Core Competence Matters: Preparing for a New Agenda

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Core Competence Matters: Preparing for a New Agenda

Urban Ljungquist

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Abstract

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The core competence concept describes how large companies can prosper and achieve competitive advantage. It is a well-known concept in the strategy domain, frequently practiced in organizations and cited in the literature. Despite this, recent research indicates that in-depth understanding of the concept is scarce. In this thesis, a few shortcomings of the concept are recognized: The vagueness of the original definition, divergence of the existing literature, and invalid appliance.

Straightforward core competence identification and verification processes are put forward, applicable to both research and practice. The processes aim at advancing beyond mere identification.

Three different core competencies were identified and verified in the empirical part of this thesis. The core competencies were possible to separate through differences in the various influences from competencies, capabilities and resources. The core competencies were also possible to arrange in a complexity continuum, from a compound and highly integrated core competence to a simple and technology-based one, with the third one, a service-based core competence, representing moderate complexity. The two most complex core competencies were, in general, influenced by competencies and capabilities to a larger extent than the simpler core competence. Resources mainly influenced the goods-producing core competencies.

The empirical findings of this thesis show that by acknowledging the specifics of the characteristics of competencies, capabilities and resources and their influences, in conceptual and empirical discussions and applications, core competencies can be identified and verified. Furthermore, their influences provide the keys to managing core competencies.

A new core competence agenda is proposed. The agenda includes core competence management, which is of particular value to organizations in need of change, for example those facing dynamic business environments, where vital activities and processes – including core competence – must be continually renewed. The agenda is feasible for future core competence research as well, since it alters the research domain, and advocates specificity, convergence and validity.

Preface

Writing a PhD thesis is probably the ultimate journey; it involves challenges, meetings with interesting people, discoveries, happiness, and achievements. My journey began with frustration, outside the academic world. I was annoyed by the difficulties involved in being a strategy consultant to CEO's of medium-sized companies. The difficulties were my own fault, since I tried not to employ ready-made solutions to the unique problems and situations I faced. The consultancy approach required quite thorough analyses, which I carried out by scrutinizing the literature and having discussions with senior colleagues. Unfortunately, this explorative approach was not fully applicable to the most complex situations.

In winter 2001, I was informed that Växjö University had hired a professor in strategy, Anders Pehrsson. I made contact and asked for literature tips concerning the latest strategy research. He kindly assisted and invited me to attend one of his PhD courses in "Contemporary strategy research", which was to begin a couple of weeks later. I simply could not reject this offer. During the course, I fully discovered that strategy is such a fun (and complex!) subject and I truly enjoyed reading strategy papers and having demanding discussions with the PhD students and the professor, adopting different theories and perspectives.

Late in spring 2002, the university advertised two PhD student positions at the department. I applied and was awarded one of these. What an opportunity! I rapidly shut down my consultancy business so I could fully concentrate on the strategy subject over the next five years. What a privilege!

Although writing a PhD thesis is a single-person project, several people have been involved in this thesis over the years. First is my examiner, Professor Anders Pehrsson. He had the courage to accept my need for autonomy, yet was available when I needed advice and discussion. Thank you!

My supervisor, Associate Professor Kåre Hansen, also has my gratitude; he has patiently supported me on various issues, in particular regarding method and analysis.

I also would like to express my gratitude to the people at the case company: The CEO, who adopted my project by providing excellent company access and explicit support. In addition, collecting data by interviews and surveys have been pleasant and straightforward thanks to the company employees' high motivation to participate in the study. Thank you all.

Other people have helped as well; without them, this thesis would have been quite different. Among these are the people at the Växjö University, and in particular at the School of Management and Economics. I would

like to express appreciation to all the colleagues who have discussed the manuscript, at seminars and personal meetings. Some people helped me heaps, with constructive comments, advice, or just showing support: Professor Jon Aarum Andersen, Mr. Navid Ghannad, Professor Karin Jonnergård and Ms. Michaela Sandell. Particular credits I also give to Associate Professor Lars Bengtsson, Lund University, for the comments at my final seminar.

Throughout these five years, I have been privileged to visit several international conferences, which have been very beneficial in the process of becoming a researcher. I have visited some universities and scholars for shorter and longer stays, and without exceptions, experienced interesting and rewarding discussions. I would like to mention in particular Professor Delwyn Clark at Waikato Management School, New Zealand, and Professor Per Davidsson at Queensland University of Technology, Australia.

The list of people I have been in contact with during the PhD-student period makes me realize what a winding journey it has been. For instance, I discussed Boolean analysis with Professor Bruce Kogut when we both visited IESE in Barcelona for a PhD course; I discussed the importance of distinctive concept definitions with Professor Jay Barney at the Copenhagen Business School; I attended a PhD course with Professor Ron Sanchez at the Lund University, and we discussed hierarchies and competence categorizations; I met Professor Colin Eden at the London Business School, and asked him about the importance of a time-dimension in analyzing paths; I also met Professor Constance Helfat and asked about the capacity aspect of the capability concept; I visited Professor Andrew Abbott at the University of Chicago to discuss sequence analysis. Early in the PhD process, I had some challenging discussions regarding causal mapping with Professor Mauri Laukkanen, University of Kuopio, Finland. Late in the PhD process, I discussed the intersection of strategy, entrepreneurship and economics with Professor Pontus Braunerhjelm, The Royal Institute of Technology, Stockholm.

Unfortunately, a majority of the windings remains; only two were possible to incorporate in the thesis. Therefore, it seems I must continue the journey; what a pleasure!

Växjö, August 31, 2007

Urban Ljungquist

List of papers

Paper I♣
Ljungquist, U. 2007. Core competency beyond identification: Presentation of a model. *Management Decision*, **45** (3): 393-402. Published.

Paper II♦
Ljungquist, U. 2008. Specification of core competence and associated components: A proposed model and a case illustration. *European Business Review*, **20** (1). Accepted for publication.

Paper III♥
Ljungquist, U. 2007. How do core competencies discriminate? Identification of influencing similarities and differences. *Knowledge and Process Management*. Accepted for publication.

Contents

1 Introduction

Core competencies are valuable to companies since they are sources of competitive advantage. Prior to writing this thesis, the author expected the concept of core competence to be complete. It therefore came as a surprise to discover, when conducting an empirical study, that the respondents in all nine companies mentioned specific products, assets such as machineries and brands, and some of their colleagues, when asked for their company's core competence. The respondents said they were familiar with the concept, yet they had difficulty describing it. This finding could not be explained by the empirical context, since the respondents showed great awareness of company-critical activities and products. Further analysis showed that they all had different understandings of the meaning of the concept. This ambiguity was ultimately traceable to the existing literature; it was basically the concept *per se* that was vaguely described.

These findings not only struck the author by surprise, but also triggered an interest in the core competence concept on a profound level: How did this concept, one which is highly important and well-known in the strategy domain, come to be misunderstood? Did this mean that all the existing literature on the concept was at risk of being misunderstood as well? These questions, and others, motivated the author to dig into the basics of the concept, and hence this thesis provides a scrutiny of the core competence concept.

This chapter begins with a description of the background of the core competence concept, followed by a problem discussion outlining the research questions that the thesis is focused on. Next, the purpose of the thesis is discussed and formulated together with the delimitations. The chapter ends with a description of the structure of the thesis.

1.1 Background

Core competence is probably one of the most well-known concepts in the strategy literature. It has been suggested to be the foundation of competitiveness (Drejer, 2000), which may be one reason for its popularity. Initially, the concept was designed to aid the development of large companies, first and foremost to enable them to achieve competitive advantage, but also to motivate and facilitate corporate diversification.

The initiators of the concept, Prahalad and Hamel (1990), define a core competence as "the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies" (p. 82). Later on they added "a bundle of skills and tech-

nology that enable a company to provide benefit to customers" (Hamel & Prahalad, 1994:199). Due to the vague expressions of the definition, for instance, "collective learning", scholars have acknowledged uncertainty how its notions could be operationalized (Bogner, Thomas & McGee, 1999; Collis & Montgomery, 2005).

The vagueness of the definition, however, has not hindered scholars from expanding it in a wide array of directions. There are several examples of research with purposes aligned towards practitioners, and most of them focus on identification issues. For instance, a scholar proposes a "Core Competence Engine" which derives future core competencies from the existing ones, together with an identification of the customers' future needs (Petts, 1997). He suggests that the model is applicable to alliances in particular and its prime contribution to the literature is a core competence framework that firstly includes a time dimension and secondly emphasizes the customers' needs as drivers of competitive advantage.

The second example takes a different approach: A scholar proposes an eight-step identification process in which a firm's managers identify and assess current successful competencies by benchmarking them in several aspects against the competencies of the firm's competitors (Javidan, 1998).

The third example is similar to the second in several respects (Hafeez, Zhang & Malak, 2002): Concepts that are associated with the core competence concept are used for identification; a benchmarking procedure is applied for verification; and the functional areas of the firm are emphasized.

A somewhat different approach, yet with a practical purpose, provides a fourth example, where the core competence concept is applied as a tool and implemented as a firm's strategy (Clark, 2000; Clark & Scott, 2000).

There are numerous empirical studies of the concept, for instance involving the linking of particular activities and competencies: R&D activities, marketing activities, external competencies, and internal competencies (Quelin, 2000). It has been suggested that core competence characteristics can be identified by examining managers' perceptions of relatedness between the two business units that most clearly manifest the main core competence (Pehrsson, 2006b).

Additional empirical studies exists: Three types of core competencies have been identified and assessed in different industries (Mascarenhas, Baveja & Jamil, 1998); the effects of core competencies have been studied in the context of company performance, in a single industry (Duysters & Hagedoorn, 2000); and in the context of firm performance under influence of the environment, among Chinese managers (Wang, Lo & Yang, 2004). The latter study adopted a disaggregated approach, implying a focus on in-depth descriptions; for instance, the influences of three constituents of core competence were measured empirically.

The core competence concept has also been scrutinized with conceptual purposes, for instance some authors have drawn on the organizational-learning literature to link core competence to company meta-

learning in an integrative model (Lei, Hitt & Bettis, 1996). Post takes a similar approach, but instead of learning and knowledge, he draws on the process of value creation by means of competence leveraging and competence development (1997). He assesses core competence and sustainable competitive advantage as follows: "the core competence concept explores how competitive advantage is linked to unique resources and firm-specific assets which are the basis of the value-creation process" (p. 733). Core competence has also been combined with other concepts, for instance knowledge management based on human resource processes (Godbout, 2000).

These few examples illustrate how research has expanded into multiple streams from the original notions of core competence. Diverging research is probably beneficial to a new domain, such as core competence, since the explorative movements can stimulate new perspectives, enable synthesis, and so on. For the core competence research domain, however, it may be high time to halt this expansion, and instead call attention to the basics; in other words, to replace divergence with convergence. Such convergence is recently initiated with other intangible concepts in the strategy domain; for instance, scholars have highlighted the paradox between the importance of the knowledge phenomenon on the one hand, and the vagueness of its conceptions on the other (Schreyögg & Geiger, 2007).

The same paradox seems to be evident to the core competence concept. Its vagueness is actually believed by some researchers to hinder further development of the concept (Walsh & Linton, 2002; Hafsi & Thomas, 2005), and it was recently proposed that the existing literature is inadequate for practical applications of core competence (Wang *et al.*, 2004). Additional evidence is supplied by an empirical study (Clark, 2000), in which the planned strategy implementation was stalled by respondents' confusion over core competence terminology.

Hence, even though the core competence concept has been highly ranked in strategy research for the past 17 years, our in-depth understanding of the concept is still limited. Regrettably, the core competence concept does not seem to be fully developed.

1.2 Problem formulation

The preceding discussion identifies a few problems with the core competence concept:

- The vagueness of the original definition;
- the diverging research endeavours that followed the introduction of the original concept;

- the invalid use of core competence.

The vagueness of the original definition makes it less useful to academics and practitioners alike – and it may actually be a major reason for the divergent literature – and for the invalid use of the concept as well.

An often overlooked solution to at least some part of the vagueness problem is to apply the alternative definition suggested by the initiators (Prahalad & Hamel, 1990; Hamel & Prahalad, 1994). This definition consists of three criteria that separate a core competence from a competence. They are: Must contribute significantly to the perceived customer benefits of the end product; is competitively unique; and provides potential access to a wide range of markets. Accordingly, a key to core competence identification is to measure a competence against these criteria; a procedure already adopted by other scholars (e.g. McDermott, 2003) and in this thesis as well.

A diverging research domain is the second problem. It is normally justifiable, for instance to separate incommensurable theories, but may also be detrimental, when an original notion is at risk of being depleted – in particular, when its fundamentals are not commonly comprehended. Unfortunately, a common solution to the latter problem within the strategy domain is that scholars suggest new definitions, which expands the divergence further. The divergence gives rise to disagreement, which in turn makes it difficult to anchor the discussions. Therefore, to avoid these variations, the focus here is, as far as possible, on the original scholars' notions (Prahalad & Hamel, 1990).

The third problem is that the core competence concept does not appear to be sufficiently validated. A rigorous method of core competence identification has recently been proposed (Yang, Wu, Shu & Yang, 2006). The authors claim that the "Process Oriented Core Competency Identification" model "prevails over alternative approaches" (p. 60). The model consists of four general strategy perspectives: Internal-out, external-in, bottom-up and top-down, and includes more than 600 competence items identified from a survey of the existing literature, clustered into 22 main groups. The impressive magnitude of this model may not only facilitate validation, but might actually hinder it as well, due to the demanding resources and efforts its analyses require. Thus, it seems as if we still are unable to validate core competence matters in practical situations – at least straightforwardly.

The situation for the core competence concept is indeed unsatisfying. We need to pull back the research frontage and to evaluate the existing literature, for instance its definitions and identification processes, in order to see whether they can be expressed more distinctly and become more convergent and more valid.

As previously is mentioned, a large quantity of the existing literature on core competence is concentrated on matters of identification. In fact, one deficiency of the existing literature is that it does not reach beyond identification, to core competence change and management. In addition,

practitioners do not seem sufficiently acquainted with core competence matters, as indicated by the previously-described confusion among concepts (Clark, 2000).

Despite the worrisome problems regarding the core competence concept, this thesis attempts to push beyond the matters of mere identification; the importance of the concept urges practical applications. Accordingly, this thesis is aligned to the problem of how core competencies are managed. In the following, this problem is further penetrated by three research questions.

1.3 Research questions

The existing research on core competence is basically concentrated on identification, as mentioned before, and identification is the suggested starting point of all research on core competence (Clark, 2000). Therefore, this body of literature is dissected first.

Here, identification means empirical identification. The process of identifying core competence usually entails teams of employees scanning and assessing company-critical activities, processes and components such as resources, capabilities and competencies. These three concepts are referred to in this thesis as "the associated concepts", because they are regularly applied to matters of core competence (e.g. Javidan, 1998).

The associated concepts are seldom conceptually and empirically separated in the identification process; instead, they are merged. The merging of these concepts occurs not only in core competence research, but also in general strategy research (Post, 1997; Schreyögg & Geiger, 2007). For example, capabilities and competencies are defined interchangeably by Spanos and Prastacos (2004), as are resources and capabilities (e.g. Peteraf & Bergen, 2003; Ray, Barney & Muhanna, 2004), as are skill, competence and capability by Hamel & Prahalad (1994). Other scholars, however, have constructively separated at least some of the associated concepts (Amit & Shoemaker, 1993; Makadok, 2001; Helfat & Peteraf, 2003; Branzei & Thornhill, 2006; Savory, 2006; McGee & Thomas, 2007), which implies that they could probably be separated in core competence research as well.

Even though merging of the associated concepts may occasionally be justifiable, for instance in simplifying the identification process, it is assumed in this thesis that a separation makes sense. One major reason for this is that the associated concepts are, to a large extent, already individually established as research perspectives in the strategy domain: The resource-based perspective, the dynamic capability-based perspective, and the competence-based perspective (respectively: Barney, 1991; Teece, Pisano & Shuen, 1997; Sanchez, 2004). Another reason is that these concepts are already important in the existing core competence literature due to their use in the identification process. A third reason is that a core

competence is here defined as a competence that satisfies the three criteria, which inevitably brings in at least one of the associated concepts. Thus, it seems as if the clarification of the core competence concept does not solely lie within the concept *per se*, but also involves the associated concepts.

