

# NETWORK CAPABILITY – EMERGING AS PART OF AN INDUSTRIAL FIRMS COMPETENCE CONFIGURATION

**Jukka Vesalainen,**

University of Vaasa, Department of Management

[jukka.vesalainen@uva.fi](mailto:jukka.vesalainen@uva.fi)

**Henri Hakala,**

University of Vaasa, Department of Management

[henri.hakala@uva.fi](mailto:henri.hakala@uva.fi)

## **Abstract:**

The network capability refers to the firm's ability to build, handle and exploit relationships. These capabilities are interwoven in the complex configuration with other capabilities and competencies of the firm and are, in practice, very difficult to separate from them. Rather than assuming that firms inherently possess network capability, our aim is to discover if this actually naturally occurs in the discourse of the top management teams. In order to understand how managers perceive, process and interpret network capability, the management teams of six industrial subcontractors were guided through a five-step process of introducing, identifying, critical screening, challenging and verifying the capabilities of the firm. The paper introduces strategic capability architecture and investigates how network capability emerges within the configuration of other capabilities in these firms. We found that in customer oriented capability sets, network capabilities are central to the formation this kind of capabilities. In other types of capability sets, networking capabilities play an important role as assets in the formation of the capability sets. Furthermore, we identified that the networking capabilities act in unison with other capabilities through three different logics, termed partnering, value streaming and horizontal allying.

Keywords: network capability, relational capabilities, cooperative competencies, competence and capability configurations

*Competitive paper*

# NETWORK CAPABILITY – EMERGING AS PART OF AN INDUSTRIAL FIRMS COMPETENCE CONFIGURATION

## INTRODUCTION

The challenges of developing an organizational “ability to handle individual relationships” (Håkansson, 1987), “close relationships with external parties” (Mascarenhas, Baveja, & Jamil, 1998), “capability to interact with other companies” (Lorenzoni and Lipparini, 1999) and “organizational ability to find, develop and manage relationships” (Lambe, Spekman, & Hunt, 2002) has attracted a lot of scholarly interest in recent decades. This phenomena has been labeled variously *network competences* ( Human & Naude, 2009; Ritter, Wilkinson, & Johnston, 2002;), *network capabilities* ( Human & Naude, 2009; Mort & Weerawardena, 2006; Ritter & Gemünden, 2003; Tyler, 2001), *relational capability* (Lorenzoni & Lipparini, 1999), *cooperative competency*, (Sivadas & Dwyer, 2000), *alliance capability* (Heimeriks & Duysters, 2007; Kale & Singh, 2007), *cooperative competences* (Tyler, 2001), *collaboration capability* (Blomqvist & Levy, 2006) and *alliance management capability* (Schreiner, Kale, & Corsten, 2009). In addition, such organizational qualifications as *supply chain management capabilities* (Tracey, Lim, & Vonderembse, 2005) and *CRM capabilities* (Plakoyiannaki & Tzokas, 2002) that are inherently close to the above terminology describing various *boundary-spanning capabilities* have been reported (Day, 1994; Tracey et al., 2005). While each term obviously has its individual connotations, for the purposes of this research, we refer to the main idea, the ability to build, handle and exploit relationships as *network capability* (Ritter & Gemünden, 2003; Tyler, 2001)

The resource or *competence* view of the firm describes a firm as a bundle or configuration of related resources, capabilities or competencies often described as a “differentiated set of skills, complementary assets, and organization routines which together allow a firm to coordinate a particular set of activities in a way that provides the basis for competitive advantage in a particular market or markets” (Dosi & Teece, 1998, p. 284) In this mesh of different capabilities the role of network capability may be difficult to isolate from other internal factors affecting the firm. In response to a “need to develop a better understanding on the intra-organizational dimension of the management of external relations” (Pagano, 2009, p. 905), this study focuses on the role of the network capability within the overall set of competencies. Rather than assuming that firms inherently possess network capability, our aim is to discover if this actually naturally occurs as key capability of a firm in the discourse of the top management team. In a recent study, Kor and Mesko (2013) argue that “a leap forward in dynamic capabilities research hinges on an intuitive understanding of how managers, *individually* and *as a team*, perceive, process and interpret new stimuli and information and *respond* to them” (p. 242, emphasis in original). Our study attempts to advance this understanding by investigating the role of network capability through a study conducted in a series of workshops with top management teams of six small and medium-sized businesses. The managers’ cognitive understanding about the capabilities of the firm is particularly interesting as it evolves over time to become a dominant logic at the organizational level on how the firm acts, and ultimately, succeeds (Kor & Mesko, 2013; von Krogh & Roos, 1996). Prior study (e.g., Tyler, 2001) has suggested that network capability may play a significant role in creating competitive advantage, “however the concept of inter-

organizational relational capabilities needs to be developed further” (Capaldo & Petruzzelli, 2011, p. 283). Hence, the research questions of this study are focused on understanding the role(s) of network capability within the overall set of organizational capabilities.

