using coding techniques (Auerbach and Silverstein, 2003). It enables the researcher to 'ground' the hypotheses in the empirical data: "Most hypotheses and concepts not only come from the data, but are systematically worked out in relation to the data during the course of the research" (Glaser and Strauss, 1967; p. 6). Hence, this method is an 'envelope' with the unique ability to cultivate fruitful insights from a great variety of sources and evidence - documents, archival records, artefacts, interviews, transcripts of meetings, questionnaire answers, field observations, etc. – which enables the researcher to group the holistic and meaningful characteristics of reality and therefore understand complex social phenomena (Glaser, 1978).

GTM achieves this by an iterative, process-orientated, analytic procedure using the two key operations: *constant comparison* and *theoretical sampling*. These operations are essential to develop dense, tightly woven and integrated theories and are the major difference between the grounded style and other qualitative research strategies such as case study research (Strauss, 1987). The process normally begins with the definition of a research problem, proceeds to the collection of the relevant data and continues onto a tentative explanation of that problem via

forming provisional categories and abstractions of the data (involving constant comparison). This comparison challenges the properties of the initial concepts and categories and the researcher needs to go back to redefinition of the propositions and/or to further data collection and analysis (theoretical sampling). The researcher moves back and forth between data collection, coding and interpretation in an iterative manner (analytic induction) until theoretical saturation is achieved (newly analysed data do not prompt further changes to the concepts) which leads to a tightly woven theory that emerges from and is 'grounded' in the data: "They should blur and intertwine continually, from the beginning of an investigation to its end" (Glaser and Strauss, 1967; p. 43).

In the following section the authors give an empirical example of how GTM was applied to a research study on the governance of inter-firm supply relationships in the German automotive industry that resulted in the development of a novel framework grounded in the empirical data.

3. A case study example of GTM in OM research

Building on sections 1.3 and 2, this section further discusses the suitability of GTM for this study, using some of the "type 5" papers in Table 1 above. This considers issues arising at the research design stage.

A research strategy should stem from the nature of the research problem (Manuj and Mentzer, 2008). In terms of using GTM this means clearly stating the philosophical assumptions (i.e. ontological and epistemological underpinnings) and the methodological point of departure of the research.

Taking the latter point first, section 1.3 has shown that there was a lack of testable propositions to engage in statistical hypothesis testing. Similarly, Fleury and Fleury (2007) chose GTM because "there was no theory to be tested".

For the former, the research paradigm is that of 'constructive realism' (Delanty and Strydom, 2003): although inter-firm relationships are a socially constructed phenomenon, they are still part of the objective reality of business activities in which certain common rules and pressures apply to all participants. Therefore, the investigated processes need to be embedded in their

wider context of action and reaction in order to capture the perspectives of the "entities" involved. This can be seen as middle ground between an objective and subjective world view, such that behind the context-bound constructions of social actions there exist objective parts of the social reality.

Hence, investigating and analysing the governance aspects of inter-firm relationships required attention to details of contextually rich data and the understanding of subjective experience of employees in the German automotive industry which could not be reflected in quantitative hypothesis-testing research in a positivistic paradigm (Auerbach and Silverstein, 2003). GTM is a discovery orientated approach which allows for a contextual analysis of empirical data and facilitates theory construction from it. The choice of GTM, given the nature of this study, is supported by scholars such as Ellram (1996). Yin (2003) and Benbasat *et al*. (1987) refer to some basic conditions that particularly determine the selection of an appropriate method:

(1) the types of research questions,
(2) the extent of control or manipulation of subjects and events, and
(3) the degree of focus on contemporary in contrast to historical events.

This study mainly asks 'why' and 'how' questions (cf. Ellram, 1996; p. 98), e.g. how car managers can design and manage inter-firm relationships in a sustainable way in an R&D context or why suppliers need to be integrated earlier in the product development process of car manufacturers, and focuses on current collaboration tendencies in automotive businesses over which the researcher has no control. This favours GTM because of its ability to provide depth and richness for constructing knowledge and building theories of contemporary and little known phenomena.

GTM lends itself well to investigating processes, as was the case for Mello *et al.'s* (2008) research on logistics outsourcing strategies. Hence, GTM is suitable for identifying patterns in relationships between actors and their environment (Suddaby, 2006) by "letting the practitioners speak" in order to draw upon rich and deep data as Leonard and McAdam (2001) did in their research on TQM. Similarly, Flint and Mentzer (2000) in investigating logisticians as marketers explained they used GTM to examine "situations in which a core phenomenon challenges people (i.e. makes life difficult)".

Although most GTM researchers emphasise working from a minimal theoretical basis (e.g. Johnston *et al*., 2002), applying GTM correctly does not require entering the research without

any prior knowledge and experience as long as the researcher is aware of this fact (Suddaby, 2006). Following this advice, Manuj and Mentzer (2008) wrote down their understanding of existing theory beforehand for reference as a way of consciously reflecting on it and trying to avoid imposing it directly on the data. The authors of the study here reviewed the relevant literature only to the extent that it enabled them to identify current gaps (see section 1.3). Similarly, Johnston *et al*. (2002) used previous work to identify the need for their research as well as potential interviewees for their study on the involvement of management accountants in operational process change.

The research process was structured in four main phases: research design, data collection, data analysis, and data validation. Note that data collection and analysis were not conducted sequentially but iteratively until theoretical saturation was achieved.

The remainder of this section will be structured around these four phases.