The indistinct use, and merging, of the associated concepts is here identified as potentially a major obstacle to achieving in-depth and specific core competence comprehension. An hierarchy suggested by Javidan exemplifies the unwanted dependency among the associated concepts: Resources at the bottom; capabilities that build on resources; competencies that build on capabilities; and core competencies at the highest level (Javidan, 1998).

In fact, the diversity of the associated concepts *per se* may enhance our understanding of the core competence concept. Therefore, it is here assumed that the associated concepts are independent, i.e. do not build on each other. The first research question of the present thesis is:

Research question 1: How can the associated concepts be conceptually and empirically discriminated?

The aim of this effort at discrimination is to separate the associated concepts. For some core competence matters, such as identification, the separation is sufficient. However, when it comes to the management of core competence, which is the problem formulated in this thesis, further elaboration is necessary. A reasonable second step may be to explore the characteristics of the associated concepts, one at a time, to find out whether they are applicable to matters of core competence beyond identification.

The links between the associated concepts and a core competence are seldom evident in existing research. Javidan (1998) is one exception in that he sequences the associated concepts in a hierarchy, as previously mentioned. However, in his hierarchy, competence alone is linked to a core competence and the hierarchy is merely binding the associated concepts together in a sequence.

Here, the notion of a sequencing hierarchy is discarded, due to the discrimination attempt outlined in the first research question. Instead, it is here assumed that all of the associated concepts are directly linked to a core competence and that they can all directly influence a core competence. Neither of these two assumptions seems possible with Javidan's hierarchy. We are now ready to formulate the next research question:

Research question 2: What are the specific characteristics of the associated concepts when linked to a core competence?

The existing literature has contributed to specifying the core competence concept by isolating moderating contexts, for instance in a particular industry (Duysters & Hagedoorn, 2000), and in the influences from the environment (Wang *et al.*, 2004). Even though these studies have an in-

depth approach that facilitate detailed analysis in comparison to many cross-sectional studies, it is possible to conduct far more disaggregated investigations, which potentially will develop specific comprehension of the concept.

The discussion so far has concentrated on the characteristics of the associated concepts when linked to a core competence. Differences in the influence of the associated concepts are not discussed; neither are the differences in influence on different core competencies. For small and medium-sized companies with single businesses, the latter issue is of less relevance; they likely possess only a single core competence. However, it may well be relevant to larger companies and those with multiple-businesses, which are likely to have several core competencies (Hamel & Prahalad, 1994).

There is much existing literature regarding the identification of a core competence in a single company. Identification, and in particular comparisons of multiple core competencies, however, are rare. One study that does exist compares core competencies of high-tech companies with those of manufacturing companies (Chen & Wu, 2007). It seems relevant to progress by focusing on the differences between core competencies *per se* – which ultimately can result in core competence categories – which will enhance our comprehension of the concept. The comparisons probably become less demanding if the context can be limited to a single industry or a single firm. Yet, these types of core competence comparisons seem to be lacking in the existing literature.

By drawing on the second research question, it may be possible to identify differences in the influences of the associated concepts. Thus, we can put forth the third research question:

Research question 3: How do the associated concepts influence core competencies?

1.4 Purpose formulation and delimitations

The intangible nature of the core competence concept makes developments rather difficult. It may be the case that inadequate effort has been put into developing the identification process. For instance, only a few scholars have adopted the notion of verifying the core competencies identified. Although Javidan (1998) is explicating verification, he still advocates strategic benchmarking, which is not in accordance with the initiators' advice to specifically align verification endeavours towards customers. Hamel and Prahalad (1994:225) say that "Customers are the ultimate judge of whether something is or is not a core competence". In this thesis, since these initiators' notions are adopted, the verification process must involve customers.

So far, three research questions are presented to use in penetrating the core competence concept, including the associated concepts, with the aim of clarifying any vagueness and framing the diversified research domain. The issues of identification and verification are scrutinized, both of which lie within these matters, and of which can potentially enhance the validity and comprehension of core competence in practice. Yet, there remains the main problem of how core competencies are managed, and therefore it seems crucial to clearly state the purpose of the thesis:

The purpose of this thesis is to contribute to the understanding of core competence by proposing a new agenda for the application of the concept.

The assumption is here adopted, common in strategy research, that it is possible to manipulate the associated concepts (Grant, 1991), especially in the context of change (Eisenhardt & Martin, 2000). The latter is assumed here to involve core competence matters. Furthermore, it is here assumed that different types of core competencies exist and that it is possible to identify and discriminate between them.

As previously mentioned, it is also assumed that the concepts of resource, capability and competence are associated with the core competence concept. The three aforementioned criteria that distinguish a competence from a core competence make up a hierarchy between these two. That hierarchy is here adopted and it is assumed that all of the associated concepts reside at the same hierarchical level and that they are possible to link to a core competence.

The links between the associated concepts and a core competence involve influence in two directions: From any of the associated concepts to the core competence and vice versa. Here, since focus lies solely on how core competencies are influenced, the latter direction is disregarded. That delimitation also involves the links between the associated concepts, which, accordingly, are also disregarded here. Figure 1.1 describes the interim model of the thesis; the arrowed link indicates the direction of the influence.

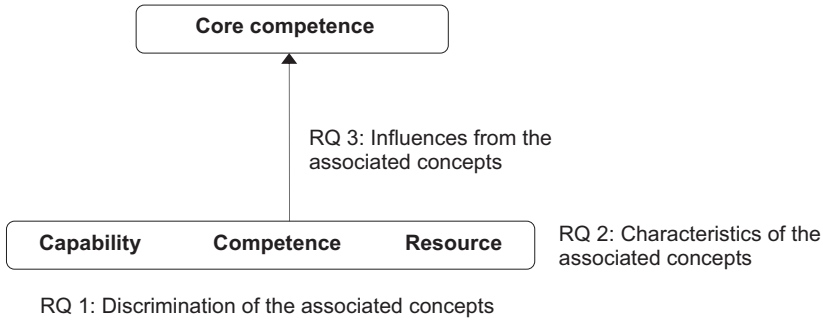

Figure 1.1 Interim model of the thesis.

1.5 Structure of the thesis

The conceptual foundations of the focal concepts are specified in the following chapter. First to be addressed is the specification of core competence theory, since its conception forms the basis of the entire thesis. The specifications of the associated concepts are then discussed in the following order: Competence, capability and resource. The chapter ends with a description of the theoretical basis of the thesis; first the definitions; then the research questions; and finally the research model, which is the interim model with a number of refinements stemming from the conceptual discussions.

In the third chapter, the methods for the empirical study are described and motivated. First, the research process is described in terms of conceptual and empirical issues and this is followed by a description of the thesis research design. Next come descriptions of the different data collection methods, including in-depth descriptions of how the focal concepts were operationalized. Different methods for analyzing the data are then described. The chapter ends with a discussion of validity and reliability.

The three papers comprising the thesis are summarized in the fourth chapter. This chapter also presents a model of how the papers are related and describes their conceptual and empirical focus. Each research question corresponds to a paper; research question 1 is handled in Paper I, research question 2 in Paper II and finally, research question 3 in Paper III.

In the fifth and final chapter, the findings of the papers are summarized and discussed along with limitations, conclusions and implications. This chapter also includes suggestions for further research.

The full papers, the case description, the description of ten potential core competencies and the interview guide can be found in the appendices.

2 Theory

Because of the vague origins and diverse applications of the core competence concept, contemporary research on the subject is hard to classify in accordance with a single theory or research domain. Core competence conceptions are apparent in several major theories in the strategy domain. Such domains include the resource-based (e.g. Penrose, 1959; Wernerfelt, 1984; Barney, 1991), the competence-based (e.g. Henderson & Cockburn, 1994; Sanchez, Heene & Thomas, 1996; Danneels, 2007), the learning-based (e.g. Senge, 1990; Levinthal & March, 1993; Lei *et al.*, 1996), the knowledge-based (e.g. Grant, 1996; Spender, 1996; McGee & Thomas, 2007), and the dynamic capability-based (e.g. Teece *et al.*, 1997; Eisenhardt & Martin, 2000; Winter, 2003).

Any attempt at classification is further complicated by the fact that the associated concepts all have origins of their own in the aforementioned theories. For example, resources are the focus of resource-based theory, assessing organizations' resources according to the valuable, rare, inimitable and not substitutable categories (Barney, 1991). Knowledge-based theory takes a different approach (Grant, 1996): A resource is defined as an input to the value process and instead competencies are in focus for the creation of organizational knowledge. Finally, competence-based theory also acknowledges resources – and, naturally, competencies – the former mainly as deployable assets governed by competencies (Sanchez *et al.*, 1996).

The following discussions are designed to assist the penetration of the research questions and to position the thesis in the existing literature. For enhanced clarity, the main references for each of the focal concepts are summarized in tables. First and foremost, references that specify the thesis conceptually are included. Generic references and extensive summaries of the literature are also included, as are references that exemplify particular circumstances relevant to the thesis.

The existing literature on the core competence concept is first discussed and then the discussion is moved on to the associated concepts, in the order of competence, capability and resource.

2.1 Specification of theories: The core competence concept

There is no doubt that the most common reference for the core competence concept is Prahalad and Hamel (1990). However, it has been suggested that the concept was actually invented much earlier: "it should be apparent that the concept of core competence is similar to that of 'distinc-

tive competence', first advanced 20 years ago by Andrews (1971)" (Collis, 1991:51). Selznick (1957) is also mentioned as one of the originators, as is Ansoff (1965). However, this thesis draws primarily on the conceptions of Prahalad and Hamel (1990), due to their wide-spread recognition. Before going deeper into these conceptions, it might be relevant to skim the existing literature. The core competence concept has multiple definitions. One is:

> "A firm's core competence is defined as the vector of the irreversible assets along which the firm is uniquely advantaged. Although the vector is multidimensional, reflecting the entire system of tangible and intangible resources that the organization has in place, it is commonly represented on a single plane" (Collis, 1991:51).

The vector described by Collis can be seen as path-dependent (Dierickx & Cool, 1989; Leonard-Barton, 1992), in the sense of its being an accumulation of historic decisions and investments. That is, core competence is seen not as a future investment, but as being determined by history. As will hopefully become clearer below, this is significantly different from the definition of Prahalad and Hamel's (1990), which points ahead of the current state and is more like a vision than a contemporary or historic state (cf. Petts, 1997).

Rumelt suggests that core competencies can be distinguished by four attributes: They are capabilities that span different aspects of a company, such as different businesses and different products; they change more slowly than their resulting products; they take place through collective learning; and the competitive locus is at stake for acquisition of skills (1994). The concept has also been contrasted with the process of innovation, in comparing companies with different degrees of performance (Pennings, Cobbenhagen & den Hertog, 1996). Pehrsson proposes that the focus on core competence in highly related businesses leads to high strategy competence and performance (2006a), while Godbout brings in human resource management as critical in building core competencies (2000).

Core competence has also been viewed as a strategic platform that eases a company's redeployment of resources in order to promote changes and opportunities (Unland & Kleiner, 1996). The idea of a strategic platform is visible in Prahalad and Hamel's (1990) presentation of the concept, but it is Unland and Kleiner who make it obvious. The platform idea is also evident in other core competence literature. Hafeez *et al.* (2002), for instance, define a core competence as strategic flexibility, in particular regarding resource deployment and routine reorganization. They define a competence as collectiveness: "the integration of key capabilities in the company wide business activities" (p. 32).

The existing literature also contains an explorative empirical study of 12 multinational companies (Mascarenhas *et al.*, 1998). The findings reveal three types of core competencies: superior technological know-how,

reliable processes and close relationship with external parties. The study also included an investigation of how it had been possible for the core competencies to develop. The most common criteria for technological competence was exposure to a demanding technical, operating or economic environment. For reliable processes competence, the necessary requirement was a mix of formal and informal corporate culture that minimizes waste, delivers customer value and delivers standards and minimal deviations. The last competence, close relationship with external parties, was most commonly developed through acquisitions and to market the company's international reach to partners and to forge external relationships through attractive technologies and/or reliable processes.

Other scholars have proposed that the core competence concept consists of three components (Wang *et al.*, 2004) – marketing, technological and integrative competencies – and measured the effects of the components on firms' performance. Their solution to the lack of core competence scales and measures was to operationalize the three components by conducting extensive literature reviews and generating items by means of an empirical study.

Lei *et al*., who studied the link between core competence and organizational learning, propose an integrative model (1996) which builds on dynamic routines, experimentation and information transfer. These three taken together may lead to organizational meta-learning and the development of dynamic core competencies. The potential strategic outcomes from this model are several growth alternatives for the firm, uncertainty reduction and path dependency.

This thesis does not draw specifically on the organizational learning literature, despite its close relation to the core competence matters evident in the definition of Prahalad and Hamel (1990), since the focus of the thesis is the associated concepts.

Core competence research ought to begin with identification, as suggested by Clark (2000), who empirically tested the concept in an attempt to implement core competence as strategy. In this study, Clark challenged the company dominant logic (as put forth by Prahalad & Bettis, 1986) and revealed severe confusion of the concept among the respondents, which made the implementation difficult to accomplish. In fact, even the initiators, Hamel and Prahalad, state that core competence identification is problematic (1994). They suggest the use of employee task-forces, with representatives from different functions, divisions, geographical locations and hierarchical levels in the organization. The main goal of this broadly anchored identification process is to separate competencies from products, to avoid misidentifying assets and infrastructures as competencies and to highlight the connection to customer value.

These notions are adopted here, which is similar, at least in part, to other scholars (e.g. Javidan, 1998; Hafeez *et al.*, 2002). One exception to this adoption is that neither Hafeez *et al*. nor Javidan advocates customer verification *per se*. On the other hand, they both adopt the idea of benchmarking as verification process, which Hamel and Prahalad point

out as well (1994). A broadly applied identification process not only sheds light on the company's processes and activities from multiple perspectives, it also anchors the findings in the organization, outside (rational) strategic planning and action, as described in organizational "muddling through" processes (Lindblom, 1959).

Numerous scholars have developed unique core competence identification processes, two of which are briefly described here.

The first identification process builds on more than 600 competence survey-items, taken from a review of the strategy literature (Yang *et al.*, 2006), which are further distilled into 22 groups. The process decomposes a firm's value activities in a workshop where managers assess their importance prior to data analysis.

The other identification process is focused on distinctive and core distinctive competencies (Eden & Ackermann, 2000), a distinction which is further elaborated in the paragraph on competence below. The centre of this process lies in finding the connections between competencies and the distinctive competencies, since they determine the organizational core competencies. Therefore, a search is made for patterns of distinctive competencies, which together with organizational values, goals and "the aspiration system" are used to identify the core competencies.

A major difference between these two examples is that the former focuses on the identification *per se*, while the latter proposes that the identification process should be a strategic tool from which managers can redirect the organization. Another difference is that the former method has a wide design, evident in its four general strategy perspectives – internal-out, external-in, bottom-up and top-down – while the latter acknowledges only the internal-out and perhaps (implicitly) the bottom-up.

In this thesis, it was decided to focus on the associated concepts in order to clarify the core competence concept. These concepts, as mentioned in the previous chapter, often play a major role in the identification process. Unfortunately, they are often defined interchangeably in that process, thus obscuring their distinctive characteristics. Javidan (1998), for instance, proposes a "Competences hierarchy" that consists of resources at the bottom, capabilities that build on resources and competencies that build on both resources and capabilities. Core competencies reside at the highest level – they are the component of most value to an organization, but compared to the other concepts they are also at the most difficult level to achieve. The hierarchy notion at first seems reasonable, although its validity merely apply to structuring the concepts – for revealing that they have different organizational applications. The definitions of the associated concepts are not expressed very clearly by Javidan and he neither operationalizes them nor makes use of their individuality in the identification process. Instead, company employers and managers are used for brain-storming activities: "…to identify as many subcategories [of competencies] as possible for each skill set" (Javidan, 1998:64).

As expected, the discussion shows conceptual heterogeneity in the existing core competence literature. However, even though the initial core

competence definition is expressed rather vaguely, it is crucial to maintain a reference to the conceptions of the initiators (Prahalad & Hamel, 1990). If this reference is abandoned, there is risk of conceptual drift, even beyond the divergence of the existing core competence literature. There are three criteria, briefly mentioned before, which can provide such a reference and they are reasonably clearly expressed (Prahalad & Hamel, 1990; Hamel & Prahalad, 1994). They are:

- A core competence must contribute significantly to the perceived customer benefits of the end product. This does not mean that the customer must be able to identify the competence *per se*, but that it would be a great disadvantage if it were missing. Manufacturing companies are also able to possess core competence, if they maintain persistent cost benefits, even if the direct customer relation is missing.