The design of the study is novel, but resembles structural cognitive mapping (Bougon, Weick, & Binkhorst, 1977). Similar to structural cognitive mapping where the structure is thematically fixed, we controlled the form of the outcome but allowed the content to vary. This choice is due to our need to follow the theoretically driven capability architecture emerging out of the previous literature. Our approach also refers to collective cognition (Tyler & Gnyawali, 2009) as all the empirical data was gathered in a participatory research process involving entire management teams from firms. The management teams were involved in a process to reveal and describe the existing configuration of the firm’s core capability. At no point in the process did we try to force any mention of network capability, as the aim was to reveal its presence in as natural a form as possible.

In the series of workshops, the management team of each firm was guided through a five-step process of *introducing, identifying, critical screening, challenging* and *verifying* the capabilities of the firm. Managers did this against the background of the theoretical framework of *capability architecture*, which is introduced in the theory section of this paper. After introducing theory and method, the paper proceeds with the results of this exercise. In the discussion, we introduce the different positioning of and logics underpinning the network capability as part of the configuration of firm-specific capabilities.

## **THE STRATEGIC CAPABILITY ARCHITECTURE**

Capabilities are often defined as the reflection of the firm’s ability to “organize, manage, coordinate, or govern sets of activities” (Dosi & Teece, 1998, p. 284). Yet, to understand the appearance of a firm’s strategic capability, it is crucial to understand its conceptual architecture, even if that is complicated by the system complexity inherent in organizational capabilities (Pandza et al., 2003). Two different types of capabilities can be found in the first associated with resources, and the other with activities that deploy resources. Henderson and Cockburn (1994) use the concepts *component competence* and *architectural competence* to differentiate between them. The first refers to resources (Amit & Schoemaker, 1993) or knowledge and skills (Leonard-Barton, 1992) as such. The architectural competences, again, refer to capabilities (Hamel & Prahalad, 1994), combinative capabilities (Kogut & Zander, 1992), organizational capital (Tyler, 2001) and managerial systems (Leonard-Barton, 1992).

Various hierarchical models have been developed in order to outline the hierarchical architecture of the competence theory. The hierarchical nature of competence thinking comes out clearly in Mills, Platts, and Bourne’s (2003) definition of competence architecture. In their model, specifically coordinated resources give rise to various services (resource usages), the coordinated services build various competences, and coordinated competences build higher-level competences. Each resource at the highest level of analysis is a product of lower level resources deployed with certain coordinating activities. Wang and Ahmed (2007) propose a hierarchical structure where resources are seen as “zero-order” and capabilities as “first-order” elements of

the hierarchy. The logic uniting them is that resources are deployed by capabilities and therefore form various resource or capability sets. Core capabilities (the “second-order” concept) emerge as bundles of resource or capability sets. The unique configuration of the bundle of core capabilities forms the foundation of a sustainable competitive advantage for a firm. Moreover, for example Wang and Ahmed (2007) define the dynamic capability as the highest-order element of the hierarchy. That refers to the firm’s need to change the core capability set according to the changes in the business environment.