3.1 Research Design

Following the choice of GTM, there remained the selection of appropriate data collection techniques. Jick (1979) refers to the term triangulation to describe the use of different techniques for data collection and analysis to study the same phenomenon from different perspectives. This study used a triangulated research design to balance qualitative and quantitative data collection techniques, such as semi-structured interviews, focus groups and self-administered questionnaires. Giunipero *et al*. (2006) and Soliman *et al*. (2001) also use a focus group of purchasing managers and a panel of experts during their respective GTM studies. Stefansson and Russell (2008) also stress the need for triangulation.

The theoretical sampling that is central to GTM requires research participants who are experts on the phenomenon under investigation. This study involved managers within car manufacturers and their suppliers who have strategic insights and responsibilities in inter-firm R&D collaboration because informant competency is likely to be higher for informants whose roles are closely associated with the investigated topic (Kumar *et al*., 1993).

The procedure of theoretical sampling was followed throughout the iterative steps in data collection in order to determine a certain level of saturation (‘overlapping data analysis’; Eisenhardt, 1989), i.e. later interviews became informed by analytic questions and hypotheses

about data relationships drawn from previous interviews (Strauss, 1987). The researchers kept recruiting and interviewing research participants until no new data produced that added new insights to theory construction or no new information was learned about the research topic.

Due to limited access to research sites and participants the authors followed the recommendations of researchers such as Eisenhardt (1989) to choose cases such as extreme situations or 'polar types' in which the topic of interest was expected to be observable. Therefore, companies that reflect different roles, and hence participate differently within inter-firm relationships, were chosen as research sites. This included: car manufacturers (4), tier 1 and 2 systems suppliers (5), tier 1 and 2 module suppliers (4), parts or components suppliers (1), and engineering service providers (2).

The final step in this phase dealt with the design of an interview guide, aligning with the ideal of bias free research and working from a minimal theoretical basis. Since the interviews were exploratory in nature, the guide did not pose a set of structured questions but rather a semi-structured collection of topics to be discussed with the aim of obtaining 'narratives' rather than 'answers'. The guide (see Appendix A for detail) covered (i) the company's industrial and competitive environment, (ii) the company's value system and competence context, and (iii) the basic collaboration issues between car manufacturers and suppliers in their inter-firm relationships. In order to avoid being deterministic in this inductive research, specific academic parlance was deliberately avoided in the interview guide and during the interviews. The guide was pre-tested on a sample of managers in July/August 2004, and amended before being employed.

3.2 Data collection

A series of semi-structured interviews with managers covering functions such as R&D, Logistics, Purchasing, Marketing/Sales, and Quality Assurance across 16 companies (see above) was conducted. Theoretical saturation was reached after 31 interviews.

Face-to-face interviews took place between December 2004 and March 2005, lasting between 1 and 2.5 hours. All participants approved audio taping and transcription, which produced a total of 45 hours and over 300 pages of transcript. These transcripts were validated and confirmed by the interviewees.

3.3 Data analysis

The researchers iteratively moved back and forth between data collection and interpretation (analytic induction) during the interview phase from December 2004 until March 2005. The final coding and analysis procedure (including transcribing the interviews) took place between April and November 2005.

Because it is difficult to identify patterns within the data intuitively, GTM uses theoretical coding as its structured coding paradigm to facilitate the development of conceptual complexity and density in the resulting theories (Glaser and Strauss, 1967). Strauss and Corbin (1998) proposed a hierarchical structure of coding levels to ensure conceptual density involving *open*, *axial* and *selective coding*. The central idea of using this coding paradigm is to draw a connection between the raw text and the research objectives in a structured step by step manner.

The empirical process stages applied during the analysis phase of this study were:

Stage 1: Development of key template categories based on research objectives

Stage 2: Codification and analysis of interviews using QSR NVivo 2.0™ software (open coding)

Stage 3: Clustering of codes into coherent categories (open coding)

Stage 4: Development of Coding Master Table (axial and selective coding)

Stage 5: Formation of theoretical narratives and tentative propositions

The coding procedure was not a linear approach from Stage 1 to Stage 5 but involved iterations within and between these stages as the researchers became more familiar with the data (constant comparison).

Stage 1

In order to facilitate the open coding process, the authors developed four basic and abstract *a priori* themes, an idea borrowed from the approach of thematic coding or template analysis (King, 1998). This provided guidance during the coding but allowed enough flexibility to produce insightful interpretations of the text (King, 1998).

(i)	Relationship Status Quo:	Current practices associated with collaboration in inter-firm R&D relationships in the automotive industry
(ii)	Relationship Design:	Creation of inter-firm R&D relationships and their governance structure
(iii)	Relationship Management:	Management of inter-firm R&D relationships and their collaborative activities
(iv)	Relationship Success:	Competitive success of inter-firm R&D relationships

Instead of developing a full model in the form of a tightly defined, predetermined list of *a priori* constructed codes (as in template analysis), the approach was used more flexibly in this study and hence limited to the four themes identified above in order not to contradict with the inductive, theoretical and *in vivo* coding philosophy of GTM (Glaser and Strauss, 1967; Strauss and Corbin, 1998). Hence, this research study remained within the domain of inductive grounded reasoning.

Stage 2

Open coding is the process in which data are initially conceptualised in a bottom up manner (Auerbach and Silverstein, 2003). The coding was done using QSR NVivo 2.0^{TM} in order to help the researchers to become sensitised to their data in an effective way. As far as was practicable, the interviews were coded only within the remit of the description within them (guided by the *a priori* template categories developed in Stage 1 above), without conscious and explicit reference to specific bodies of literature but with reliance on the subjective experience and the knowledge of the researchers. Each identified code was briefly described reflecting the idea it was expressing which helped in allocating text passages with the same ideas to the respective codes; thereby speeding up the coding process. However, the code titles and descriptions changed several times during the progression of the coding as new and more evocative quotes were encountered through constant comparison. At the beginning of this data coding and analysis process, relationships between the codes were not yet clear, leading to a composite list of 237 provisional codes for the entire sample of interviews.