- A core competence should be competitively unique, and as such, it must be difficult for competitors to imitate. This means that while competitors may also have the competence, only one company in the industry can gain core competence from it. Companies may need certain competencies to be able to participate as fully competitive in an industry. These competencies are not core, but necessary.

- A core competence provides potential access to a wide range of markets. That is, the competence should give access to new product arenas, arrayed from its current embedded products.

Not all competencies are relevant as core competencies, since core competencies cannot be assets (or things) such as patents, brands, production facilities and raw materials (Prahalad & Hamel, 1990). However, asset management is a valid core competence. Finally, core competencies must not contain single and non-integrated competencies. These criteria are used in this thesis to define core competence. The literature discussed above is summarized in Table 2.1.

Reference	Main point for inclusion in the conceptual discussion
Selznick (1957), Ansoff (1965), Andrews (1971)	Suggested origins of the notion of the core competence concept.
Lindblom (1959)	Introduced the “muddling through” notion.
Prahalad and Bettis (1986)	The dominant logic of firms.
Dierickx and Cool (1989), Leonard-Barton (1992)	Path-dependency notion.
Prahalad and Hamel (1990), Hamel and Prahalad (1994)	Initiators of the core competence concept. Represent the conceptual roots of the thesis by suggesting three criteria that identify a core competence through a competence: must contribute significantly to the perceived customer benefits of the end product; is competitively unique; and provides potential access to a wide range of markets.
Collis (1991)	Defines core competence as a multi-dimensional vector of irreversible assets.
Rumelt (1994)	Suggested that a core competence is distinguished by four attributes.
Lei, Hitt and Bettis (1996)	Links core competence to organizational learning.
Pennings, Cobbenhagen and den Hertog (1996)	Contrast core competence to the process of innovation.
Unland and Kleiner (1996)	Propose core competence as a strategic platform.
Petts (1997)	Emphasizes the importance of firms being future-oriented and customer-focused.
Javidan (1998)	Takes on the original notion of Prahalad and Hamel (1990), advances it by suggesting a “Competences hierarchy” and proposes an identification procedure.
Mascarenhas, Baveja and Jamil (1998)	From an explorative study, identified three different types of core competencies which were assessed on how they were developed and shifted.
Clark (2000)	Presents difficulties in concept comprehension when studying implementation of core competence as strategy.
Eden and Ackermann (2000)	Separate distinctive competence and core-distinctive competence and propose a rigorous identification process of core competencies.
Godbout (2000)	Adds human resource management as critical in building core competencies.
Hafeez, Zhang and Malak (2002)	Bring in strategic flexibility to the core competence concept, including resource deployment and routine reorganization.
McDermott (2003)	Empirical study of the three criteria that identify a core competence.
Wang, Lo and Yang (2004)	Measuring the effects of three core competence components on a firm’s performance.
Pehrsson (2006a)	Suggests that core competence in highly related businesses leads to high strategy competence and performance.
Yang, Wu, Shu and Yang (2006)	Propose a rigorous identification process for core competencies.

Table 2.1 References for the core competence concept, presented in chronological order.

2.2 Specification of theories: The associated concepts

There are nearly as many definitions of the associated concepts as there are scholars in the strategy domain. While this dilemma has been acknowledged by scholars (Hafsi & Thomas, 2005), it still poses a problem for practical issues such as operationalization; which definition is accurate? Although the definitional issues are important to this thesis, the forthcoming discussions are not intended to be comprehensive. The focal concepts have already been dealt with in more detail and depth by others (e.g. Bogner *et al.*, 1999; Sanchez, 2004).

In the following sections, the associated concepts are scrutinized. The discussions are guided by the research questions and by the interim model of the thesis, in an effort to find some way of discriminating the associated concepts. Such discrimination is not only applied to make inter-concept distinctions, but also involves the formulation of generic intra-concept definitions. For these two reasons, the discussions are carried out in two phases: First, each of the associated concepts is discussed, to facilitate generic definitions. Second, the concepts are compared and contrasted, in accordance with the research questions. The purpose of the discrimination is to formulate definitions of the associated concepts and to refine the interim model.

2.2.1 Competence

A competence is linked to a core competence via the three criteria and so the competence concept needs a thorough discussion, probably deeper than that required for the capability concept and the resource concept. The literature regarding competence is here divided into five themes:

- Commonly adopted conceptions and definitions which inform the reader of the competence concept in general and set the basics for the forthcoming formulation of the competence definition.
- Competence-based literature that alters the mainstream discussion described in the point above.
- Categorizations of the competence concept.
- Literature that links the core competence concept to the competence concept.
- Brief descriptions of knowledge-based and learning-based literature that relate to the competence concept.

Competencies are generally divided into functional and integrative categories, although other names are sometimes used, for instance "component" and "architectural" (Henderson & Cockburn, 1994). Functional competencies are used in daily activities and integrative competencies are used to integrate and develop new competence components.

Another possible categorization is that suggested by March (1991): Exploitation and exploration. While these notions lie closer to the learning domain than the competence domain, they are also commonly adopted by competence-focused scholars (e.g. Danneels, 2002). Recent scholars have developed the exploitation/exploration notion and proposed that the "competency trap" (March, 1991) in dynamic environments stems from imbalances between exploitation and exploration (Liu, 2006).

Both the functional/integrative and the exploitation/exploration categorizations have been adopted and adapted by several scholars. From a technology perspective, for instance, scholars suggest that product innovation, facilitated and improved by competencies, is a driving force of company renewal (Danneels, 2002). Danneels takes on the ideas of McGrath, MacMillan and Venkataraman (1995) and Henderson and Cockburn (1994), and defines a competence as "a purposive combination of firm-specific assets (or resources) which enables it to accomplish a given task" (Danneels, 2002:1102). He also draws on the exploitation/exploration notion and suggests three competence categories: First-order competence involves customer competencies and technological competencies; integrative competence is the ability to combine first-order competencies; and second-order competence is the ability to build first-order competencies.

It is somewhat surprising to the author that Danneels (2002) brings "ability" into the definition of a competence. When a competence is defined as the ability to meet objectives, the focus is not on the competence, but on the relation between what is planned and what is achieved. That is, the competence may be top ranked, but if the plan is unrealistic then the competence will be downgraded. Furthermore, ability is measured contextually, since it relates to specific objectives (e.g. budget, staffing, major deadlines, quality, etc.) that were adopted by McGrath *et al*. (1995); this probably places unnecessary limits on the application of a competence.

This thesis does not adopt the notion of ability, since a more tangible definition is required (for the capability concept too, where this notion is frequently present).

Even though Danneels uses the ability form of the competence concept, he implicitly focuses on the outcomes: "New product development requires bringing together two competences: competence relating to technology and competence relating to customers" (Danneels, 2002:1104). Thus, product development is, at least partly, the result of combining the two competencies he calls first-order. The argument is applicable to his arguments regarding second-order competencies as well; building first-order competencies (the word "ability" is omitted). This means that de-

velopment can be seen as an artefact of competencies at work. The development issue is further discussed at the end of this chapter.

A number of criteria for the classification and identification of company-critical competencies have been proposed by representatives of the competence-based view (Sanchez, 2004). First is the organizational level where the competence exists: The competence can emerge from different hierarchical levels, from the creation of capabilities, or from the organization and coordination of assets. Second, competencies may need different lengths of time to prosper (cf. "time compression diseconomies"), and their endurance may also differ (cf. "asset erosion" (Dierickx & Cool, 1989)). Third, competencies can have different sources: Know-how, know-why and know-what. Fourth and fifth, competencies may emerge through integration of processes and the underlying assets and capabilities may be applicable in different types of industry contexts. Sixth, competencies may emerge from firm-specific assets or from assets beyond the firm's boundaries. Seventh and eighth, competencies may be contingent or not and they may be applicable in either static or dynamic efficiency contexts.

These eight criteria describe where a competence originates within an organization. In fact, Sanchez (2004) develops a research domain based on the competence concept and including assets, skills, resources, capabilities and so on in a ready-made framework. Since for the purposes of this thesis the associated concepts must be assessed independently of each other, rather than being placed together in a comprehensive framework. Therefore, these notions are not adopted here.

An assessment of previous research on competence categorizations might also be relevant. Within the strategy research domain it is common to define concepts by categories. One of the most famous examples is probably Barney's (1991) categorization of a resource: Valuable, rare, imperfectly imitable and not substitutable.

Categorizations of the competence concept also exist. An empirical study has identified three types of competencies: Distinctive competencies, or those which are the most important in the company; necessary competencies, or those which do not differ from the competencies of competitors but are needed for operational reasons; and protected competencies, which can hurt the company if misused (Heikkilä & Cordon, 2002). Another approach involves taking a systemic stance. This, however, makes it hard to identify single competencies, since they are interrelated with other concepts. Nevertheless, four generic categories are suggested: Technology (hard), human beings (soft), organization (formal) and culture (informal) (Drejer, 2000).

These examples of categorizing a competence may be applicable in analysis but they are less useful for the present discussion, which seeks other types of definitions.

Competencies have also been defined by scholars who focus mainly on core competence research: "a cross-functional integration and coordination of capabilities" (Javidan, 1998:62). As is evident from the re-

search model, it is assumed in this thesis that the associated concepts are not linked. Thus, a definition suggesting such a link, for instance that of Javidan (1998) above, would be misleading.

Other scholars distinguish between distinctive competencies and core distinctive competencies (Eden & Ackermann, 2000). The former are particular strengths that are difficult to imitate, for instance offering customers something unique. The latter are "those that primarily drive the aspirations system" (p. 16), and they are the link between the company's goals and its competencies. The systemic view of these scholars seems focused on company-specific efforts at identification and strategy formulation and appears less applicable to assessment of the core competence conceptions *per se*. Still, their contributions to the identification process are profound, for instance their proposals for a path-analysis and designs for a systemic approach.

Bogner *et. al* (1999), in trying to separate competencies from their outcomes, compare a number of different theories; resource-based theory (Barney, 1991; Peteraf, 1993), organizational learning (Grant, 1996; Spender, 1996), and theories for environmental change (Tushman & Anderson, 1986). They state that this separation is critical, since it separates competitive advantage based on luck and potentially redundant unique resources, from the creation of unique resources. The present thesis also acknowledges the importance of this, by separating the concepts.

Grant (1996) claims that the primary role of organizations is knowledge application, rather than knowledge creation. By focusing on knowledge processes, resources are found and deployed and eventually produce outcomes relevant to the firm. Grant views the firm as an institution of production which explores the nature of coordination within the firm. This view also facilitates analysis of organizational structures, hierarchies and the locations authority. Finally, it determines the boundaries of the firm.

There are diverging assumptions in the domain of knowledge research too: Bogner and Bansal (2007), for instance, say that the point of the knowledge-based perspective is to allow firms to create value.

Although the importance of the procedural view (i.e. Grant, 1996) is acknowledged in this thesis, its conceptions do not seem to provide insight into how knowledge is identified and measured. For that we need the declarative view, which is explicated by other scholars: "Whereas organizational knowledge resources are procedural, measuring organizational knowledge demands declarative knowledge" (Wilcox King & Zeithaml, 2003:764). These scholars adopt a resource-based view, but do not use what they call "the common method of content-free approaches" (p. 764) by measuring such things as patents and expenditures in marketing and R&D. Instead, they choose the interview method. They define organizational knowledge as being enacted through multiple "knowers" in the organization and state that organizational learning is captured through language (Wilcox King & Zeithaml, 2003). Additionally, and in line with the methodological advice of "content-free approaches", they

suggest that data collected from experienced middle- and top-level managers are especially relevant when studying knowledge.

Table 2.2 summarizes the competence literature relevant to this thesis.

Reference	Main point for inclusion in the conceptual discussion
Tushman and Anderson (1986)	Competence and environmental change.
Dierickx and Cool (1989)	Inherent dynamics in assets due to their time-dependent nature.
Barney (1991), Peteraf (1993)	Resource-based literature.
March (1991), Liu (2006)	Separation of exploration and exploitation.
Henderson and Cockburn (1994)	Divide competencies in functional (component) competencies and integrative (architectural) competencies.
McGrath, MacMillan and Venkataraman (1995)	Categorize competencies: First-order, integrative and second-order competencies.
Grant (1996), Spender (1996)	Knowledge-based theory.
Javidan (1998)	Proposes a “Competences hierarchy”
Bogner, Thomas and McGee (1999)	Separate competencies from their outcomes by drawing on underlying theories.
Drejer (2000)	Suggests four competence categories: Technology, human beings, organization, and culture.
Eden and Ackermann (2000)	Separate distinctive competence and core-distinctive competence.
Danneels (2002)	Distinguishes between three categories of competencies: First-order, second-order and integrative. Empirical study of innovation processes in manufacturing companies.
Heikkelä and Cordon (2002)	Identified three types of competencies: Distinctive competencies, necessary competencies and protected competencies.
Wilcox King and Zeithaml (2003)	Separates procedural from declarative organizational knowledge.
Sanchez (2004)	Suggests multiple competence modes to manage strategic issues and processes and to reconfigure, deploy and manage resources.
Bogner and Bansal (2007)	The knowledge-based perspective creates value and produces outcomes relevant to firms.

Table 2.2 References for the competence concept, presented in chronological order.

2.2.2 Capability

Just as with the discussions concerning the competence concept, the discussions concerning the capability concept are divided into themes. The first theme involves discussion of the tangible and the intangible notions of the concept. It is the tangible notions that are adopted in this thesis, since the intangible notions involve the idea of ability, which is discarded using the same argument as for the competence concept. The second theme discusses the combination of the tangible and intangible notions

and the third theme discusses the division of the operational and dynamic aspects of the concept. These discussions are summarized in Table 2.3.

The capability concept may be the most indistinct of the associated concepts, yet also the most widely researched. Its most tangible notion involves routines, which are often defined as regular and predictable patterns of activity coordinated by individuals (Nelson & Winter, 1982).

Capabilities are also defined as tangible or intangible interactions of resources that are firm-specific and created over time (Amit & Shoemaker, 1993); as strategically understood business processes (Stalk, Evans & Shulman, 1992); and as a measure of resource usage efficiency (Dutta, Narasimhan & Rajiv, 2005).

Winter also claims that capabilities are locally defined either as normal routines, or as activities to support change (Winter, 2003). The first of these he calls zero-level capabilities, which are normal-to-the-business in a stationary process, while the second he calls first-order dynamic capabilities, which are focused on organizational scale processes and markets rather than product attributes. He also suggests that the first-order capabilities involve cost structures and long-term commitments, which imply extra costs, regardless of whether the capabilities are being used.

The more intangible notion of the capability concept often involves capacity, for instance when defined as "the capacity for a team of resources to perform some task or activity" (Grant, 1991:119). Another, similar definition is "the organizational abilities to deploy the firm's resources and to develop new ones" (Henderson & Cockburn, 1994:3). Javidan (1998) is another scholar to adopt the capacity notion and he also suggests that capabilities are functionality-based.

Collis (1994) combines the tangible and the intangible notions, defining capabilities as "the socially complex routines that determine the efficiency with which firms physically transform inputs into outputs" (p. 145). The first part of the definition involves the tangible notion, in which capabilities are embedded in the firm's routines and observable corporate structures and processes, as well as in company culture and employee networks. These are not always possible to articulate. The second part involves the intangible notion, in which "inputs transform to outputs". In this transformation, capabilities support the technological and manufacturing processes. Therefore, says Collis (1994), capabilities can progress the efficiency of activities and they comprise the ability to create new value.

The third capability notion divides the concept into operational capabilities and dynamic capabilities and builds partly on the ideas of Collis (1994). This is where the majority of the existing literature on the capability concept is to be found. Operational capabilities include all the routines generally involved in performing an activity such as manufacturing; while dynamic capabilities build, integrate and reconfigure operational capabilities (Teece *et al.*, 1997; Eisenhardt & Martin, 2000; Helfat & Peteraf, 2003). Dynamic capabilities can develop and change resource configurations, especially where uncertainty cannot be modelled.