**Table 1.** Conceptual hierarchies of various capability models

Author(s)	Uppermost level concepts	Third-level concepts	Second-level concepts	Lowest level concepts
Long & Vickers – Koch (1995)	Cutting-edge capabilities (Skills and systems that need to be nurtured and developed as sources of tomorrow’s competitive advantage)	Critical capabilities (Skills and systems that are critical to customers and provide a firm with today’s competitive advantage)	Basic level capabilities (Skills and systems common to most companies in a particular business. Necessary just to be in that business)	Support capabilities (Support services (HR, legal, etc.) that primarily serve internal customers)
Hafeez et al. (2002b)	Core competencies (valuable and rare competencies)	Competences (valuable capabilities, usually a network of capabilities)	Capabilities and key capabilities (the capacity for a team of resources to perform some task or activity)	Intellectual, physical and cultural assets
Mills et al. (2003)	Higher-level competences (competences + coordination)	Competence(s) (= services + coordination)	Service(s) (= resources + coordination)	Resources
Sanchez & Heene (1997); Sanchez, 2004	The strategic logic of an organization for creating value in markets	Core competences (management processes coordinating organizational assets)	Capabilities (different ways to coordinate firm-specific and firm-addressable resources)	Resources available (firm-specific and firm-addressable)
Wang and Ahmed (2007)	Dynamic capabilities (adaptive capability, absorptive capacity and innovative capability embedded in processes)	Core capabilities (bundles of important resources and capabilities)	Capabilities (firm’s capacity to deploy resources; processes and tacit elements embedded in the processes)	Resources (“zero-order” element of the hierarchy)

For the purposes of the present study, focusing on the business-unit level of analysis, the capability architecture is defined as follows.

*Assets as zero level elements.* All resource based view (RBV) and competence based competition models of strategic management recognize the organization’s resources or assets as the foundation of competitive advantage. Assets as such, however, are not usually treated as a source

of sustainable competitive advantage due to a usually weak VRIN<sup>1</sup> value (Wang & Ahmed, 2007). Some writers also include capabilities (Hooley, Greenley, Fahy, & Cadogan, 2001), competences or routines (Mills et al., 2003) with assets, describing them as higher-order assets. However, in our conception of strategic capability architecture, we define assets as tangible and intangible, firm-specific and firm-addressable basic elements of competitive advantage. They are essentially passive in the sense that they must be coordinated in order to create economically feasible activity within the business context.

*Capabilities as assets coordinated by activities.* Originating from Penrose's (1959) distinction between assets and service (resource use), various other concepts have been used to describe the deployment of assets. There are, actually, two distinct interpretations possible: a firm can have a capability to *use resources* or a capability that is a *combination of resources and activities*. The latter interpretation highlights the mutual dependence of resources and activities (Ritter & Gemünden, 2003). This conceptual distinction is not always explicit in the literature. Various terms have been used to refer to asset/activity combinations such as competences (Human & Naude, 2010; Ritter & Gemünden, 2003; Sanchez & Heene, 1996), capabilities (Hafeez et al., 2002; Sanchez, 2004; Wang & Ahmed, 2007), organizational routines (Hafeez et al., 2002), services (Mills et al., 2003) and transformation processes (Lewis, 2003). In our hierarchical architecture, we use the term capability to refer to those firm-specific elements that are products of coordinated assets. At the very lowest level, this is a human and machine combination where a physical asset is used by a machinist possessing special skills to run the machine. Moving up to a higher level of analysis a firm may have certain assets such as automated machinery, and up-to-date information systems. These assets are then coordinated by, for example, active leadership and lean production principles resulting in a capability called efficient production. This view complies with Prahalad and Hamel (1990 p. 64) who define core competence as "collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies."

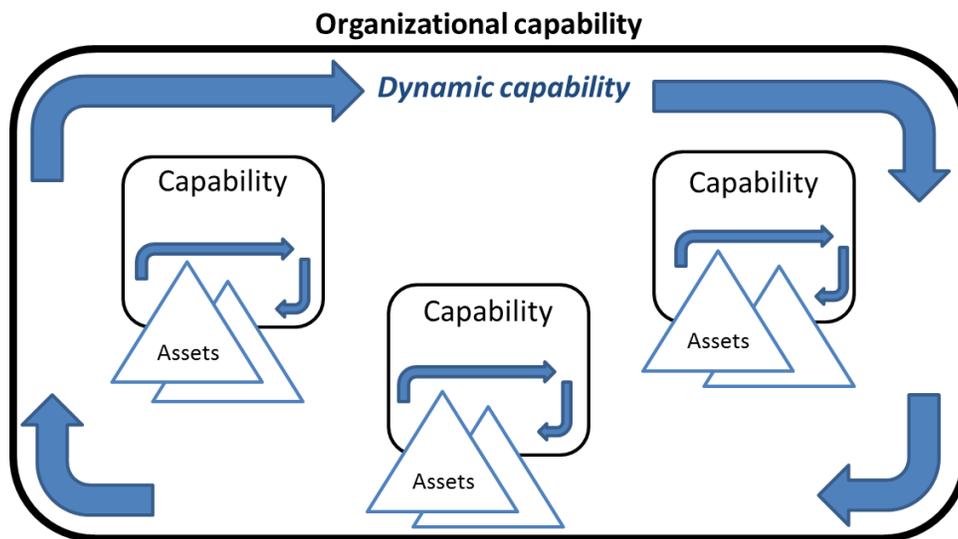
*Organizational capability as a bundle of important capabilities.* Organizational capabilities have been treated as bundles of important resources and competences (Wang & Ahmed, 2007), a network of valuable capabilities (Hafeez et al., 2002b) and coordinated services (Mills et al., 2003). Capabilities such as products of asset/activity combinations are also nominated as higher-order resources (Hunt & Morgan, 1995; Lambe et al., 2002). At this level of the competence hierarchy, capabilities have to be coordinated by activities, thus following the same asset/activity logic presented above. The activities at this level of analysis have mainly been described as strategic processes (Long & Vickers-Koch, 1995), business processes (Sanchez & Heene, 1997; Sanchez, 2004) or spanning capabilities (Day, 1994). In the present study, we use the term organizational capability as a concept for organization-level attributes. The organizational capability set is a product of (functional) capabilities coordinated by business processes (e.g., order-to-delivery and new product development processes) and other integrating managerial activities (e.g., management team routines and information systems).