In order to increase reliability of the interview coding and analysis (Bauer, 2000) two measures were taken.

First, because transcripts were produced in German whereas the coding was conducted in English, the examples taken from the interview transcripts that were used to represent the codes were back-translated from English into German by a bilingual peer. The results were compared, leading to minor changes in the translation until mutually agreed. This procedure was also used for the questionnaire (see below).

Second, the 237 provisional codes were evaluated by one bilingual industrial expert from the German automotive industry who was not involved in the interviews. This 'second coder' was asked to compare the given code examples (English) and further text passages from the interview transcripts (German) with the developed code and code description for their unity. The second coder was informed not to consult any other source of information apart from his practical expertise. Where necessary, codes were refined or added in order to produce an agreed coding between the two coders. Thus, 11 new codes emerged, 15 codes were slightly renamed to better reflect the meaning of the data, and 2x2 codes were merged because of being interdependent.

Although not having calculated an explicit inter-rater score, the authors argue that this approach was sufficient for the purpose of this research, keeping in mind the need to deal with German-English translation and that this study contains a second empirical stage consisting of further validation of the coding (in the form of a set of derived propositions from the interviews) in a questionnaire survey (see 3.4).

Stage 3

The next stage involved clustering groups of codes that share the same meaning into more abstract categories. This is accompanied by a reduction process, i.e. uniformity in the coded data is achieved that enables the formulation of theory with a smaller set of higher level categories (Glaser, 1994). According to Glaser and Strauss (1967) this reduction combined with a consequent generalisation leads to the minimisation of codes and categories (parsimony) and the applicability of the developed theory to a wide range of situations (scope), two major requirements of substantive theory development.

During the comparison of codes across all interviews (cross-case analysis) the relationships between the codes became clearer and the authors started to group codes with similar meaning into categories and sub-categories. Similarly, groups of categories were organised into larger and even more abstract provisional core categories. This process led to a refined list of 158 codes making up 6 provisional core categories, 13 analytical categories and 19 subcategories. A conceptual overview of initially identified relationships between the 6 provisional core categories and their 13 categories is shown in Figure 1.

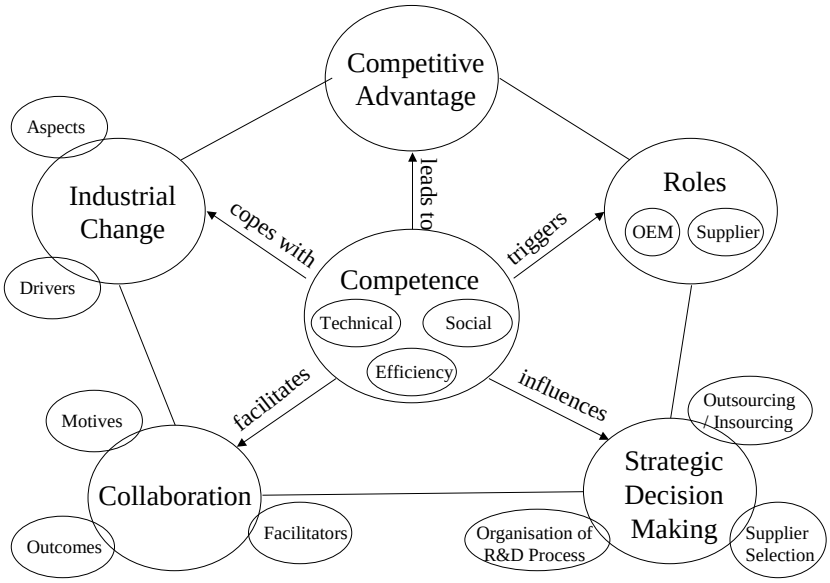

Figure 1: Basic conceptual overview of initial category relationships

Stage 4

In axial coding, relationships between the developed categories are identified and data explaining their interrelation is extracted which then enables the refinement of any category that needs further development. It revolves around the 'axis' of one category at a time (Strauss, 1987). Selective coding involves a systematic approach towards the development of core categories which explain all other categories and hence the data. The core categories are the basis for generalised theory via narratives and theoretical propositions and guide further theoretical sampling and data collection to reach theoretical saturation.

The authors developed a detailed Coding Master Table including all categories, sub-categories and codes with a suitable title, description/definition, and illustrative example of representative text to be consistent with the principles of coherence and transparency to ensure the quality of the coding (Bauer, 2000). Providing examples of coded text enables the researcher to support his/her interpretation with data so that other researchers can understand

the way of analysing it. In this context Auerbach and Silverstein (2003) argue that "if your interpretation is supported by the data, then it is valid, even if there are other ways to interpret the same data" (p. 32). An alternative approach to use in axial coding is Strauss and Corbin's (1998) coding procedure using 'logic diagrams'.

This approach helped in identifying and developing core categories based on criteria identified by Glaser and Strauss (1967), such as centrality, frequency, relation, implications and variation. Considering these guidelines, five core categories (out of the initial six provisional ones) emerged in this study, influenced by the *a priori* template categories derived from the basic research objectives in Stage 1 above. The result is shown in Table 4.