Reference	Main point for inclusion in the conceptual discussion
Nelson and Winter (1982)	Capability is a mix of routines, tacit knowledge and organizational memory.
Grant (1991)	A capacity for a team of resources to perform some task or activity.
Stalk, Evans and Shulman (1992)	A capability can be strategically understood business processes.
Amit and Shoemaker (1993)	A capability is tangible or intangible, firm-specific and created over time through the interaction of resources.
Collis (1994)	Define a capability as a socially complex routine determining the efficiency with which firms physically transform inputs into outputs.
Henderson and Cockburn (1994)	Divide competencies in functional (component) competencies and integrative (architectural) competencies.
Teece, Pisano and Shuen (1997), Eisenhardt and Martin (2000), Helfat and Peteraf (2003)	Separation of operational capabilities from dynamic capabilities.
Javidan (1998)	A capability is a functionality-based ability that resides in a particular function, such as marketing.
Winter (2003)	A capability is locally defined either as a normal routine, or as an activity that supports change.
Dutta, Narasimhan and Rajiv (2005)	Measuring capabilities.

Table 2.3 References for the capability concept, presented in chronological order.

2.2.3 Resource

A few definitions of the resource concept is now presented and their shortcomings are discussed. Table 2.4 provides a summary.

Strategy research is certainly not lacking in unique definitions of the resource concept; in fact, such definitions are arguably already too numerous (Eneroth, 1997; Sanchez & Heene, 1997; Sanchez, 2001). In addition to this, some of the dominant definitions are also vaguely expressed.

One such definition is “all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm to conceive of and implement strategies that improve its efficiency and effectiveness” (Barney, 1991:101). This definition’s first part gives examples of what resources can be and ends with “etc.”, which leaves further interpretations and suggestions to the reader. On the other hand, it is probably not fair to expect scholars to list all potential attributes in a definition. One problem with this particular definition is that it is broadly expressed to cover as much as possible, which means that the definition’s expression is vague and less distinct. At the same time, the vagueness can be viewed as being compensated by the exemplifying part, with concrete

practical attributes. Of course, this compensation needs to be complete and significant; otherwise, the distinctness is lost.

Javidan (1998) proposes three groups of resources: Physical, human and organizational. He states that resources are the "building blocks of competencies" (Javidan, 1998:62). However, as previously explained, definitions that interlink the associated concepts are unsuitable for the purposes of the present thesis.

Another type of definition is exemplified by that of Sanchez *et al*.: "assets that are available and useful in detecting and responding to market opportunities and threats. Resources include capabilities, as well as other forms of useful and available assets" (1996:8). Assets are defined as: "anything tangible or intangible the firm can use in its processes for creating, producing and/or offering its products (goods or services) to a market" (p. 8). By this definition, resources are limited to assets that are available and useful for opportunities and threats.

Resources may also be viewed as inputs to the company value process (Grant, 1991; Amit & Shoemaker, 1993). Resources are identified as sources for sustainable competitive advantage if they are valuable, rare, imperfectly imitable and not substitutable (Barney, 1991). Furthermore, resources can both hinder and ease organizational change through core capabilities and core rigidities (Leonard-Barton, 1992), because they are sticky (unchanging in the foreseeable future), fungible (diversely usable), path-dependent (history-bounded) and causally ambiguous (tacit, complex and specific). Six classes of resources have been suggested: Financial, physical, human, technological, organizational and reputation (Grant, 1991).

Originally, resources were distinguished from capabilities by the metaphor of "stocks and flows" (Penrose, 1959). This was later used by scholars to stress the inherent dynamics in asset stocks, caused by their time-dependent nature (Dierickx & Cool, 1989), in aspects of imitation that may be hindered because of time compression diseconomies, asset mass efficiencies, interconnectedness of asset stocks, asset erosion, causal ambiguity and substitution. Another definition is "stocks of available factors that are owned or controlled by the firm" (Amit & Shoemaker, 1993:35).

The discussion above contains different categorizations of the resource concept. The advantage of such categorization is that it is straightforward. However, it merely informs partly of the content of a concept; it does not matter whether it is a resource, a capability, or a competence, since all three have the potential to be, for instance, valuable, rare, imperfectly imitable and not substitutable. Such an approach is not applicable in this thesis.

Reference	Main point for inclusion in the conceptual discussion
Penrose (1959)	Distinguished resources from capabilities.
Dierickx and Cool (1989)	Inherent dynamics in assets due to their time-dependent nature.
Barney (1991)	A resource is a source for sustainable competitive advantage if it is valuable, rare, inimitable and not substitutable.
Grant (1991)	Resources are input to a company's value process.
Leonard-Barton (1992)	A resource can both hinder and ease organisational change through core capabilities and core rigidities.
Amit and Shoemaker (1993)	Resources are stocks of available factors that are owned or controlled by the firm.
Sanchez, Heene and Thomas (1996)	Resources include assets that are available and useful for opportunities and threats.
Eneroth (1997), Sanchez and Heene (1997), Sanchez (2001)	Points out that the problem of too many definitions of the resource concept.
Javidan (1998)	Resources are the building blocks of competencies and consist of three types: Physical, human and organizational.

Table 2.4 References for the resource concept, presented in chronological order.

2.3 The theoretical basis of the thesis

The preceding brief reviews of the focal concepts have established a base for further, more specialized discussions. The major difficulties inherent in the existing core competence literature, including the literature on the associated concepts, resulted in the formulation of three research questions.

The research questions build on each other in sequence, meaning that initial assumptions and inputs are transferred on to the questions that follow. In the following paragraphs, the assumptions of the research questions are scrutinized with the help of the interim model, which by the end of the chapter will have been refined into a research model.

2.3.1 Definitions

From the previous conceptual discussions, we can conclude that commonly adopted definitions do not exist for any of the associated concepts. The necessary decision for this thesis, then, is whether to adopt an existing definition or to create a new one. Unfortunately, the existing definitions are not applicable to the approach of this thesis, with the exception of the definition of the core competence concept; the Prahalad and Hamel (1990) criteria are suitable in this case.

All of the existing definitions for the associated concepts seem either too abstractly formulated or too inclusive of misleading notions, for in-

stance when Javidan (1998) defines the associated concepts as being aggregated. As previously explained, such a notion is discarded in this thesis. Instead, it is here searched for inter-concept distinctions and at the same time for intra-concept generic definitions. It is thus necessary both to discriminate between the focal concepts and to use definitions that are parsimonious in the sense of being consistent. For these reasons, new definitions are formulated which will include certain notions from the existing literature.

An implicit notion of the competence concept is that it involves people: Individuals and teams nurture a competence and keep it up-to-date when using it. Hence, to avoid redundancy, competencies must be applied. Furthermore, the application must be relevant and consistent in order to maintain and develop the competence out of redundancy.

This thesis focuses on competencies that go beyond maintenance; such a competence is referred to here as development, which is similar to the existing literature (e.g. Danneels, 2002). Therefore, competencies are defined here as developments made by individuals and teams.

The existing literature applies the capability concept in multiple different ways. Since it is here decided that the definition ought to be intra-concept generic, both the operational/strategic and the static/dynamic characteristics ought to be included. The ability notion is excluded as well and instead takes on the notion of the concept that involves routines. As shown in the discussion of the capability concept, scholars emphasize the structures that capabilities bring to an organization and the pattern of changes and decisions that they are artefacts of. The distinction from *ad hoc* activities is often stressed as well, which further emphasizes the notion of routine. Not only tacit routines are relevant: Planned and implemented routines such as systems, for instance, software to organize customer accounts and certifications of quality, are added as well. Thus, a definition of capability can be formulated: In this thesis, capabilities are defined as systems and routines, a definition adopted from (Zollo & Winter, 2002; Winter, 2003).

The existing literature on resources is partly focused on categorization that is crucial for the efforts of categorization. However, since the associated concepts are discriminated in the present thesis, this application is too general; some of the categories would be suitable for any of the associated concepts. Thus, in accordance with the search for definitions that are inter-concept distinctive, yet intra-concept generic, a resource is here defined as an input to the value process, a definition adopted from Grant (1991).

2.3.2 Research question 1

The first research question is formulated as: How can the associated concepts be conceptually and empirically discriminated? This question has already been partly penetrated, given the conceptual definitions outlined in the previous sections. The empirical discriminations are described in

the next section, since they involve links from the associated concepts to a core competence – which apply to the formulation of the second research question.

2.3.3 Research question 2

The second research question is formulated as: What are the specific characteristics of the associated concepts when linked to a core competence? The conceptual and empirical discriminations developed in Paper I are used as input when specifying the characteristics. Since the conceptual definitions are already set, the focus is on the empirical definitions. Here, an empirical definition specifies a conceptual definition; the latter is more widely expressed due to the attempt at being generic.

The empirical definitions here indicate the link between the associated concepts and the core competence concept. Not all of the associated concepts in an organization are linked core competence; it is assumed that only the exceptional associated concepts are linked to a to a specific core competence. This implies that the empirical definitions ought to be more narrowly formulated than the conceptual definitions.

Some scholars who focus primarily on the competence concept label this distinction as competence building and competence leveraging (Sanchez *et al.*, 1996), in a similar way to the distinction between exploitation and exploration (March, 1991). The significant distinction between the two, according to Sanchez *et al*., is that the former implies quality changes. Thus, the empirical definitions of the associated concepts must involve quality changes; otherwise, they would not be exceptional.

Therefore, the empirical definition of the competence concept must involve developments – which is an expression within the conceptual definition – yet be more narrowly expressed and simultaneously be exceptional. Here, "improvement" is chosen as the empirical definition for the competence concept. The difference between developments and improvements is that the former only involves change from one status to another, while the latter involves change into something superior; for instance, higher quality, faster delivery, more satisfied customers, product innovations that push competitors' products out of the market and so on. Thus, only competencies that improve core competencies are empirically linked.

The existence of a conceptual link between a competence and a core competence is already established – through the three criteria that separate the two concepts – as defined by Prahalad and Hamel (1990). For the capability and resource concepts, however, the links are only assumed to exist.

The selected empirical definition for the capability concept is "support". It is distinctive from systems and routines and it adds a purpose; to support core competencies. A capability may be conceptually linked to a core competence through systems and routines. Yet, if that capability is

not supportive, that is, if it does not bring structure and order to a core competence, then it is not empirically linked to the core competence.

A resource is conceptually defined as an input to the value process and "utilization" is chosen as the empirical definition. Utilization brings a purpose to the input and accordingly links a resource and a core competence.

2.3.4 Research question 3

The third research question is formulated as: How do the associated concepts influence core competencies? This question implicitly assumes that the influences from the associated concepts differ.

The focus of the third research question is the search for influences; or, more precisely, the search for differences in influences. The framework for the influences is adopted primarily from the second research question and secondarily from existing literature.

The sequenced design of the research questions implies that the logical approach is to adopt a flexible and explorative mode. Hence, the empirical study concerning this research question is not designed to test hypotheses.

2.3.5 Research model

It is now possible to refine the interim model of this thesis into a research model. The research model structures the adopted conceptual framework and highlights its assumptions.

It was possible to discriminate the associated concepts both through the conceptual definitions and through the empirical definitions. The former specify the characteristics of the concepts and the latter indicate the link to core competence. The links are of two types, conceptually agreed and proposed; see Figure 2.1.

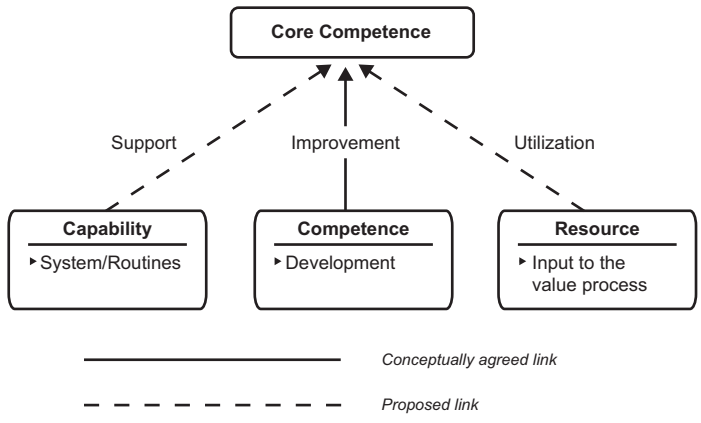

Figure 2.1 The research model of the thesis.

3 Method

3.1 Research process

3.1.1 The theoretical process

The research process of this thesis started with an empirical study carried out by the author among nine diversified companies, in which the respondents had difficulty describing their company's core competencies. This result could be traced back in the existing literature all the way to the original notions of the core competence concept (Prahalad & Hamel, 1990); it was found that this concept was quite vaguely described. This surprising result then triggered an interest in clarifying the notion.

It is not the agenda of this thesis to change the core competence concept *per se*. On the contrary, the original notions are preserved as far as possible. The choice to preserve the original notion altered the focus of the thesis from the core competence concept to the associated concepts. That is, it was assumed as a fundamental that the associated concepts could clarify core competence matters. Therefore, while this thesis is about core competence matters, it focuses on the associated concepts.

3.1.2 The empirical process

Prior to visiting the case company and initiating data collection, the author reviewed the existing literature thoroughly in order to decide how to empirically identify the focal concepts. The main issue concerned how to identify core competencies through competencies. One of the first alternatives considered was to follow the most common identification process in the existing literature by identifying the associated concepts. This process was decided against since it usually involves merging the associated concepts – they are simply used to "funnel" core competencies – and this is not in accordance with the assumptions of this thesis.

An alternative that was considered takes on the previous process but avoids the problem of mergence. Core competencies are identified through the same process (including the merging of the associated concepts). The associated concepts are then discriminated and identified (causewise) backwards from the identified core competencies through "laddering", using a technique known as "means-end". Laddering is a commonly-used method in marketing studies, where, for instance, customers are not aware of the reasons for their preferences and behaviours

(e.g. Bourne & Jenkins, 2005). However, there is a risk to adopting an existing process such as this, since it would probably reduce the chances of gaining new insights into the core competence concept. The existing literature has been heavily criticized from the outset of this thesis; it was therefore decided that new paths were required.

Yet another alternative was to turn the process around and adopt the most common definitions for the associated concepts and then use these to empirically identify core competencies. Unfortunately, it proved impossible to find any commonly agreed definitions for the associated concepts. Hence, this alternative was also soon abandoned.

A bottom-up design became appealing to the author, since it put prime focus on the associated concepts. The first problem that occurred was how to identify and discriminate the associated concepts, given that they were frequently merged in the existing literature. Several alternatives were considered in the search for discrimination. This search inevitably brought in the question of identification; which artefacts are most representative? It seemed logical and important to use the same identification process for all the associated concepts; this would facilitate valid and reliable discriminations.

One of the bottom-up alternatives considered was to start with products and to divide them into simpler and more complex types, with direct and indirect involvement of the associated concepts. This logically made sense, since products are the results of the focal concepts. Pure goods and pure services were categorized as simple products and noted to primarily involve resources, for instance as input to the manufacturing processes. The people involved in delivering the services were not categorized as competencies but as resources, since they delivered a product; that is, they took action as part of the resource activities. More complex products, such as combinations of goods and services, brought in capabilities, competencies and eventually core competencies – in R&D activities, the entering of new markets and so on.

This alternative was dropped for two reasons. Firstly, it became too difficult to separate direct involvement of a concept from indirect involvement. For instance, even though a good may have been manufactured in a simple process, the end product inevitably involved competencies and capabilities, for example when it was sold or delivered. Secondly, the division into simple and complex products was not logically correlated with the associated concepts. For instance, a complex core competence could produce a simple product.

The results of this attempt forced the author to re-evaluate the identification process and the focus was changed from products to "activities and processes" within the organization. Activities and processes were chosen since they were considered to be more generic than products, yet still tangible to the employees and operational in the organization.

Manufacturing processes and other similar processes were accordingly categorized as resources, since they are the artefacts of the value process, in accordance with the selected conceptual definition of a resource. Ad-

ministrative systems and routines and the like were categorized as capabilities, since they are patterns of systems and routines structuring activities and processes, again in accordance with the selected conceptual definition. Finally, activities and processes involving people were categorized as competencies.

This categorization of activities and processes, however, proved to be insufficiently specific to discriminate the associated concepts; the notions of the former implicitly brought in aspects of concerning, for instance, time and the static/dynamic divide and these assumptions confused the discrimination. Accordingly, further refinement took place. The focus was changed again, towards "occurred events", an expression which includes the activities and process, but puts emphasis on occurrence.