*Dynamic capabilities as activities embedded in processes.* In the literature, there are at least two ways to treat dynamic capabilities in the context of a firm's capability architecture. First, it can be treated as an element at the highest level of the capability architecture (Wang & Ahmed,

---

<sup>1</sup> VRIN = Valuable Rare Inimitable and Nonsubstitutable qualities of a resource, referring to the framework by Barney (1991) and used to determine if the resource serves as a basis of competitive advantage

2007), and second it can be seen as an element embedded in processes (Mills et al., 2003; Sanchez & Heene, 1997). Following the idea of dual activity (Abell, 1993; Sanchez & Heene, 1997), we distinguish competence leveraging and competence building. The former refers to coordinated deployments of resources without qualitative changes in resources used, and the latter to action taken to acquire or develop new resources or activities. The dynamic capability of a firm is treated as an organizational characteristic embedded in activities or processes in our framework. These capability building activities come close to organizational learning dynamics with an incremental (single loop learning or continuous improvement) or a radical nature (double loop learning or strategic change). Competence building may take place at all the levels of the capability architecture.



**Figure 1. Strategic capability architecture**

In our framework, tangible and intangible assets (including personal skills and knowledge) represent the first-level elements of the hierarchy. These are deployed by activities, routines, and processes (coordinating activities). Sets of assets and coordinating activities are also developed by certain activities (developing activities), which represent the dynamic capabilities of the firm. The emerging capabilities (assets coordinated by activities) form resources available at the next level of the hierarchy. These are, again, mobilized by coordinating activities and developed by developing activities. It is important to note the dual activity principle inherent in the framework's logic: competence leveraging (or coordinating activities) is differentiated from competence building (development activities) and competence leveraging by also being subordinate to competence building. The coordinated usage of the set of capabilities follows a certain *value creating strategic logic*, which is derived from customer preferences and competitive pressures in the market. A value generating logic refers to a firm's competitive strategy, for example, cost leadership or differentiation. In addition, the strategic logic is subject to development activities, or dynamic capability at the organizational development level.

## Network capabilities within the architecture

The ability to build, handle and exploit relationships, *network capability* (Ritter & Gemünden, 2003; Tyler, 2001) has been treated as a subset of organizational competences, which again, have a mediating role between technological competences and firm competitive advantage (Tyler, 2001). This kind of technological interweaving has been found to positively influence the successful innovations of a firm (Ritter & Gemünden, 2003). Sometimes above average cooperative capabilities may complement or even substitute for average technological competence as a source of sustainable competitive advantage for a firm (Tyler, 2001)

In our review of the extant literature on network capabilities, we were sensitive to any signs of how the literature has linked network capability in connection with the whole set of a firm's capabilities and competences (cf. the architecture defined above). This is an important issue, because rarely does any single capability play a crucial role in the formation of a firm's competitive advantage; instead it will usually act as a part of a system of capabilities. Network capability in principle can possess VRIN-qualifications to make it a core competence. It does certainly not possess such a position on its own, but has meaning only when linked with other capabilities (Pandza et al., 2003).