Template category (*a priori*)	**Objective**	**Core category (*in vivo*)**	**Definition/Description**
Relationship Status Quo	Current practices associated with collaboration in inter-firm R&D relationships in the automotive industry	Industrial Impact	Factors that describe the role of the industrial environment and its influence on practices in the context of inter-firm R&D collaboration in the German automotive industry. Includes: Change Drivers, Change Aspects, and Coping Methods
Relationship Design	Creation of inter-firm R&D relationships and their governance structure	Collaborator Portfolio	Factors that are concerned with the design and development of an appropriate portfolio of collaborating companies in the context of inter-firm R&D collaboration in the German automotive industry. Includes: Collaborator Sourcing, Relationship Criteria, Strategic Collaborator Roles, and Relationship Interfaces
Relationship Management	Management of inter-firm R&D relationships and their collaborative activities	Collaboration	Factors that are concerned with the execution and management of collaborative activities between parties within the collaborator portfolio (enterprise portfolio) in the context of inter-firm R&D collaboration in the German automotive industry. Includes: Facilitators, Elements, Operative Collaborator Activities, and Outcomes
Relationship contingency	Category not identified *a priori* (cf. Stage 1)	Competence	A competence can be considered as a bundle of skills and technologies that must be competitively unique. Includes: Influencers, Features, Attributes, and Developers.
Relationship Success	Competitive success of inter-firm R&D relationship	Holistic Competitive Advantage	Factors that consider the development of competitive advantage and business success for the overall collaborator portfolio in the context of inter-firm R&D collaboration in the German automotive industry

Table 4: Core categories of this research study

At this point it was necessary to engage in re-coding and thereby re-arranging codes, categories and sub-categories in the Coding Master Table, gradually densifying the theory by

beginning to think about a general theoretical framework for the governance of inter-firm relationships.

In the first step of re-coding, the coding scheme was discussed with several colleagues, and one practitioner from the automotive industry who was not involved in the research project leading to minor re-organisations of the codes and clarifications of the individual code descriptions/definitions. In a second step, the codes of the Coding Master Table were deductively applied to the interview text (similar to theoretical coding or template analysis) in order to identify any redundancies or lacks in the coding from the raw text. This led to a subsequent refinement of the Coding Master Table. A generic overview of the final relationships of the categories is presented in Figure 2.

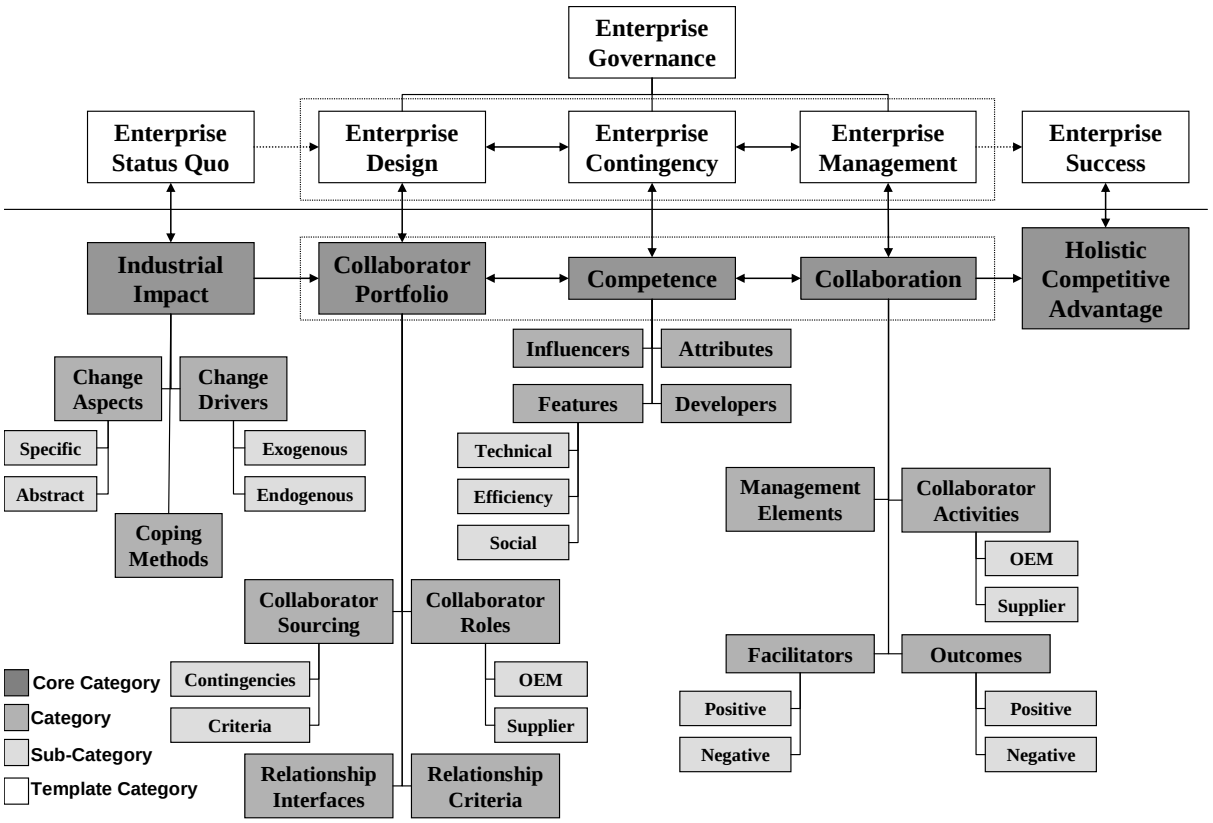

Figure 2: Generic coding diagram (Binder and Clegg, 2007)

Once the re-coding was completed and all codes, sub-categories, categories and core categories were identified, defined and provided with a text example, a frequency count was conducted to indicate how often each code occurred in the overall data set. This does not contradict general GTM philosophy as positivistic techniques such as content analysis or word count can be used in a complementary sense (Suddaby, 2006). The results are included in the Coding Master Table in a separate column stating the interview in which the code was

observed and the number of passages it occurred in. The sum of all those passages led to an overall frequency figure provided in the lower right corner of the cell stating the code title. The final design of the Coding Master Table is shown in Table 5.