The data collection involved not only discrimination of the focal concepts but also the inclusion of as many as possible of them from the start. Due to the results of the aforementioned empirical study, as well as results from existing research concerning confusion over core competence terminology (Clark, 2000), caution was applied regarding the respondents' familiarity with the focal concepts. The decision was ultimately made not to specify the focal concepts during the data collection. This may seem contradictory to previous arguments, in which criticism has been made of scholars who use the concepts indistinctly. This situation, however, is different. By avoiding too much specificity in the data collection, more data can be collected, due to the wider and broader approach adopted. In fact, a researcher who works in this way can take some of the responsibility off the respondent; that is, it becomes easier for the respondent to comprehend the questions, since they are open-ended rather than specific. Still, it is necessary that the researcher not be too vague, as there is a danger that the respondent may misinterpret the question.

Thus, in this study, general expressions were used instead of specific ones; for instance, "critical resources" was used instead of for instance "tangible resources" and "intangible assets". It was assumed that specifying tangibility and intangibility would lead to the respondent asking for the difference between a tangible and intangible resource, as well as that between a resource and an asset – and such a discussion is outside the scope of this thesis.

Accordingly, later in the analytical process the researcher must identify the focal concepts from the wide range of data that has been collected. The choice to take a broad approach in the data collection also facilitates the explorative approach that was chosen for the study.

Thus far, only the initial decisions taken when planning the study are described. Before going into the in-depth descriptions of the data collection, it is essential to describe the research design, which consisted of a single case study.

3.2 Research design

Empirical studies of complex phenomena such as core competence are not easy to perform. The difficulty lies not only in selecting the most apt definition, as became apparent in the previous chapter – and in the aforementioned empirical issues – but also in ensuring validity and reliability. Complex phenomena, such as organizational change and development, are often studied by longitudinal approaches. A longitudinal study approach makes it possible to capture what happened and also how and why it happened (Pettus, 2001). Longitudinal studies can be conducted both in real time (Van de Ven & Poole, 2000) and in retrospect (Tripsas & Gavetti, 2000). It is often more important to grasp the context and the overall patterns of change than to capture the precise time and timing of a change. However, the longitudinal time-span should not be too short, since it might then become difficult to detect any changes (Barr, Stimpert & Huff, 1992). Still, there exist successful studies covering time periods as short as six years (Webb & Pettigrew, 1999).

This study is not longitudinal, since the analysis did not include processes involving, for instance, change and development. That is, even though some data may be classifiable as process data, the analysis will not involve such aspects or dimensions. This was a deliberate choice, taken after approximately half of the data had been collected. The reason for this decision was that the phenomena under study were so complex to collect, identify, comprehend and analyze that additional dimensions such as change and time simply would not fit within the time limitations.

Hence, this is not what Ghauri and Grönhaug (2002) call a "one-shot case study", which they claim is a weak research design since it does not allow comparisons. Instead, this is a single case study that includes historical data as well as current data; collected by multiple methods, at different sites and over several years.

The primary reason for deciding on the single-case design was that it facilitates a comprehensive study in which it is expected to add new aspects to the analysis. The opportunity to study the case with multiple methods and with unrestricted access was also welcome, since these aspects increase the possibilities for thick case-description and analysis. The decision to limit the study to a single case was also justified by the necessity of a deep understanding of the context wherein the focal phenomena reside. However, there are multiple arguments against a single-case design (Yin, 2003). For one thing, it may be difficult to generalize the results outside the empirical context and to compare the findings with similar studies. It is also easy for a researcher to become biased or uncritical regarding the case. On the other hand, Easton claims that a single case cannot be generalized to populations, but "…to a real world that has

been uncovered" (Easton, 2000:214). The disadvantages of the focal research design are further discussed in the final section of this chapter.

Initially, a cross-sectional design was considered instead of the case design. The primary benefit of a cross-sectional design is the explanatory power of the analysis. However, since the existing mixed-up definitions of the focal concepts indicate that we do not fully understand their basic conceptions, it was decided that valid operationalizations were unlikely.

The focal concepts are indeed complex to study, to comprehend and above all to measure. Complex phenomena put a particular burden on the researcher, since they imply the necessity of acknowledging the context in which they reside (Easton, 2003). Scholars have emphasized the importance of the context: "…organizational processes cannot be understood in an a-contextual, cross-sectional manner" (Balogun, Huff & Johnson, 2003:199). Other scholars have conducted empirical studies on complex phenomena in which the context is emphasized: Of processes (Van de Ven & Poole, 2000), and of phenomena (Tripsas & Gavetti, 2000; Wilcox King & Zeithaml, 2003). The value of a context that includes thick descriptions (Rouse & Daellenbach, 1999) is emphasized here since it has been suggested to give the author a chance to engage the reader in the study and to make it trustworthy (Creswell, 1998).

In line with thick descriptions, it might be valuable to distinguish between different types of case studies. Some scholars have suggested a distinction between research designed to describe or explain cases on the one hand and research designed to develop and test theories on the other (Hammersley, Gomm & Foster, 2000). The proponents of this distinction state that the latter type may be applicable to case studies, but add a caveat: "In theoretical research, interest in cases is indeed restricted to the ways in which they exemplify the relevant theoretical category. By contrast, where the aim is description and/or explanation, the task is to document what occurred in the particular case(s) being studied and why" (p. 250). In this thesis, the focus is on description rather than theory development.

A basic premise when categorizing cases is whether they are seen as empirical units or as conceptual constructs and whether their conceptions are of specific or of general type (Ragin, 1992). The first dichotomy pinpoints whether cases exist "out there" and therefore are discovered by the researcher, or whether the researcher constructs them. In this thesis, the case was found. The other dichotomy asks whether a case is in general a recognizable unit. The general category is applicable here, since the concepts studied are assumed to exist in many cases.

A number of criteria were used in selecting which case (company) to study. These criteria were based on advice given by Yin (2003), who says that single-case is a delicate study design since it requires "careful investigation of the potential case to minimize the chances of misinterpretation and to maximize the access needed to collect the case study evidence" (p. 42). The first criterion, therefore, was that the case had to involve multiple core competencies which were transparent and identifiable. Secondly,

it was important to achieve open access, with no hampering restrictions. Thirdly, it was beneficial if the case had core competencies with divergent origins and/or applications, which was assumed to make the analysis more interesting and dynamic. A case fulfilling all three criteria was found in the aforementioned empirical study, which was particularly interesting to study in regard to core competence issues. The company was multi-diversified; it produced pure goods, pure services and different combinations along the continuum. The company was also organized into several strategic business units. A third aspect was that the main business was located in Scandinavia, which the author hoped would ease the empirical access. Access to the company was granted after meetings with the company CEO to discuss the potential study. The company is anonymized here by request of the respondents and is referred to as The Transfer Company. Further information about the case company is provided in Appendix.

3.3 Data collection

Leonard-Barton has emphasized the importance of letting the research methodology slice vertically through the organization, in order to capture data and perspectives from different levels and viewpoints (1995). This is most likely especially important for complex phenomena, such as core competence matters, since they are normally present within an organization in different functions, different departments and so on. When conducting case studies, it is usually easy and natural for a researcher to employ different methods. In this thesis, both primary and secondary data are used, since the different types complement each other; the heterogeneous approach enhances multiple facets and facilitates comprehension and analysis.

Data were collected using several methods and from several sources, covering multiple countries, all available hierarchical levels of management, all divisions and multiple functions among the employees of the case. This diverse approach had two purposes; firstly to enrich the empirical case (as advised by, for instance, Hammersly and Gomm (2000)), thus improving its trustworthiness and secondly to enhance validity by means of triangulation (Creswell, 1994; Denzin & Lincoln, 1998; Huberman & Miles, 1998).

Samples, study designs and methods need not be completely prespecified in qualitatively guided studies such as this, according to Miles and Huberman (1994). Instead, the analysis emerges during the data collection and is driven by the conceptual framework; basically, by the research questions. This is a fairly accurate description of the approach taken by this thesis: The explorative intent guided the data collection process and it also structured the analysis. The precaution of using a sampling checklist was adopted, which ensures that accurate and useful data

are collected (Miles & Huberman, 1994). The adopted checklist advises that the sampling should be relevant to the conceptual frame and to the research questions. It suggests also that the empirical phenomena should be ensured to appear in the data and that the sampling enhances potential generalizations. Furthermore, it should be possible to produce believable descriptions and the sampling should be feasible in term of time, access and work style. Finally, the sampling plan should be ethical in terms of the researcher's relationship with the respondents.

The data collection process should also frame the case and help to uncover and qualify the study (Miles & Huberman, 1994). The frames of the study were decided on quite early in the data collection process. They are contextual and yearly. The former was given beforehand, when the single-case design was chosen. The latter was included since annual reports were used to provide structure before, during and after the interviews; without this, the analysis would have been restricted by the respondents' limited awareness of in-depth descriptions, lack of memory and inability to possess an overview of the company.

Data collection took place during the years 2002 to 2005 and two types of data were collected. The primary data was gathered via interviews, direct observation and two telephone surveys. The secondary data included annual reports and other archival documents. The data collection took place in three phases. In the first phase, annual reports and other archival documents were studied and introductory interviews were conducted with key informants. The aim of this initial phase was also to enhance comprehension of the case and its context. The frames of the study were also refined during this phase, since it was decided to bring additional structure to the data. Besides the context and per year, two frames were added: Per business area and per associated concept.

The second phase covered the majority of the data collected. Most of the interviews were conducted during this phase; interviews were recorded, transcribed and sent out to respondents for correction and verification. This phase also included a deep study of annual reports for the years 1992–2004, as well as data collected by means of direct observations and study of other archival documents. The end of the second phase was marked by the writing of a summary case report (see Appendix).

In the third phase, data was collected from two telephone surveys: one external and one internal. The external survey was conducted by customers, for reasons of core competence verification. The internal survey was completed by employees, which assessed influences on different core competencies.

Each data collection method will now be described more thoroughly.

3.3.1 Interviews

The purpose of the initial interviews was to introduce the author to the case, to provide input to the next phase of data collection and to provide an anchor point for later validation via triangulation. The immediate aim

of the interviews, however, was to facilitate the discrimination, identification and discovery of the specifications of the associated concepts. The interviewing process was guided by the advice given by Kvale (1997).

The data collection initially involved separate interviews with the CEO and two business area managers, with the purpose of informing the author about the case and its context. Interviews were then conducted with individuals suggested by the CEO and two business area managers from criteria formulated by the author. The criteria were: They should hold a strategically informed position or have a key position in any of the following functions: Marketing, manufacturing, research and development, administration and management. The three managers supplied a list of potential respondents and motivated their selection to the author. However, this list was only a recommendation; the open access made it possible to interview any employee. The interviews were booked by the author over the telephone. In these telephone calls, the respondents were informed of the purpose of the interview, the scope of the author's access to the company as determined by the company CEO and the ethics of the study, including respondents' anonymity and information confidentiality. The interview guide was sent out to each respondent by e-mail well in advance of the interview, confirming where and when to meet.

The second-phase interviews continued until saturation emerged, as advised by Lincoln and Guba (1985). Saturation is defined as the point when additional interviews did not generate any new insights or useful data. The interviews had an informal character and consisted of open-ended questions (see Appendix for the interview guide). The majority of the interviews covered the past 10 years of the company's history, but the timeframe ultimately depended on the respondents. Three key informants of long tenure provided information about the past 30–50 years. Some of the respondents were interviewed more than once; in total, 20 unique respondents provided approximately 30 interviews. The interviews lasted from one to three hours and mostly took place at the company plants, at four different locations.

Early in the data collection process, it was decided not to directly ask the respondents to specify the company's core competencies. There were two reasons for this decision; firstly, the decision was made because of the vagueness of the concept. Secondly, it was believed that there was a major risk that concept definitions would differ, both between the respondents and between the respondent and the author.

An alternative approach was considered, that of providing the respondents with a straightforward definition, but this idea was discarded due to the explorative approach that had been decided on. In addition, the empirical study did not aim to assess the awareness of the respondents' definition of core competence, a lesson learned from the previously mentioned study in which respondents' definitions diverged vastly (Clark, 2000). Hence, "core competence" was never mentioned during the interviews and instead more generally formulated questions were asked about the concepts, as previously mentioned. This approach was adapted from a

previous core competence study (Johnson & Johnson, 2002) in which the authors asked respondents to list their current "most important elements of their success" and to describe "what customers believed them to be especially good at and which set them apart from their competitors" (p. 221).

All interviews were recorded, transcribed and sent out to the respondents for correction and verification. Rewriting and correction continued until final acceptance by the respondents, which occurred in almost all cases.

3.3.2 Study of annual reports

The study of the annual reports covers the years 1992-2004 and partly served to introduce the author to the case. The true aim, however, was to supplement the interview data by facilitate the discrimination, identification and discovery of the specifications of the associated concepts and to bring structure to the study, as well as forming part of the triangulation validation.

Data collection from annual reports has been criticized, since such reports are essentially the top managers' communication channel for favourable information. Due to the resulting contextual dependency, this can be a disadvantage when attempting to elicit cognitive maps from managers (Johnson & Johnson, 2002); who warn that "such maps [crafted from documented archival data] may tell us a lot about what a company wants the outside world to think it is thinking, but little about what individual managers are actually thinking" (p. 233).

Since this thesis is not concerned with cognitive aspects, this issue is of less importance here. However, caution was applied when analyzing the data.

3.3.3 Direct observations

The data collection also involved direct observations, which were conducted at different conditions, times and levels in the organization. The purpose of these direct observations was to complement the data previously collected from interviews and study of annual reports.

The attendees of the meetings the author attended were first informed of the purpose of the observation and the author was introduced by a top manager. The author sat down at the meeting table with the others, but did not participate in the discussions. During the breaks, all parties mingled and the author asked follow-up questions to clarify his perceptions. The author was allowed to take notes during the meetings, as were all attendees.

One of the meetings attended by the author was arranged by a business area manager. It was a full two-day strategic meeting for the business area and several general managers attended. They were: Country managers, sales managers and a controller, in total 10 people. The aim of the

meeting was to discuss past performance, future actions and objectives and to align them to the corporate strategy and objectives. The meeting was focussed on internal matters, although a few suppliers were invited to the second day of the meeting to discuss joint campaigns and actions.

Another type of meeting attended was aimed at structuring the applications of a new software system for the internal corporate businesses. Employees from different business areas, functions and hierarchies were interviewed by the current software supplier representatives with the aim of identifying needs and wants for a forthcoming major upgrade. Five of these meetings were observed, each lasting between half an hour and one and a half hours.

3.3.4 Study of archival documents other than annual reports

Archival documents other than the annual reports included the company's internet site, internal memos, protocols and bulletins, as well as brochures containing product information and promotions. External sources such as newspaper and journal articles were also studied. The information in these archival documents enhanced the author's understanding of the case and complemented the other data.

3.3.5 Telephone survey of customers

Two surveys were designed and launched within the case study; one was administered to customers and the other to employees. The purpose of the former was to verify the potential core competencies that were empirically identified.

For several reasons, it was decided to perform the data collection via telephone for both the surveys. The telephone establishes a relationship with the respondents (Cycyota & Harrison, 2006), reduces respondent bias and secures a high response rate. This process also carries the benefit of respondent identification, which enhances the precision of the study.

Ten potential core competencies could be identified through the empirical case and they are described in Appendix. These ten competencies were assessed independently by three key informants holding strategic informed positions with a long employment tenure in the case company, a procedure that enhances validity (D'Ambra & Rice, 1994). However, such a procedure does not verify the ten as core competencies; for that, customer assessment is needed, according to Hamel and Prahalad: "Customers are the ultimate judge of whether something is or is not a core competence" (1994:225).

Therefore, for assessment of core competence, the CEO and four business area managers were asked to select customers of major importance to the company, preferably involving different products and different business areas. Nine customers were selected to participate of which six had jointly developed major projects with the company, which will have

increased their awareness of company matters, in particular regarding technology and markets. Prior to contacting these customer representatives by telephone, the company's top managers were asked to inform them about the agreements regarding the ethics of the study, confidentiality and so on, in order to increase the customers' trust and the trustworthiness of their answers.

Before the telephone survey began, products that belonged to each of the ten potential core competencies were identified. The five top managers were also interviewed briefly about the selected customers: The length of the relationship with the customer, which products the customer used, to what degree the customer had participated in product developments and so on. The customer representatives were then contacted by the author, one at a time by telephone.

The survey session began with a brief introduction by the author with the intention of informing the customer representative of the purpose of the study, the questions and the response scale. In order to simplify the procedure, the survey was not sent out to the customer representatives beforehand.