Network capabilities appear to function with the same resource-activity interaction logic as capabilities in general. Ritter and Gemünden (2003) incorporate both aspects in their concept of network competence. For them, network capability is about having the necessary knowledge, skills, and qualifications and also about using them effectively. In addition, studies in alliance capabilities suggest that they are embedded in organizational routines, which are repetitive activities that a firm develops in order to deploy its resources in alliances (Heimeriks & Duysters, 2007; Helfat & Peteraf, 2003).

Scholars have defined network capabilities as personal qualifications referring to human capital (Tyler, 2001), social qualifications (Ritter & Gemünden, 2003), relational skills (Walter, Auer, & Ritter, 2006) or cooperative capabilities (Blomqvist & Levy, 2006). These terms refer to communication capabilities, negotiation capabilities, ability to engender trust, conflict management skills, empathy and sense of justice (Ritter & Gemünden, 2003; Tyler, 2001; Walter et al., 2006). It is possible to interpret the same qualifications as organizational attributes embedded in routines, processes and even as a part of the firm's culture. For example Schreiner et al. (2009) treat communication and bonding capabilities as organizational rather than personal attributes. Those capabilities are thus employed to help the firm cope with relationships, and that process stresses certain behavioral patterns to be followed in border-spanning activities.

From the perspective of a market-driven firm, Day (1994) posits that the outside-in capabilities of a firm play a central role in building competitive advantage. These capabilities manifest themselves as market sensing, customer linking, channel bonding and technology monitoring activities, and are key to linking a firm's other capabilities to market-driven challenges. Collaboration capability can also be seen as a generic meta-capability enabling leverage of both internal and external knowledge bases. From that particular viewpoint, capabilities are associated with information management, relationship management and other systemic interdependent capabilities (Blomqvist & Levy, 2006; Tyler, 2001). These components support each other. For example, a high degree of partner knowledge and internal communication enables good coordination between partners; high levels of coordination and relational skills permit a spin-off

to increase knowledge of its partners; internal coordination enables the collection of various pieces of information for enhanced partner knowledge (Walter et al., 2006).

Berghman, Matthyssens, and Vandenbempt (2006) suggest that companies should build competencies like marketing practices (to support absorbing external knowledge), general organizational competences and supply chain or network competences, thus indicating that the two types of competences are inherently cross-border attributes of the firm. Day's (1994) distinction between inside-out, outside-in, and spanning capabilities interestingly builds on the open systems view. He argues that both inside-out and outside-in capabilities are needed, but the most important task for any organization is to connect them effectively, and for that, a firm needs spanning capabilities. Those include business level processes such as order-delivery, new product development, customer service delivery, and strategic management processes. His capabilities are actually processes with a hierarchical order. The order-delivery process represents the core process, whereas market sensing, customer linking, and channel bonding represent important sub-processes of a functional (marketing) origin. Similarly, manufacturing, purchasing, and logistics represent inside-out types of sub-processes to be integrated at business level through core processes. Tracey et al. (2005) followed Day and applied the internal-out/external-in framework within the supply chain management context. They defined various SCM activities in the context of Day's three types of capabilities and tested a performance model. The findings highlighted positive linkages between outside-in capabilities (e.g., inbound transportation and materials warehousing) and inside-out capabilities (e.g., packaging and products warehousing) as well as between spanning capabilities (e.g., purchasing and customer order processing) to both outside-in and inside-out capabilities. These results reveal the important interplay between boundary-spanning capabilities and business level spanning capabilities. Berghman et al. (2006) also build on the above three basic categories of firm capabilities defining them as a) marketing practices for external knowledge absorption: recognition, assimilation and transformation, b) general organizational competences (i.e., culture, cross-functional coordination and structure) and c) competences embedded in the supply chain/network, referring to information from customers and suppliers and innovation stimulus from customers and suppliers (Berghman et al., 2006). Network capability is a multi-dimensional phenomenon, as it requires inter-organizational integration and collaboration to take advantage of intra-organizational capabilities. In their review and analysis, Blomqvist and Levy (2006) showed the multi-level nature of collaboration capability to range from individual and team level to intra- and inter-organizational level attributes.