Abstraction Level	Category/Code	Definition/Description	Example [#interview: paragraph]	Coding
Core Category	Collaborator Portfolio	Factors that are concerned with the design and development of an appropriate portfolio of collaborating companies in the context of inter-firm R&D collaboration in the German automotive industry. Includes: Collaborator Sourcing, Relationship Criteria, Strategic Collaborator Roles, and Relationship Interfaces	N/A[4]	Referenced interview (number of passages therein), e.g. 2(3), 15(1)
Category	Collaborator Sourcing	Factors that consider the selection and evaluation of potential collaborators for an appropriate portfolio. Includes: Sourcing Contingencies and Sourcing Criteria	N/A	N/A
Sub-category	Sourcing Contingencies	Factors that influence the selection and evaluation process leading to different degrees of relationships between the collaborators (buyer and supplier) in a portfolio	N/A	N/A
Code Frequency	Product & process attributes 90	Aspects that consider product and process attributes, such as volume, degree of innovation, or complexity, that influence the buyer's emphasis on the various sourcing criteria	The simpler the part or component the more emphasis is put on the price [#15:111]	1(6), 2(2), 3(2), 4(1), 5(2), 6(1), 7(1), 8(3), 9(3), 10(3), 11(1), 12(1), 13(3), 14(10), 15(7), 16(3), 17(2), 18(6), 19(8), 20(1), 21(1), 22(2), 24(7), 25(5), 26(6), 27(3)

Table 5: Final design of Coding Master Table

Stage 5

The final stage of the data coding and analysis phase involved the transformation of core categories into a theoretical narrative leading to the generation of a set of tentative propositions (tentative in the sense that further validation is needed). A theoretical narrative explicates the story of a core category in relation to the research problem using the subjective perspective of the research participant rather than academic parlance. These narratives thereby

[4] Text examples and frequency counts from the interview can only be given for bottom level codes that were conceptualised from the empirical data not for abstracted categories. See "Product & process attributes" for an example of a code of this core category.

help to lift the data onto a conceptual level by abstracting subjective experiences into theoretical statements (Suddaby, 2006).

At this stage the frequency count conducted above proved useful as a guide towards evaluating the importance of the numerous codes. Although none of the codes were omitted from the narratives purely because of a low frequency number, the propositions were mainly formed on the basis of codes with higher frequencies due to their greater importance for the topic. This led to the generation of a set of 35 tentative propositions that summarise the most important aspects of the theoretical narratives.

The discussion of these empirical findings in the form of propositions in the context of conflicting and supportive literature drawn from the 160 papers classified in Table 3 above revealed the following specific gaps:

- No model in supply management is particularly based on the value proposition of the potential partners made to the overall supply network (not the individual company) that is determined by the distinct features and attributes of the partners' competencies, such as unique sales points (e.g. innovation, R&D know-how etc.) as well as interface capabilities that enable linking with partners via cross-company projects (e.g. project management etc.). This, however, was found to be a – if not the most - critical contingency aspect for the selection of an appropriate relationship governance strategy and structure between buyer and supplier in inter-firm R&D collaboration (7 propositions are relevant here).
- No approach accounts for the fact that an infrastructural link between product, process and governance structure needs to be established that enables the integration of the partners' competencies via autonomous cross-functional units instead of functional departments and business units. An aspect that seems particularly important at the early stages of R&D collaboration to ensure effective operational transactions (6 propositions relevant).
- No portfolio model includes a differentiated relationship management approach in terms of roles (including clear set boundaries and responsibilities of the partners) and activities (e.g. interface management) considering the multiplicity of dynamic relationships and projects to be governed within a supply network (6 propositions relevant).

- No existing model or framework explicitly shows the impact of good collaboration practice on the performance of the supply network and the individual partners, especially in terms of the general competitive priorities for R&D projects in the automotive industry: time, quality, and cost (4 propositions relevant).

3.4 Data validation

The evaluation of the propositions through a survey provided feedback on the quality and adequacy of the data coding and analysis which enabled further conceptual development and inductive theory building (Glaser, 1978).

The validation phase was based on a self-completed questionnaire comprising a sample of 110 industrial experts covering similar functions to the interviewees, such as R&D, Purchasing, Logistics, Marketing/Sales, Quality Assurance, Strategy Development, and Production across 52 different companies (OEMs and suppliers).

The respondents ranked their perceptions on two dimensions 'Agreement' and 'Importance' using 5-point Likert scales as follows:

- A*greement* (strongly agree =2, agree =1, neutral = 0, disagree = -1, strongly disagree = -2);
- *Importance* (very high = 5, high = 4, medium = 3, low = 2, very low = 1).

Quantitative analysis of the data was performed using SPSS for Windows 13.0^{TM}. The results showed an *Importance* rating above the "medium" score (3) for every proposition. This reflected the merit of the discussion to decision makers in the German automotive industry and enabled an informed inductive theory building process.