The study was designed to assess one core competence at a time and by the time two core competencies had been covered, the representatives had become familiar with the study design. The customer representatives were not acquainted with all core competencies, and so they were firstly asked to what degree they were familiar with the particular core competence of interest. If they answered that their familiarity was low, that core competence was omitted for that customer. Occasionally, the customer representatives were not acquainted with any of the exemplifying products, yet were familiar with the underlying core competence. In these cases, it was explained that the products mentioned were only examples, and if the customer was familiar with the core competence itself, the study could proceed.

They were asked to indicate on a five-point Likert scale how well each of the ten core competencies fulfilled certain criteria. The criteria used were the same that define a core competence, namely: Must contribute significantly to the perceived customer benefits of the end product; is competitively unique; and provides potential access to a wide range of markets. Each criterion variable was operationalized as a number of survey variables; these variables are summarized in Table 3.1 and described further below.

Contribution to customer value is the first criterion. The initiators of the core competence concept (Prahalad & Hamel, 1990; Hamel & Prahalad, 1994) operationalized it as the aspect of the product that is important to the customer – what the customer is paying for. Javidan (1998), however, takes a benchmarking approach to the verification issue, which basically puts his approach on an entirely different level of analysis. What he calls "customer value" has three aspects; it concerns competitive advantage, it takes place on the industry level and it involves "…those vari-

ables and criteria that customers use in making their purchase decisions" (p. 66).

Here and firstly, only the core competence issues proposed by the concept's initiators are included. Secondly, the verification procedure is aligned to the particular market and specific customer, to enable customers' comprehension of the particular competence under study. Finally, the issue of purchasing decisions is not applicable to this thesis; here instead the current customers' perceptions of current core competencies and related products are assessed.

The first variable in the survey measures the general notion of the first criterion (see Table 3.1). The second variable measures adaptation to the customers' need, which historically was found to be a critical issue for the case company. The third variable was suggested by Hamel and Prahalad (1994) that manufacturing processes that bring cost benefits may also be a core competence. It is worth noting that this aspect does not have to be visible to the customer, nor do the cost advantages have to be passed on to the customer, for the competence to be core. Still, customer assessments bring in customer visibility. The fourth variable measures where in the customers' value process the product's value is delivered; whether directly in the organization, or, perhaps, also passed on to the customers' customers. This variable was included since the case company frequently delivers products to its customers' customers.

It could be argued that customer core competence assessment typically only involves the criterion particular to customers, that is, contribution to customer value. However, it was decided to involve all of the criteria, since it was assumed that the customers were likely to be able to assess them all. This differs from the approach recommended by the initiators of the concept, who suggest benchmarking competitors for a "reality check" (for the criterion of being competitively unique), and asking managers to identify new product arenas (for the criterion of providing access to new markets) (Hamel & Prahalad, 1994). While operationalizing the first criterion into variables, the author realized that the customers are important to the second and third criteria as well. In the case of the second criterion, it is the customers who ultimately decide what is competitively unique, that is, whether or not the uniqueness is valuable in the particular market; this fact determined the fifth variable. The sixth variable, innovation, involves a signifying uniqueness aspect to the markets of the case company. The seventh variable brings in forward integration, by involving the customers' customers, a type of customer relation that was found to be rather common in the case company, as seen with the fourth variable.

Current customers seem to be involved in new markets in two ways relevant to the final criterion. Firstly, customers can increase their purchasing volumes, both by increasing the quantity of current products purchased, but also by moving into new product types. The latter is obviously a new market to a supplier. Secondly, the purchased product can open up new markets to the customers themselves, which brings up the question of how to define a market; is it the customers that purchase our

products, or the customers that our customers serve with the help of our products? The initiators of the core competence concept may have felt that this last criterion should have an internal focus; that the competence should be applied to new markets and driven by internal forces of integration, transfer of technologies and so on (Hamel & Prahalad, 1994). However, if that notion gives the same result as when current customers buy new product types, the separation seems redundant, at least when it comes to external assessments of core competence. When it comes to internal assessment, aspects such as the applications of the competence are probably more important. These notions are represented by the eighth and ninth variables.

Criteria	Variable
Contributes to customer value	1. Products from this core competence are important to us 2. Products from this core competence are adapted to our needs 3. Products from this core competence are cost efficient 4. Products from this core competence help us satisfy our customers' needs
Being competitively unique	5. Products from this core competence are unique on the market 6. Products from this core competence are innovative 7. Products from this core competence make us competitively unique on behalf of our customers
Gives access to new markets	8. Products from this core competence give us access to new markets 9. Products from this core competence could to a larger extent be used in our company.

Table 3.1 Criteria and variables for customer core competence assessment.

3.3.6 Telephone survey of employees

An additional telephone survey was conducted with a selection of company employees, who were assumed by the author to be best suited to assess the influences on core competencies and their discrimination. This assumption rests on the fact that company employees are frequently used for core competence matters (e.g. Prahalad & Hamel, 1990; Eden & Ackermann, 2000). Prior to launching the survey, its design was discussed with the case company CEO and other top managers. These managers informed the author that company employees were often asked to fill in forms and surveys, both internally and externally, which fact would necessitate additional caution in the design of the survey. This information further strengthened the decision to perform a telephone survey – bringing seriousness to the study – which possibly makes the respondents more motivated to participate.

Additional efforts were made to increase the respondents' motivation to participate in the study. For instance, the four business area managers

sent out an e-mail to the respondents selected for participation in the study, describing the purpose of the study and enclosing the survey. This procedure validated the full access of the author and it emphasized the study's importance to the respondents. In total, 97 respondents were selected by the four business area managers, the CEO and middle managers to participate in the study. These 97 represented all the managers of the case company, from the CEO to the department managers and also respondents with special functions, for instance regarding R&D and internal support functions. The survey was completed by 93 of the 97 invited.

The survey was first pilot-tested on senior academics. After some corrections, it was pilot-tested again, this time on the CEO in the case company. This second pilot-test resulted in some minor restructuring and rephrasing.

In the initial email from the business area managers, respondents were encouraged to suggest telephone appointments by e-mailing the author. The author called each respondent at the proposed time. Prior to commencement of the interview, the respondent was informed of the ethical issues associated with the survey, such as confidentiality of answers and other survey issues, such as the response scale used. When administering the survey, the author read each question out loud, one at a time, and then waited for the respondent's reply. The answer was keyed in to a predesigned software program. This survey design had several benefits; for instance, it was impossible to key in an answer incorrectly, due to the software design and the respondents only had to concentrate on the answer, not on how or where to indicate the answer. The telephone calls all lasted between 15 and 60 minutes, with an average duration of 25 minutes.

The survey aimed to measure the influence of the associated concepts on three different core competencies, which are described in Appendix. In the operationalization of the associated concepts, the measures were disaggregated as close to the operational context as possible (Ethiraj, Kale, Krishnan & Singh, 2005); a disaggregated approach adopted to core competence issues (Wang *et al.*, 2004), and in this thesis as well. Existing measures were adopted where they were found to have sufficient measurement quality. When no existing measures were found to be suitable, new items were developed in accordance with the conceptual framework of the study and were discussed and tested with senior academics and practitioners. This procedure is obviously less reliable than ready-made and previously-tested measurement scales, but scholars agree that the core competence concept still lacks suitable scales (Miller & Shamsie, 1996, in Ethiraj *et al*., 2005).

The competence concept was captured by means of nine variables measuring development, adaptation and transfer, adapted from previous research by Danneels (2002), Henderson and Cockburn (1994) and Zander and Kogut (1995). The endeavour of the case company to be innovative in a trial-and-error spirit has historically been highly successful, primarily in the development of technological products. In this thesis,

such innovation is measured by *product development with customers* and *external partners, and by the R&D department's ability to innovate*. Another characteristic of the company is caring for customers, which is evident in its efforts to create customer loyalty. Adaptation to customer needs has always been a guiding light of all business undertakings; in fact, customer loyalty has proved to be one of the origins of customer-specific product development. Here, this is measured by *the ability to understand customer needs, the ability to adopt and create individual customer solutions,* and *the ability to integrate product solutions with customer systems*. The results of this adaptation and development, however, are only occasionally transferred over business area boundaries within the company. Here, transfer is measured by *the use of competencies across business area boundaries, the use of shared technology,* and *information transfer*. This includes transfer from one context to another, for instance between business areas.

The survey included four variables measuring organizational and transfer/communication capability; the former represents systems and routines and the latter (managerial) communication of explicating future directions. These measures were adapted from previous research (primarily from Nelson & Winter, 1982; Zander & Kogut, 1995; Winter, 2003). Since the case company is multi-diversified, its business undertakings and administrative processes rely heavily on common structures and systems; however, these are neither very often adopted, nor efficiently used in the company. In fact, the business areas often prefer self-developed systems. Here, the organizational variables concerned with capability are *efficiency in administrative work, internal support systems,* and *decentralization of central functions*. The last of these is an action initiated by the previous top-management team in the 1990s to enhance inter-business area cooperation. A new top-management team entered the company at the turn of the millennium and their visions and major transformation programs have since been implemented. This is measured by *increased focus on total solutions rather than single products*, which represents a transfer/communication capability with the aim of transferring from one support system to another.

The survey also included five variables measuring tangible, intangible and transfer/allocation resources; these were adapted from existing research by Grant (1991), Helfat and Peteraf (2003) and Zander and Kogut (1995). In the case company, it is apparent that cooperation between business areas is occasionally neglected. One reason for this is the perceived high boundaries between business areas, manufacturing units and other functional departments – often due to geographical distances. Here, this is measured by *the geographical location of the manufacturing units*. Tangible resources have a history of being crucial to the case company. They are measured here by *strong corporate finance* and *marketing expenses*. The former is clearly emphasized by both employees and customers as being of major importance, but the latter is seldom evident. The intangible resource variables are *manufacturing skill*, which is highly re-

garded by customers and *employee education*, which is assessed as being low.

3.3.7 Summary of data collection

Interviews and annual reports were used to introduce the case to the author. These two data sources provided discrimination, identification and specifications of the associated concepts, while the direct observations and the archival documents supplied complementary data. The customer telephone survey allowed verification of the potential empirically identified core competencies and the employee telephone survey allowed discrimination among the core competencies and assessments of the influences on them.

The methods had different purposes, used different data sources, focused on different time-periods and they were aligned towards different research questions, see Table 3.2.

Method	Interviews	Annual reports	Direct observation	Other archival documents	Customer telephone survey	Employee telephone survey
Purpose of the sub study	Discriminating, identifying and specifying the associated concepts	Discriminating, identifying and specifying the associated concepts	Complementary data	Complementary data	Verifying core competencies	Discriminating core competencies and assessing influences on them
Data sources	30 Personal interviews	13 reports	Approx. 20 hours	Approx. 100 items	9 respondents	93 respondents
Time period	1955-2005	1992-2004	2004	1992-2005	1992-2005	1992-2005
Research question	No. 1-2	No. 1-2	No. 1-2	No. 1-2	No. 2-3	No. 3

Table 3.2 Overview of the methods used in the thesis.

3.4 Data analysis

When collecting qualitative data, it is crucial to start iterating the analysis early (Miles & Huberman, 1994), especially when conducting interviews that are transcribed, to avoid information overload (Kvale, 1997). The study frames emerged partly from the conceptual discussions and partly from analysis of the collected data, in a procedure partly adopted from (Churchill, 1979; Wang *et al.*, 2004). The third frame was based on the

previous two and comprised the author's judgments stemming from interpretations of the two combined.

Due to the wide empirical data collecting approach, a multi-phase analytical process was developed. Interviews were performed in parallel with study of annual reports. The latter prompted questions for the former and data from both methods were compared with the findings of each other. The author frequently returned to earlier respondents to ask additional questions arising during interviews with other respondents, or through study of annual reports. Contradictory data was actively sought, which induced further penetration. New data brought into question, but also verified, existing data. Details were double-checked and divergent data were continuously reassessed. The recordings of the interviews were listened to several times and the transcripts of the interviews were read through repeatedly, while simultaneously taking notes and rearranging existing notes.

Although the analysis began with the data collection, this section focuses on the post-collecting analysis. For reasons of validity and analysis, the interviews and the annual reports were written up in a chronologically-ordered interim case description, covering the period of time from the founding of the case company until 2005. Three key informants independently read through and corrected the interim case description. It was also presented verbally to the operational board of the company. All three respondents proposed corrections to the case description on a detailed level. See Appendix for the case description.

The case description was used as one of three data displays for the analysis. The analysis began with a thorough reading of and listening to the data material, with the aim of finding what Miles and Huberman (1994) call patterns and themes. Initially, the search was focused on what here is called OSEs, short for Occurred Strategic Events. Occurred events were selected because it was assumed that something that had occurred was likely to be remembered by the respondents and accordingly mentioned during the interviews. Similarly, such an event was also likely to be included in the annual reports. Strategic here means internal and external events of major importance to the case company, which were assumed to involve activities and processes of core competencies. Examples of such activities and processes are: Acquisition of competitors and suppliers, market expansion and launch of new products. This is a somewhat blunt instrument regarding core competence matters such as identification, since it was during analysis discovered that strategic events were occasionally missed.

The suggestion of Miles and Huberman (1994) also were adopted, to look for additional evidence for the same pattern and to remain open-minded to disconfirming evidence. The latter tactic resulted, for instance, in noticing limitations of the case description data display; the efforts to make the text interesting and easily accessible made it less detailed. This drawback became apparent early in the analysis. Some of the data was removed from the case description data display since it was too unspe-

cific, including for instance generally formulated strategies and other issues unnecessarily spelled out, such as smaller organizational changes. Data with particular characters were also excluded. These included different forms of activities and processes: Tacit (taken-for-granted activities such as routines that did not follow the formal paths), emergent (for instance products not mentioned in the archival documents until launched to market), and redundant (such as technologies not yet applicable to new products and markets).

Due to these problems, it was decided to go through the raw data again and to set up a second, supplementary data display to reassess the previously neglected data. This second display widened the analysis and brought in data that were more detailed. While capturing the entirety of the data is probably impossible, the disparity was reduced by bringing in the supplementary data display.

To bring structure to the analysis, the identified OSEs were first clustered, arranged by year and by company business area as previously mentioned. This analytical technique is one suggested by Miles and Huberman (1994) to group and conceptualize large amounts of data. Occasionally it was not possible to relate an OSE to a specific business area and so a general category was added. When an OSE involved several business areas, the most apt was selected. A similar procedure was adopted for the year category; occasionally an OSE spanned several years, for instance when major processes, such as building new plants and developing supplier contracts, were involved. In such cases, all the focal years were taken into account.

Once the data was clustered by year and organizational unit, it was possible to begin a more advanced clustering procedure, aimed at identifying the focal concepts. When this more advanced clustering was complete, the data was ready to be connected to the theoretical basis adopted in the thesis, which moved the analysis upwards on what Miles and Huberman (1994) calls the abstraction ladder.

The connecting procedure started by measuring the data against the selected conceptual definitions of the associated concepts. One OSE at a time was compared with the conceptual definition of a resource (input to the value process). If it was a good fit to this definition, it was then measured against the conceptual definition of a capability and then against the conceptual definition of a competence. If the OSE was not a good match to either of the latter two, it was categorized as a resource. If it was a good match to the capability definition, it was categorized as such. If it was not possible to place the OSE in any of the three categories, it was classified as “other” and omitted from further analysis. When an OSE could be categorized as more than one of the focal concepts, it was thoroughly scrutinized, by studying the underlying data. This process allowed all OSEs to be categorized as a single concept, that is, as a resource, a capability, or a competence.

An attempt to identify core competencies by the three criteria and the identified competencies was deliberately avoided. Information regarding

whether a competence was core or non-core was not necessary at this stage of analysis and it was assumed that it could possibly alter the forthcoming analysis. In later analysis, as previously described, ten potential core competencies were identified, verified and assessed.

Additional structuring was needed now, since as many as 112 unique OSEs were identified. Hence, a third data display was designed; the plot display. All the OSEs were plotted on a diagram, with years on the x-axis and concept categorization (resource, capability and competence) on the y-axis. Different symbols were used to identify the different business areas. During the plotting, it was noticed that it was possible logically to link some of the OSEs. For instance an ISO certification in quality could be linked with an ISO certification in environmental concern that occurred a couple of years later; and the decision was supported by empirical findings since several interviewees had mentioned the first ISO certification as bringing structure to the organization and helping later system implementation. The business area categorization was neglected during the linking process, since by definition core competencies are often integrated; they rely on cooperation which can potentially occur across business area borders. The linking process ceased naturally when no further OSEs could be linked.