In conclusion, network capability is seen as one of the general forms of organizational core capabilities within the set of organizational capability architecture. The other generic capability types are usually described as effective processes or superior technological know-how (Mascarenhas et al., 1998). In other words, capabilities at the very generic level are either relational, network capabilities or inherent within the firm as technology, or production capabilities

## A CASE STUDY WITH A PARTICIPATORY RESEARCH DESIGN

As pointed out above, a firm’s set of competencies is a complex web of various resources and capabilities. Owing to system complexity, bounded rationality is always present in real life situations, since managers inevitably have a limited understanding of the different configurations of capabilities needed to build competitive advantage for the firm. Managers also have to address their limitations when the numerous possible different patterns of knowledge, resource and capability integration are considered, and also when having to predict the consequences of certain combinations (Pandza et al., 2003). Any understanding of the competences of a firm is also subject to an individual perspective, owing to differing cognitive bases, and the understanding being to some extent subconscious rather than entirely conscious (Chen & Chang, 2010). Furthermore, as with all strategy management issues, the task of defining a firm’s competences requires a shared understanding of the parameters of the task by the key members of the management team.

In this study, we attempted to reveal a firm’s strategic capabilities in as natural a form as they appear in the thoughts of the management team. We were not interested in potential formal definitions of strategy, but pursued the naturally existing configuration of the capability set of the firm. Six small and medium-sized firms operating within the metal industry were selected on the basis of size (50–250 employees), an expected dependency on network ties (a majority of turnover coming from only a few customers) and, of course, access (the nature of the research demanded a considerable investment in time, effort and trust from the participating firms). Each firm had also been in business for a considerable time (20–50 years), and could be considered successful in terms of recording profitability close to or above the industry average. The average profitability of the firms between 2005 and 2011 was in the range 2–22% (earnings before interest and taxes) with a huge variation on yearly basis. That profitability range was of course adversely affected by the severe economic crisis between 2008 and 2009. The main firm-specific information is presented in Table 2.

**Table 2.** General information on the case firms

Case	Company and ownership structure	Business area	Turnover 2011 and trend 2005–2011	Profitability 2005–2011
SHEET	A family business belonging in to a group of six independent but cross-owned companies	Sheet metal products; partly by own design and partly manufactured according to customers’ specifications	€4.6 m Slightly decreasing	Slightly below industry average
MACH	Independent one-site family business	Component and sub-assembly deliveries for heavy machines and constructions	€18.4 m Slightly growing	Slightly above industry average
PIPE	A family business in the same group as Sheet; one subsidiary	Manufacturing of tube-systems and tanks	€9.7 m Growing	Very profitable

	company			
MINK	A family owned business group; own products and subcontracting	Supplier to large multinationals, manufactures and assembles various steel structures	€7.0 m Steady	Average
WELD	Independent company with two subsidiaries (one of them abroad)	Welding, machining and assemblies for heavy metal constructions	€12.0 m Growing	Slightly below industry average
COMP	A family business with four manufacturing sites (one abroad)	Light component manufacturing with five different technologies	€24.9 m Slightly decreasing	Average

In our search for sets of the firms' capabilities, we used a participative research strategy with an abductive reasoning logic. Where the framework has a deductive theoretical origin, the content of firm-specific sets of capabilities is defined inductively through the following participative research process. In the course of the research process, we met management teams on between two and five occasions to 1) ensure there was as high a level of shared understanding about the firm's set of capabilities amongst the team as possible 2) ensure the theoretically sound form of each set of capabilities (cf. the capability architecture) 3) allow for as profound a treatment of possible competences as possible, and 4) to ensure that the emerging picture of the set of competences of a firm is as real and trustworthy as possible. This research procedure consisted of the following phases:

*Introduction.* Before engaging in the main research task, the management teams were introduced to the main principles of the capability architecture, as the desired form of the outcome. The capability architecture was described as specifically as possible with some illustrative examples. It was, however, underlined that the principles set forth in the case examples represent rather the form than the content of sets of firm-specific capability configurations. In the introduction, we attempted to steer the thinking of the management teams towards the capability theory, because we saw no value in studying the capability structures *per se* with an exploratory approach. We were instead interested in the content of the capability sets and particularly, in how the network capabilities manifest themselves in those sets.

*Identification.* The main task in this phase was to identify all possible sources of the firm's competitive advantage. This was done by presenting a simple question to the management team: *Tell me, what are the main elements behind your firm's competitive advantage?* This question led to lively discussions between the members of each team, and the teams produced between twenty and fifty different competitive factors. These factors varied from small detailed elements to large strategic principles. The collection of all the competitive factors the six firms presented in the first phase was content analyzed. It appeared that the competitive factors fell into four categories: They were either resources, knowledge, various activities or general performance factors, such as speed, lead-time, flexibility, quality or effectiveness.