Considering the theory building nature of this research the authors deliberately did not engage in any more advanced form of statistical analysis, e.g. exploratory factor analysis, because a) the induction of relationships between the propositions can only be done based on the understanding of the content and context of the core categories and b) it was sufficient that a proposition had an importance rating above medium and hence was subject of an analytical

interest. Therefore, the validation of these propositions must not be confused with quantitative hypothesis testing; the purpose of GTM is only to code and describe data enough to be able to generate and *suggest* theory not to prove it statistically (Glaser, 1994). Validation simply helps make the theory less tentative.

A detailed confrontation of the validated propositions with extant literature revealed shortcomings of research in inter-firm relationship governance because often only small parts of existing concepts and their theoretical perspectives could be used to explain the empirical observations made (see above).

Hence, a framework that links the main elements of inter-firm relationship governance, i.e. building relationships, managing relationships and the sustainable success of these relationships, in a comprehensive but simple manner was necessary to assist practitioners involved in inter-firm collaboration. Based on the insights gained from the empirical fieldwork, a novel conceptual contingency framework termed *Collaborative Enterprise Governance* was developed to facilitate managers in the automotive industry in their strategic decision making. By iteratively confronting the study's analytical generalisations in the form of the developed concept of Collaborative Enterprise Governance with the empirical insights in the form of the validated propositions, internal validity was established.

A summary of how to apply the conceptual elements of the framework is given in Figure 3 (also see Binder and Clegg, 2007). This is similar to the main four steps of managing supplier relationships in commonly used portfolio models (e.g. Olsen and Ellram, 1997b):
(i) classify components or activities/analyse business environment,
(ii) classify supply base/analyse relationship criteria,
(iii) determine appropriate relationship strategy, and
(iv) develop action plans/managerial decision of relationship strategy.

However, special attention is paid to the issues of building and managing inter-firm R&D relationships (termed *collaborative enterprise*) in alignment with the structure-conduct-performance paradigm in the sense that performance of the R&D project and the related inter-firm relationship depend on the adoption of appropriate sourcing and relationship strategies and structures according to the R&D project requirements (*Collaborative Enterprise Governance*).

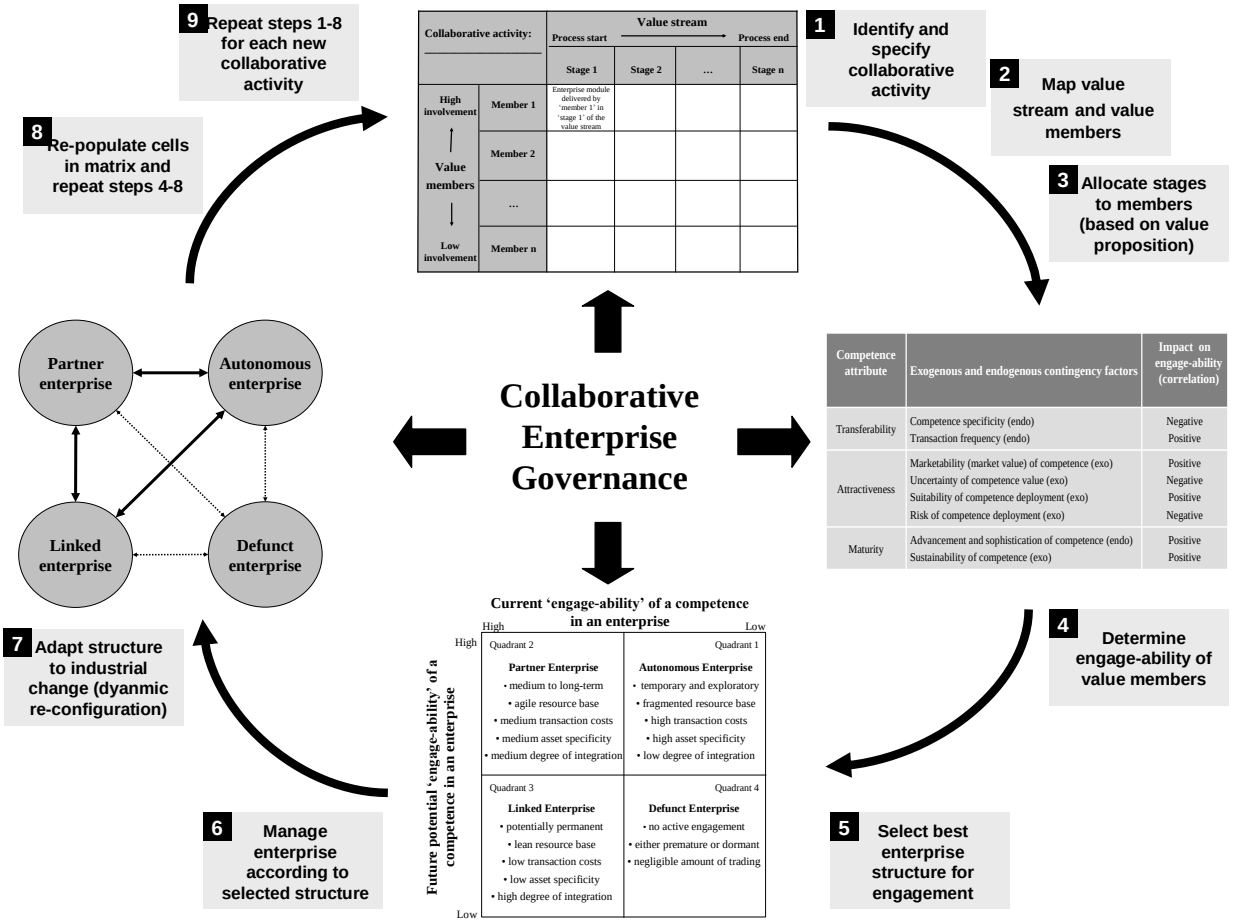

Figure 3: A step-by-step approach of applying the concept of Collaborative Enterprise Governance (adapted from Binder and Clegg, 2007)

The identification of the usability and practicality of the developed concept was then pursued by conducting a focus group with five experts from the German automotive industry (OEMs and suppliers). The discussion lasted for three hours and was recorded, resulting in 20 pages of transcript that were validated and approved by all participants. The transcript was analysed using QSR NVivo 2.0^{TM}.