At this stage the plot consisted of competencies, capabilities and resources, all arranged by specific years and business areas. Ten potential core competencies were analytically identified from among the competencies in the plot using the process previously described, including the three criteria. In accordance with the recommendations of Prahalad and Hamel (1990), the potential core competencies were controlled: Firstly by not being assets and secondly, by not being single competencies, that is, they must be integrated. All of the ten passed both tests.

As a final refining step, the numbers of OSEs were further reduced by omitting those that were not directly or indirectly linked to any of the potential core competencies.

The construction of this third data display was quite work-intensive. However, it contributed to deeper understanding, both in general and in specifics, of the case and the core competence empirical matters. The display also advanced the analysis to a new level of abstraction when the empirically identified associated concepts were linked with multiple core competencies. In the final analysis, the case description was scrutinized using the research questions of the thesis (see the papers for further descriptions and analysis).

3.5 Validity and Reliability

Measurement and assessment of quality in terms of validity and reliability is often problematic in qualitative research studies, since in contrast to quantitative studies, clear rules and calculations of what good quality is

do not exist. Instead, it is the researcher's assumptions about the relationships between the conceptual construct and the empirical items that must be interpreted.

According to Yin (2003), validity is enhanced if several data sources are used, if the chains of evidence are explicated and if respondents give comments on transcripts and case descriptions. These three criteria are almost the same as those described by Creswell (1998), and they are all adopted in this thesis.

This thesis rests primarily on the advice from Miles and Huberman (1994) regarding conforming findings to enhance validity; this involves representativeness, the effect of the researcher, triangulation, quality of data, replicability and verification procedures.

To avoid over-confirming the analysis, data representativeness was taken into account in three ways. The first was to look for contrasting or extreme data that argued against or altered assumptions and findings. The second was to manage the data systematically in reduction, clustering and in general analysis, in order to detect weak analysis such as sampling. The third was to avoid declaring data saturation too early, that is, to avoid halting data collection too early with the claim that new data did not bring new information. Miles and Huberman actually advise increasing the number of cases, which is not possible when studying a single case. Since all three aspects have been given the fullest consideration, the representativeness of the thesis may be satisfactory.

The effect of the researcher involves two sides of the same coin; the effect that the researcher has on the case and the effect that the case has on the researcher. The author became well acquainted with many of the respondents and especially the top managers. During interviews and direct observations, the participants occasionally asked for the opinion of the author. This request was often neglected. Then again, these meetings were often outspoken, since the participants were informed in advance about the ethics and purpose of the study and of the author's access. On the other hand, answers from the interviews were questioned during and after the personal meeting, to find out more and related information, which might have affected the case. The other forms of data (archival documents and the telephone surveys) bring fewer problems to this issue; the former since it does not affect the case at all and the latter since the fact that data collection occurred over the telephone probably reduced the effects.

The other side of the coin involves the case affecting the researcher. In accordance with the advice given by Miles and Huberman (1994), several measures were taken to reduce such effects. The respondents had different profiles; they had different functions, hierarchy levels, geographical locations, lengths of tenure in the company and were organized in different business areas. In addition, respondents with deviating opinions and unique positions were actively asked for, to complement the assumed "mainstream" data. For instance, this involved interviewing former employees and top managers. Other tactics adopted, also recommended by

Miles and Huberman (1994), included triangulation and focusing on the research questions during (for instance) meetings in order to avoid letting the data collection process wander off track.

Triangulation is a technique which can enhance validity and enable matching of complementary data sources (Denzin & Lincoln, 1998; Huberman & Miles, 1998; Hammersley & Gomm, 2000). It has also been claimed to enhance replicability in that a new type or source of data by default requires replication of previous findings (Miles & Huberman, 1994). Triangulation was adopted here in data sources, data types and methods. Data sources involved different people, settings and places, for instance existing versus previous employees, personal meetings versus telephone interviews and on site meetings versus off site meetings. Data types included qualitative as well as quantitative data and primary as well as secondary data. Triangulation of methods involved interviews, direct observations, archival documents and telephone surveys.

The issue of validity also brings up concerns regarding quality of data. Several suggestions were adopted prior to and during the data collection process, which took place over an extended period of time and the majority of the data was of the primary type. The ample access granted by the CEO brought researcher independence to the entire data collection process, which probably strengthened the quality of data. On the other hand, a majority of the participants in the interviews and the direct observations were managers or marketers. In other words, non-managers, administrators, people within manufacturing functions, logistics, transportation, economy, maintenance, R&D and so on were all underrepresented. Still, people within all these areas were at least represented. The matters of concern of this study probably do not need full or balanced representation, since they are of a strategic and integrated type, which calls for representative functions.

The data from the direct observations and the archival documents other than annual reports did not primarily bring tangible data or information to the study. On the other hand, these observations did lead to good personal contact with a business area manager with long tenure in the company, who became a less formal key informant and case description verifier. He also became an onsite adviser, together with the company CEO.

According to Miles and Huberman (1994), the issue of replicability is the “bedrock of science” (p. 273). Triangulation is a type of replication, as is the procedure of verification. Both methods are adopted here. The research questions of this thesis have a definite sequence. When one research question was applied to the next, caution was applied to see if the findings fit, which among others involved questioning the existing findings. Miles and Huberman describe similar replication logic when an emerging hypothesis is applied to a new setting. Furthermore, they describe how replication can be applied by looking at consequences. In this thesis, some replication is evident in the two telephone surveys. The telephone survey of customers involved verification *per se*. The telephone survey of the employees involved assessment of consequences: The in-

fluences of the associated concepts on multiple core competencies. The foundations of the consequences emerged from a sub-study, which was replicated in the aforementioned employee survey. The latter study confirmed the previous findings and advanced the analysis towards more in-depth descriptions.

The replication would have been stronger if applied to an entirely new setting, such as a new case, but such would be beyond the limits of this study. On the other hand, it might have been possible, as Miles and Huberman (1994) point out, to pre-design a case within the case, for instance to take out a couple of core competencies, in order to allow replication of the findings post-study. On the other hand, this would probably have biased the findings in the first case study, since it then would have been incomplete.

The verification procedure is the last of the validity techniques adopted in this thesis and it is one that is highly regarded by scholars (Lincoln & Guba, 1985; Miles & Huberman, 1994; Bryman, 2002). The verification procedure here involved three phases. First, the interviews were all recorded and transcribed and most of the interviewees corrected the transcripts until they were satisfied. Second, an interim case description based on the initial data was written; it involved the majority of the interviews and also findings from the study of archival documents. This interim case description is a predecessor of the final case description found in Appendix. For reliability reasons, the case description was written and completed prior to data analysis. The case description was independently verified by the CEO and two employees with different backgrounds and functions in the company – both were strategically well informed and had long tenure in the case company (25 and 20 years respectively). Separate meetings, each lasting for two hours, were arranged with these two employees. At the meetings, their comments and corrections were discussed. A summary version of the final case description was presented verbally to the board of directors. Third, the potential core competencies were verified by customer representatives especially selected for the assignment.

Miles and Huberman (1994) give five aspects of quality of conclusions: Objectivity, reliability, internal validity, external validity and utilization.

The objectivity of a study can be assessed using a number of questions also proposed by Miles and Huberman, and these assessment methods are adopted here. The study methods and procedures are described explicitly and in detail and efforts are made to make the data collection procedures, processes, displays and so on visible to the reader. The conclusions are linked to exhibits of displayed data, for instance when describing the ten potential core competencies and their influencing associated concepts. Competing hypothesis and rival conclusions are emphasized in an ongoing basis, during data collection and analysis. The author has also, to some extent, made his values and personal assumptions clear, for instance when discussing the assumptions of the research questions. All study data have been retained and are available for others to assess.

Reliability is essentially about the degree of replicability (Carmines & Zeller, 1979; Bryman, 2002), an issue which has already been handled in discussing validity issues. According to Miles and Huberman (1994), reliability is also concerned with consistency of the study, across methods and researchers. In this study, the research questions were made clear and the design of the study was aligned to them, for instance by collecting data across multiple settings, among different groups of employees, at different time-periods, and so on. The author's role is fairly well described and the basic concepts have been specified. Data quality checks were made when questioning the respondents' answers and statements, but also during the employee telephone survey; emphasis was placed on assessing respondents' knowledgeability about focal core competencies. Throughout the entire data collection process, the study design, methods and findings were assessed by senior colleagues of the author, a tactic which probably enhanced the reliability. Reliability can also be enhanced by using a case study protocol, as is done here, since such a protocol helps to penetrate and analyze the collected data (Marshall & Rossman, 1999; Yin, 2003).

Internal validity is enhanced by context-rich and thick descriptions that make sense and are convincing. It is further improved if triangulation produces generally converging conclusions. In this thesis, the thick descriptions, to some extent, were traded for reader accessibility; the details of the complex focal phenomena made the descriptions too thick and cumbersome. Therefore, it was decided to lighten the case description somewhat and to omit non-essential details. Other features, which will have enhanced the internal validity of the study, are the linking of the data and measures to theory, the systematic relations among the concepts and the internal coherence of the findings. However, perfect coherency was not achieved, since some surprising results emerged during analysis.

Negative evidence and rival explanations were occasionally found and considered during the study. As previously mentioned, the internal validity could possibly have been strengthened by replicating the findings with other cases.

External validity rests partly on the same criteria as internal validity. In addition to these criteria, it is also enhanced when generalizability is improved by accurate and explicated conceptual sampling and by comparing to existing theory and when the scope of the study is made explicit by acknowledging generalizations that would be beyond its context. These issues are partly discussed in the final chapter, along with discussion of how the conclusions add to existing literature, suggestions for further refinement and testing of the results and suggestions of how these could be carried out.

Utilization, finally, is concerned with the implications of the findings. It is also referred to as pragmatic validity. Utilization involves issues such as whether the findings are usable and intellectually and physically accessible and if they would lead to specific actions or help solve specific problems. Questions such as these have been included in the present the-

sis from the outset, when the problems associated with core competence matters were first discussed. The issue of utilization is important, since the focal concepts are well-known to academics and practitioners alike and as such, they ought to be usable. The implications of this are discussed further in the final chapter.

4 Summary of the papers

4.1 Relations between the papers

This thesis consists of three papers, all of which have been accepted for publication by international scientific journals; for full papers, see Appendix. The papers all build on the same conceptual framework and therefore the original notions of the core competence concept are preserved. The papers focused on different conceptual and empirical issues, see Figure 4.1.

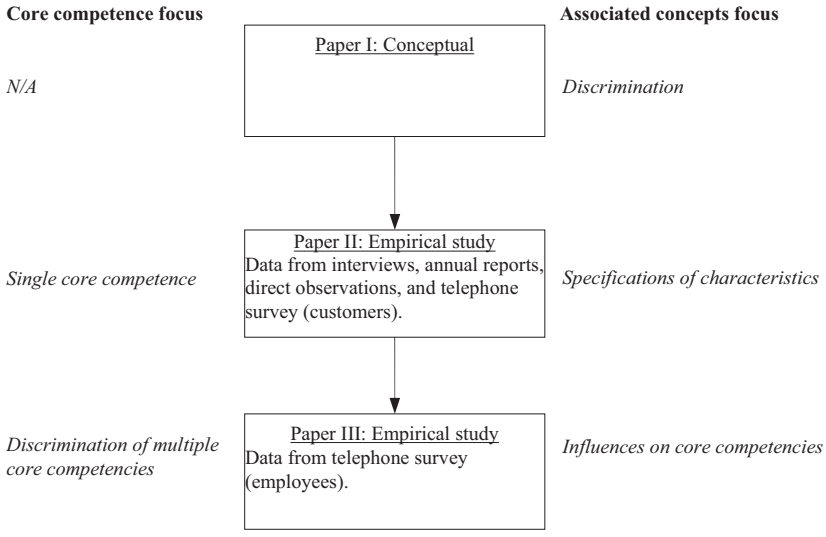

Figure 4.1 Relations between the papers.

4.2 Abstract for Paper I

Ljungquist, U. 2007. Core competency beyond identification: Presentation of a model. *Management Decision*, **45** (3): 393-402. Published.

Purpose: The purpose of this paper is to outline a model that is conceptually and empirically applicable by practitioners in contexts extending beyond mere core competence identification.
Findings: This paper demonstrates that the associated concepts (competence, capability, and resources) have characteristics that differ both conceptually and empirically. The findings also indicate that competencies are central to core competence matters; it is possible to distinguish them analytically by three criteria. Furthermore, the notions of hierarchy suggested in previous research could not be verified which implies that the associated concepts all reside at the same hierarchy level.
Research implications: The findings advance core competence theories that better serve the needs of practicing managers and consultants, by initiating a specific research agenda in conceptual and empirical reviews and discussions. By proposing a model, the study provides a point of departure for core competency research that goes beyond matters of identification.
Practical implications: The dissimilar characteristics of the associated concepts offer great opportunities to core competency management, by means of the different influences they have on core competencies. Their influence makes organizational change and rejuvenation not only comprehensible, but also manageable. This is of particular importance to organisations that need ongoing renewal of core competencies, for example, when facing dynamic business environments. Competence improvements manage and change core competencies; capability supports reinforce and create structure before, during, and after a change process; resource utilizations are operative, and need daily attention.
Originality/value: The paper initiates a new research agenda for core competency matters by acknowledging specific features of the concepts associated with core competence. This makes a significant contribution to the existing literature in terms of practical and scholarly applicability.
Keywords: Competences, Change Management, Corporate strategy, Organizational structures
Paper type: Research Paper.

4.3 Abstract for Paper II

Ljungquist, U. 2008. Specification of core competence and associated components: A proposed model and a case illustration. *European Business Review*. **20** (1). Accepted for publication.

Purpose: To outline a core competence model by exploring links between core competence and the associated concepts of competencies, capabilities, and resources, and by proposing refinements to the characteristics of these concepts.
Methodology: A case study based primarily on personal interviews.
Findings: The findings: (a) suggest that competencies, capabilities, and resources are all linked to core competencies; the first two continuously, and the third intermittently; (b) motivate refinement of the competence concept, by adding adaptation competence as governing customer loyalty, and transfer competence as managing transcendental integration; and (c) motivate refinement of the capability concept, by adding capacity as a quality characteristic, and communication as a characteristic that can actively initiate organizational change.
Research implications: We outline a core competence model and propose refinements of the characteristics and links of the concepts, contributing to both core competence theory and resource-based theory.
Practical implications: This work informs managers of the details of the core competence concept, of particular interest to managers with a customer-focused standpoint. An empirical core competence exemplifies the importance of knowing the characteristics of competencies, since they encapsulate the power of organizational development. Managers also need to pay attention to the influences of capabilities, since they not only support organizational processes (if up-to-date), but also initiate change.
Originality/Value of paper: The development and specification of the core competence concept.
Keywords: core competences, capabilities, resources.
Type of manuscript: Research Paper

4.4 Abstract for Paper III

Ljungquist, U. 2007. How do core competencies discriminate? Identification of influencing similarities and differences. *Knowledge and Process Management*. Accepted for publication.

Purpose: To propose a model that discriminates between core competencies by the similarities and differences of the associated concepts' influences.
Methodology: Data from a telephone survey to 97 employees analyzed with ANOVA.
Findings: In this paper, we advance existing core competence research by identifying similarities and differences in influences on three core competencies. Three concepts were used to assess the similarities and differences in one case-company; the latter to avoid empirical bias. The three concepts are competencies, capabilities and resources; all commonly applied to core competence issues, such as identification.

All three core competencies were profoundly influenced by specific competence attributes: Technological developments and customers' adaptation, which have been the fundamentals of the case-company's success. This finding brings in a context-dependency aspect to core competence management.

The core competencies were also found to have differences in the less context-dependent influences. The more complex the core competence, the more it is influenced by transfer and adaptation competencies, as well as by organizational capabilities. Resource influence clearly separates a service-producing core competence, which is mainly influenced by organizational capabilities, from two goods-producing core competencies which are not so influenced. The more complex of the goods-producing core competencies is more strongly influenced by both tangible and intangible resources.
Research implications: We outline a core competence model and propose refinements of the concepts' characteristics and links which contribute to both core competence theory and resource-based theory.
Practical implications: Core competencies are highly valued by managers since, among other things, they underpin competitive advantage. One stream of research in this area has focused on practical processes relating to the identification of single and multiple core competencies. Yet, identification is insufficient for sustaining core competence-derived competitive advantage, since a core competence needs continuous development. Organizations typically possess multiple core competencies, which most likely have different origins and requirements of the developments. They typically underpin different markets and products; face different degree

of dynamic conditions and so on. Thus, it is our contention that core competencies accordingly ought to be managed separately.
Originality/value: Identifies three core competencies in a single context, and discriminates them through influencing associated concepts.