The exercise revealed that, in the opinion of automotive decision makers, the use of *Collaborative Enterprise Governance* can potentially lead to the realisation of sustainable competitive success in terms of faster development time, higher quality, and lower development cost in R&D projects. Nevertheless, current practice in the German automotive industry does not reflect the idea of *Collaborative Enterprise Governance* and hence faces major challenges on its way to partnership-focused collaborative relationships. Various recommendations were developed in collaboration with the focus group participants to help

OEMs and suppliers in implementing a *Collaborative Enterprise Governance* philosophy (cf. Binder *et al*., 2008).

4. How GTM was applied for theory building in this OM research study

Key aspects of the approach applied in this study will be discussed in the context of existing literature. Suddaby (2006) pointed out in the context of using a combination of techniques in GTM, the researcher needs to avoid too narrow an application of quantitative techniques, such as frequency counts or content analysis, in a positivistic sense. Hence, in this study the authors used frequency counts of codes only to facilitate the qualitative reasoning that resulted in the development of tentative propositions via theoretical narratives. Moreover, the questionnaire survey technique was applied to validate these tentative propositions empirically through industrial experts to avoid the subjective bias of the authors guiding theory development too much. Alternatively, Soliman *et al*. (2001) argued that by using a panel of experts for both data collection and interpretation any subjective bias built into the theory therefore comes from the panel members not from the researchers.

Nevertheless, it is important to remember that GTM is not about presenting the subjective experience of experts *per se* but about abstracting it into theoretical statements in the form of a set of tentative propositions. In GTM this conceptual abstraction is achieved through constant comparison, i.e. the constant iteration between data collection and analysis until the stage of theoretical saturation is achieved. During this study the authors went through iterative steps in data collection and analysis: later interviews became informed by analytic questions and hypotheses about data relationships drawn from previous interviews. This was repeated until a sufficient level of saturation was reached, i.e. insights gained through the last interview were observed to be minimal and hence any additional interview would not enrich the data any further. Similarly, Flint *et al*. (2005) explain how the early theory emerging from their first data analysis was used to modify the interview guide for later interviews. Ford *et al*. (2004) went through the same process by making theoretical comparisons until the marginal findings of additional comparisons were judged insignificant. Fleury and Fleury (2007) state that the data were coded both during and after the fieldwork. This involves the need to go over each interview transcript many times (Flint *et al*., 2005).

As the grounded theory begins to take shape during the analysis process, Stefansson and Russell (2008) explain how existing theories are almost unavoidably brought in by the researcher. This is because the researcher is and needs to be an active element of the creative research process in GTM (Suddaby, 2006). However, a critical reflection on subjective interpretations of the data is necessary. For this study this issue was addressed in three ways. First, the tentative propositions as a result of the coding procedure were validated by industrial experts using a survey. Second, transcripts and memos reflecting on the authors' personal experience and knowledge of inter-firm relationships were used to be aware of the impact on the coding process. Third, peer academics and industrial experts were asked to review the coding done by the authors in order to verify the quality of the coding which led to the refinement of various data codes. Similarly, Hausman and Haytko (2003) stress the importance of triangulation across researchers in their study, e.g. by different researchers conducting different interviews and using reviewers to look at developed codes and categories to assess their plausibility.

Despite everything mentioned so far it has to be kept in mind that the core of GTM is a pragmatic approach to facilitate researchers in analysing and interpreting complex social phenomena (Suddaby, 2006). This implies that too rigid an application of GTM lacks the creative insight on which exploratory research is based. In order to be adaptive to the tacit elements of the data and leave enough room for creative insights while at the same time still applying a structured approach, the authors of this study produced a Coding Master Table as an adequate 'miniframe' of each core category rather than strictly adhering to Strauss and Corbin's (1998) coding paradigm using logic diagrams. Similarly, Giunipero *et al*. (2006) show no sign of engaging in axial coding in their research on key skill sets for supply managers in the future. Also emphasising the need to work in a systematic fashion, Ford *et al*. (2004) use 'memoing' to help find meaning in the data and create the higher-level theoretical categories, concepts, and relationships.

Although applying GTM is an iterative process, Suddaby (2006) advises that it still should be presented sequentially in order to adhere to the general (rather positivistic) norm of journal presentation. All but one of the "type 5" papers adhere to this conventional structure of providing a literature review before describing the specific study, the exception being Manuj and Mentzer (2008), who describe the methodology of their GTM study before reviewing the literature. Sequential presentation has been followed in this paper, with a detailed description

of the research process in four phases: design, data collection, data analysis, and data validation, including examples and illustrations, e.g. Coding Diagram and Coding Master Table. Alternatively, Flint and Mentzer (2000) included example passages of narrative to demonstrate how the theory emerged from their data, but commented that "Although literally hundreds of passages could be presented, only a few are included here to demonstrate the logic behind some of the analyses".

The above discussion is summarised in Table 6 to help researchers in making a more informed decision on using GTM in OM research showing how it was applied in this study.