5 Discussions and conclusions

In this final chapter, the empirical findings (from now on referred to simply as "findings") are discussed and conclusions are drawn. First, the findings are summarized; see the papers for full analyses and presentation of data. Then follow limitations of the study and conclusions. The paragraphs thereafter correspond to the problem formulated in the thesis: How core competencies are managed. The chapter ends by presenting managerial implications and suggestions for further research.

5.1 Summary of the findings

The purpose of this thesis is to contribute to the understanding of core competence by proposing a new agenda for the application of the concept. For core competence matters, competence is the prime concept, since it is analytically linked to core competence by three criteria (Prahalad & Hamel, 1990; Hamel & Prahalad, 1994). These criteria are:

- A core competence must contribute significantly to the perceived customer benefits of the end product.
- A core competence should be competitively unique and as such, it must be difficult for competitors to imitate.
- A core competence provides potential access to a wide range of markets.

The associated concepts (competence, capability and resource) were discriminated both conceptually and empirically and by the findings of an empirical study, their characteristics were refined. The competence concept was initially defined as developments, but was later complemented and refined with two characteristics: Adaptation and transfer. The capability concept was initially defined as systems and routines and later was divided and refined in the communication and the capacity characteristics. The resource concept was also scrutinized in the study, yet its characteristic remained unchanged: Input to the value process.

Figure 5.1 describes the refinements. Below each associated concept, its characteristics are listed. The associated concepts are linked independently to the core competence: Competence through improvement, capa-

bility through support and resource through utilization, though only intermittently.

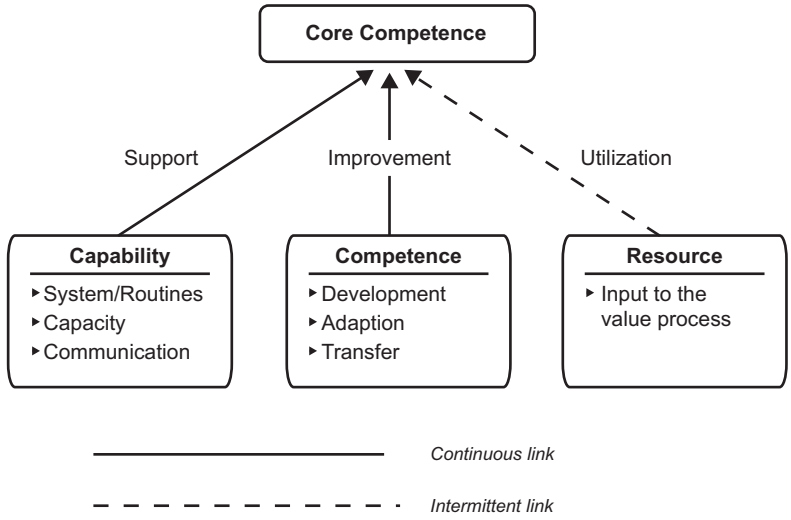

Figure 5.1 Proposed refinements to the characteristics of the associated concepts when linked to a core competence.

These refinements involved a single core competence. However, companies often have multiple core competencies and so the study was progressed in that direction.

The character of the influences of the associated concepts varied for different core competencies. Three core competencies were first identified and thereafter verified by customers and assessed, and they were then possible to arrange in a continuum with respect to complexity: From a complex composite core competence to a simple technology and goods-focused core competence, with a third, service-focused core competence representing moderate complexity.

The core competencies showed both similarities and differences in how they were influenced; some influences seemed typical to the empirical case, implying that these were being context dependent: The core competencies were all influenced largely by competence development, due to the innovative and technology-oriented culture of the empirical case. The influences from competence adaptation were most central to two of the core competencies, since their products are normally individualized to meet the customers' unique needs. Resource influences were of major concern to the goods-focused core competence.

The two most complex core competencies were, in general, influenced by competencies and capabilities to a larger extent than was the simpler core competence. To be more specific, competence adaptation and competence transfer were major influencers on the two complex core competencies and the most complex of them was influenced the most. The two

core competencies are applied in more than one business area and with shared technology, which explains why they were profoundly influenced by the transfer competence. The transfer characteristic was not typical to the empirical case. On the contrary, transfers seldom took place.

Capability influenced the two complex core competencies more, compared to the simple core competence. The greatest influence came from the communication capability, which can initiate organizational change. The complexity of the two core competencies also emphasized the importance of influences from organizational capability, i.e. routines and systems.

Resources mainly influenced the two goods-producing core competencies, i.e. the most and the least complex, in particular by intangible resource. However, the service-producing core competence was only to a small extent influenced by resources. This is surprising, since the value process logically includes producing not only goods, but also services. A tangible resource was a major influencer of the simple core competence. Figure 5.2 charts the influences on the core competencies.

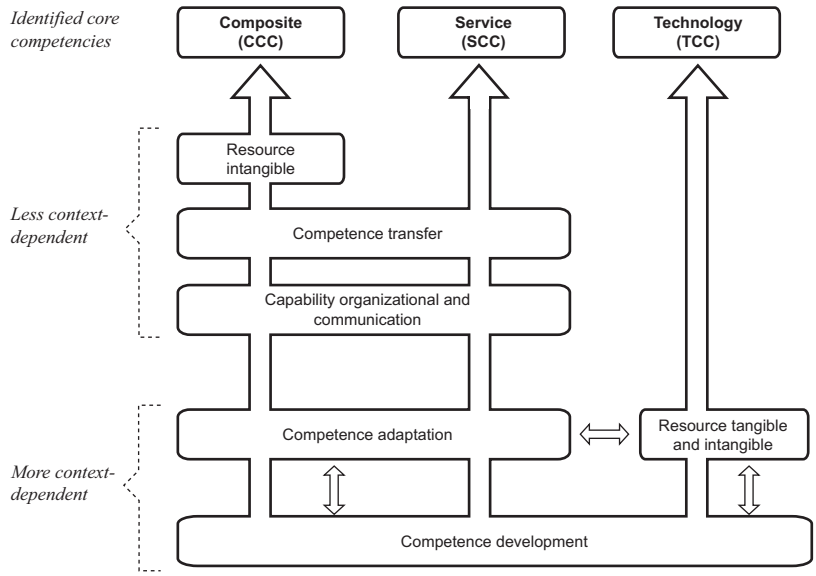

Figure 5.2 Model that discriminates core competencies by similarities and differences in influences from the associated concepts.

5.2 Limitations

Before drawing any conclusions from the findings, it might be relevant to emphasize the limitations. Throughout the thesis, there have been frequent references to a vast stream of core competence literature, which at the same time has been criticized for being incomplete in terms of in-depth descriptions, clarity and so on. An elegant solution would have been to add one or two theories, to supplement the shortage. Following this advice would bring in conceptual triangulation to the thesis, which would no doubt have added power to the conclusions. On the other hand, some part(s) of the existing thesis would then have had to be reduced or even omitted. Due to the explorative approach adopted here, and the need of inclusion of the existing content of the thesis, the author decided to maintain it as it stands.

Relying on a single case study is, for several reasons, a risky tactic. This study was privileged with great access, which made it possible to apply multiple methods and to study the case in-depth. A drawback of single case studies is that they have limited power to generalize the findings beyond the empirical context.

A technological and managerial change took place during the selected main period of the empirical study: 1992-2004. This was a major transformation to the case company and the data from the period therefore most likely are biased on these aspects. If the findings from the period were compared with those of other periods – within the case, and/or with other cases – the deficiency probably had disappeared. Unfortunately, due to limitations of time and access to equivalent quality of data this was not performed.

Some people may comment on the definitions of the concepts; that they are expressed either too widely or too narrowly. Throughout the thesis, efforts were taken to describe the choice of the definitions, and to emphasize their limitations. Furthermore, the selected definitions and refinements of the characteristics of the associated concepts ought to be viewed as suggestions only, since their general applications remain to be tested.

5.3 Conclusions

Due to the vague origins of the core competence concept and its diverging literature and invalid use, this thesis has focused on the associated concepts. It was not possible to penetrate the main problem of core competence management directly, since the matters of identification and verification were first to be scrutinized.

The following are the conclusions of this thesis, arranged from the associated concepts to core competence specifics.

- The associated concepts are conceptually and empirically discriminated in this thesis; this approach differs from the existing literature, in which they are frequently aggregated (e.g. Post, 1997; Javidan, 1998) and generally merged (e.g. Hamel & Prahalad, 1994; Eden & Ackermann, 2000). This thesis shows that the discriminations make sense, since the individuality of the associated concepts is vital for core competence matters of identification. This is the first conclusion of the thesis.

- The specification of the characteristics of the associated concepts that is carried out in this thesis enhances our comprehension of them, which adds to the existing strategy literature in general (e.g. Danneels, 2002). It adds in particular too, since the adaptation and development competencies, for instance, are similar to what Mascarenhas *et al.* (1998) call close external relationships and superior technology. Other of the findings are congruent to a recently performed empirical study among high-tech and traditional manufacturing firms (Chen & Wu, 2007), which found that capabilities, especially R&D and logistics, were of significant importance to both types of firms. These findings are progressed in this thesis by studying core competencies on a more detailed level – for instance showing that capabilities are more important to core competencies with higher complexity. The specification of the characteristics of the associated concepts establishes a base for future applications – with specific approaches – involving in-depth comprehension of core competence matters. This is the second conclusion of the thesis.

- The existing literature on core competence lacks fullness in verifying core competence, since it does not follow the advice given by the concept's initiators (Hamel & Prahalad, 1994) to involve the customers. Hence, this thesis develops a verification process, adopting and adapting the advice, which adds to the existing literature in at least two ways: Advocating rigidity by following the initiators' advice on customer verification; and encouraging simplicity by proposing a straightforward survey. The former adds for instance to the work of Javidan (1998); even though he proposes a detailed core competence identification process, he does not verify the identified core competencies *per se* – he merely says that the "internal views" (p. 65) of a company require external validation, for instance through key stakeholder groups and benchmarking. The same criticism is applicable to other core competence scholars as well (e.g. Petts, 1997; Hafeez *et al.*, 2002). Furthermore, the customer verification process described in this thesis also adds in particular to Petts' (1997) core competence framework. Here, the customers' assessments are based on the exist-

ing company-specific competencies, instead of being based on future, industry-wide meta-skills, as suggested by Petts. This is a major difference: Assessment of existing competencies probably always overrides assessments of future meta-skills on validity. Despite the fact that we never know for sure what will happen in the future, the verification process developed in this thesis brings validity and not merely comparisons between what the customers perceive and what the company managers perceive, as Petts suggests. The latter, encouraging simplicity, adds to recently published literature that proposes a comprehensive, yet cumbersome core competence identification model (Yang *et al.,* 2006). Thus, customer core competence verification is important and the process ought to be straightforward. This is the third conclusion of the thesis.

- The influences of the associated concepts made it possible to separate different types of core competencies. Core competence identification has been performed many times before. However, core competence comparisons are scarce and often lack in-depth description (e.g. Chen & Wu, 2007). The findings of this thesis therefore differ compared to the existing literature in at least two aspects: The studied core competencies are selected from a large sample of (ten) potential core competencies, which adds accuracy to the results; and the detailed characteristics of the identified core competencies are well-known. Thus, core competence verification preferably is conducted on a selection of multiple core competencies, which characteristics are described in details and are well understood. This is the fourth conclusion of the thesis.

- In this thesis, it was possible to distinguish the detailed characteristics of core competencies, divided into complex versus simple and goods-producing versus service-producing. Unfortunately, the existing core competence literature lacks such comparisons, as was indicated in the previous paragraph. For instance, scholars have compared core competencies of high-tech firms and traditional manufacturing firms (Chen & Wu, 2007), which is at a different level of analysis compared to this thesis (industry/type of firm versus single firm). The study of this thesis distinguishes different core competencies, adds in-depth descriptions of their characteristics, which bring in comparing options. Thus, identification of the detailed characteristics of multiple core competencies facilitates comparisons among them. This is the fifth conclusion of the thesis.

- Finally, the authors of an empirical study adopted a pre-decided framework that a core competence consists of three components (Wang *et al.*, 2004). The components are similar to the three competence characteristics of this thesis. Their findings propose that all three characteristics are important to core competencies to a similar extent. However, the findings of this thesis can only partly affirm this propo-

sition. Here, the influence of capabilities and resources are included as well, which adds further in-depth comprehension. Thus, core competencies seem to be differently influenced by competencies, capabilities and resources. This is the sixth and last conclusion of this thesis.

5.4 A new core competence agenda

The focus now is changed towards the problem of how core competencies are managed and how the findings can be synthesized, beyond the single conclusion, into the proposition of a new core competence agenda.

The agenda is feasible as input to both theory and practice. It alters core competence research, from the ongoing expansion to a focusing: On the three criteria and on customer verification. The agenda also outlines the basic core competence matters: Identification, verification and management.

Scholars have already acknowledged that core competence research ought to start by identification; the adoption of the characteristics of the associated concepts, as described in this thesis, adds not only clarity and convergence, but also uncomplicated aspects to the identification process. The first step in the core competence identification process therefore is to acknowledge the characteristics of the associated concepts, in conceptual and empirical discussions and applications.

Furthermore, adopting the customer assessment survey proposed in this thesis advocates a straightforward and valid verification process of the core competencies identified. The survey's simplicity facilitates simultaneous identification of multiple core competencies, and makes comparisons among them possible, which ultimately enhances the reliability of the verification process.

Core competence management is the last component of the agenda and it is dependent on the accuracy of the processes of identification and verification. Core competencies are manageable through the influences of the associated concepts. Table 5.1 shows the components of the new agenda.

Core competence matters		Characteristics
Identification		
Competence	Prime concept for core competence identification.	Development Adaptation Transfer Link to a core competence through improvement
Capability		System & routine Communication Capacity Need to be up-to-date Link to a core competence through support
Resource		Input to the value process Link to a core competence intermittently only, through utilization of core competencies.
Verification		
	Customers assess potential core competencies regarding three criteria.	A core competence must contribute significantly to the perceived customer benefits of the end product. A core competence should be competitively unique and as such, it must be difficult for competitors to imitate. A core competence provides potential access to a wide range of markets.
Management		
Complex core competence	Composite of goods and services	Primarily influenced by: Competence adaptation, capability communication and competence development. Also influenced by resource.
Service core competence	Service-producing	Primarily influenced by: Competence adaptation, capability communication and competence development.
Simple core competence	Goods-producing, technology focused	Primarily influenced by: Competence adaptation, resource and competence development. Resource influence is essential, competence transfer influence is redundant.

Table 5.1 Components of the new core competence agenda.

5.4.1 Managerial implications

The new core competence agenda is important to all organizations that hold core competencies in need of change, for instance due to increased market competition and/or shift in customers' demand.

Transfer competencies have the potential to relocate competencies to new contexts. Adaptation competencies are of critical concern for organizations that want to strengthen their customer relations. Managers also need to pay attention to the influences of capabilities: They not only support organizational processes (if up-to-date), they can also initiate change.

Concerning resources, the most critical issue is not to neglect their importance to the value process and core competence utilizations in particular.

5.4.2 Suggestions for further research

Further research is needed in several directions: Conceptual, empirical and methodological. First, we need to refine the conceptual assumptions and selections of this thesis, such as the definitions, by bringing in literature that adds further clarity and convergence, contributes to the discriminating efforts and enhances validity.

Secondly, we need to test and refine the findings of this thesis, particularly regarding the influences of the associated concepts and the characteristics of the different core competence types, which can ultimately refine the proposed agenda. New empirical contexts are also important and they may involve small and medium sized companies, which brings in new types of firms; multiple cases, which brings in the possibility of comprehensive comparisons; longitudinal studies, which bring in dynamic aspects such as sequences; and large-scale cross-sectional studies, which bring analytical power and empirical generalizations.

Thirdly, we need to focus on the issues of methodology, such as testing and refining the identification and verification processes here proposed, which will progress the forthcoming literature towards even more straightforward core competence management.

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