Key phase in GTM	Key activities applied
Research design	• Clearly state the philosophical assumptions (i.e. ontological and epistemological underpinnings) and the point of departure of the research • Use GTM for qualitative theory building purposes when there is no distinct theory to be tested deductively (let the research problem determine the right research strategy) • Critically reflect on existing literature to guide research and theory development • Specify relevant existing literature and your understanding of it beforehand and be aware of how it might impact on the research (reflection) • Develop a structured and systematic approach (e.g. interview guide, research questions and objectives etc.) to avoid being overwhelmed by the data
Data collection	• Use triangulation across data sources to balance quantitative and qualitative research techniques (e.g. interviews, focus groups, questionnaire survey etc.) • Use triangulation across researchers, e.g. conducting different interviews by different researchers, to increase trustworthiness of the data • Collect data until no new insights are gained through any further data collection (theoretical saturation) • Constantly iterate between data collection and analysis to modify future data collection based on initial findings and conceptualisations from previous data collection (constant comparison) • Play an active role in the research process by e.g. engaging in interviews
Data analysis	• Become involved with the data but reflect on your personal experience and knowledge and how these impact on the analysis of the data and the interpretation of findings • Optionally use software (e.g. NUDIST, NVivo etc.) to facilitate analysis work (mainly structuring data and speeding up coding process) • Use quantitative elements such as frequency counts, content analysis or questionnaire survey only to support qualitative reasoning (avoid methodological slurring) • Use theoretical narratives (i.e. a story of the codes and their relationships) to lift the data onto a conceptual level, e.g. by forming hypotheses • Develop memos that reflect on the researcher's experience and knowledge about the investigated phenomenon to become explicitly aware of the influence on the coding process • Stay adaptive to the tacit elements of the data by avoiding over-detailed coding approaches without adding any interpretation • Be pragmatic and chose an approach that facilitates the analysis and interpretation of the complex data at hand

Data validation	• Use peers to verify the quality of the coding (inter-coder reliability); adjust codes and categories accordingly (if necessary) • Use objective validation mechanisms to critically reflect critically on data analysis and interpretation, e.g. focus groups, surveys etc.
Data presentation	• Present research sequentially in order to adhere to norms of publishing even if actual research was conducted iteratively by generating and analysing data simultaneously • Explain research process (particularly data collection and analysis) in sufficient detail and underpin this with examples and illustrations

Table 6: Aspects of the use of GTM in this study

5. Summary

A fundamental tension in analysing qualitative data is between being open enough to the data and imposing some structure on the analytical process. Grounded Theory Method (GTM) manages this trade-off, being a practical and structured approach towards qualitative research in order to form substantive theories and theory extensions that are grounded in the data. This paper has given a detailed view on how GTM can be successfully applied for theory building in OM research. The point of departure for this paper is the fact that the term GT or GTM is often used in an overly generic and simplistic sense in current literature thereby providing insufficient guidance and detailed examples on how to conduct qualitative theory building research.

Suddaby (2006) identified a set of common misconceptions with regard to what constitutes GTM and what does not, which applied across the management research literature as a whole. On the basis of an extensive literature review on the use of "grounded theory" and GTM in OM research, it is clear that the OM literature suffers from similar problems. However, drawing on the 20% or fewer good exemplars in the literature, and using GTM in a research study on inter-firm relationship governance in the German automotive industry, the authors provide a thoroughly applied example on using GTM in qualitative theory building research in OM for other researchers.

The core of the developed *Collaborative Enterprise Governance* concept is a competence based contingency framework that helps decision makers in selecting the most appropriate governance strategy (i.e. sourcing strategy) for an inter-firm R&D relationship between a buyer and its supplier (Binder and Clegg, 2007). Thereby, the concept conceptualises an inter-firm relationship as composed of autonomous cross-functional units of the individual partner

companies that contribute value to a particular joint R&D project via the possession of task specific competencies. Experts confirmed that collaborating this way can lead to the realisation of sustainable competitive success for the partnership and its individual companies in terms of faster development time, higher quality, and lower development cost in joint R&D projects.

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Appendix A: Interview guide

Interview Guide

Section 1: Industrial context

- Current industrial landscape (constraints etc.)
- Main players and distribution of power among them
- Changes over the past (reasons, drivers, objectives etc.)
- Future trends (reasons, drivers, objectives etc.)
- Ideal situation

Section 2: Company context

- Basic background (facts and figures)
- On what basis to you deliver products and services to customers (e.g. quality, speed, flexibility etc.,)
- How does this deliver value to your customers
- Depending on different types of projects are different aspects important
- How does it enable you to differentiate from your competitors
- Would you consider these as your core competencies and why
- What specifies a core competence to you
- How did you develop your competencies
- What opportunities do they give you for the future
- What are possible threats to your competencies
- How important are competencies for business in automotive sector
- Does competence determine strategy or vice versa

Section 3: Collaboration in R&D context

- Value system in joint R&D and product development
  - Process steps
  - Participants / value members
  - Contribution of participants
- Outsourcing of business to suppliers (reasons, experiences, impact on relationship etc.)
- On which basis are suppliers selected
- When do you consider a supplier / partner to be the most competent one
- How does the nomination and selection process look like (data used, dependent on product requirements etc.)
- What risks are involved in selecting the right supplier
- Do you maintain a supplier database

- How can collaboration between OEM and supplier be characterised (negotiation process, decision making, degree of involvement, know how transfer, main challenges, Lopes-effect etc.)
- What makes good collaboration for you
- What benefits would you expect of collaboration
- What was the evolutionary development of your collaborative activities
- What has changed because of collaboration
- Has there been a particular effect on the success of the company

Section 4: Stories and narratives