*Critical screening.* In this phase of the process, the management teams were asked to critically evaluate all the competitive factors they had identified. They were asked to use the VRIN criteria (which had been introduced in the introductory phase) to differentiate the competences from other less important qualities of the firm. At the same time, they were advised to differentiate between nuances and large strategic principles, and to group the elements in a hierarchy using a

mind-map technique. The mind maps produced gathered the identified criteria into larger hierarchical combinations of capabilities and only the most important criteria were incorporated into the descriptions. In most cases, the structure of the model clearly had a functional origin matching the organizational structure of the respective firms.

*Challenging.* After finalizing the collective mind maps, we challenged the teams to evaluate the capability structures they had created by asking them to ensure that the capability structures were real. In order to do that, we distributed tables containing the main competitive factors from their maps. We asked them to analyze whether these qualifications were or included a) resource allocations b) high class resources as such c) certain knowledge or skills and d) certain processes, routines or principles that guide activities. We stressed that a capability (for example *customer orientation*) would not be considered real if they could not show it to be based on those particular elements. This task clearly improved the reliability of the study as the management teams were led into a conversation where they were forced to critically evaluate the real situations in isolation from those that were only expressions of the capabilities serving to improve firm's image.

*Verification.* Following the final workshop, we made graphical and tabulated outlines of the capability sets discussed in the workshops and sent them to the managing directors for verification. Only some minor interpretations were adjusted but in most cases, our interpretations were accepted as accurate descriptions of the firms' capabilities.

As researchers, our only responsibility was to steer the process and keep it within the capability architecture framework. We considered the participative nature of the study to be a two-way process. First, we influenced the respondents to ensure we shared a similar conceptual framework of thinking, and second, the respondents contributed to the analysis of the data as they themselves defined, organized, weighted, and designed the sets of capabilities. As a result, the within-case analyses were mostly conducted on site. We continued by conducting the cross-case analysis in order to search for the manifestation of network capability from the firm-specific capability sets. The following analysis and results mostly deal with the cross-case analysis, where we addressed the general patterns of capabilities emerging from the firm-specific capability sets.

## **NETWORK CAPABILITIES EMBEDDED IN CAPABILITY CONFIGURATIONS**

A large number of important competitive factors were identified by the management teams in the first phase of our participative research process (the identification phase); these represented fairly typical ideas of having the right equipment, skills among the personnel, quality and cost related issues. Customer-related issues were also of particular interest to the management teams. However, when we asked the managers to use the VRIN criteria to distinguish between important and less important competitive factors, the capability sets started to emerge. As we added the challenge to the management teams to justify the main capabilities they found, the firm-specific sets of capabilities became more credible. As a result, we were able to define and describe the firm-specific capability configurations. These configurations typically consisted of two to four main sets of capabilities following the capability architecture type of representation: a capability consists of allocated resources and knowledge as first-level resources, and they are

activated by processes and activities (the second level) in order to achieve third-level capabilities. The configuration of two to four third-level capability sets represents the firm level capability structure. It was also possible to extract some manifestations of dynamic capabilities from the case data. As defined in the framework for capability architecture, these qualities are embedded in various levels of the capability architecture.

A great deal of discussion centered on the ability to produce performance factors such as the high quality, reliable delivery and cost efficiency that many customers demanded. Two of the firms also stressed the importance of being able to deliver a broad range of products and services to assist the large industrial customers to simplify their own purchasing and reduce the number of suppliers. A firm's own internal human resource and leadership practices were also identified as a source of competitive advantage not only through the ability to attract the best people, but also through the staff's ability to directly create cost and quality advantages. This article, however, does not address firm-specific capability configurations, but focuses on general manifestations of capabilities in order to reveal the position of network capability within these sets of capabilities. With that in mind, we proceeded through a two-phase analysis. First, we conducted a cross-case analysis to find out what kind of general patterns of capability sets exist among our case data. This procedure was followed by an analysis trying to extract all network capability items out of the generalized capability sets and to position those network capabilities within the capability architecture defined earlier in this article.

As a result of the cross-case analysis, we were able to extract five different sets of capabilities (See also Table 3):

- A) Customer and offering oriented
- B) Technology oriented
- C) Production oriented
- D) Human resources oriented
- E) Group oriented capability sets

*Customer and offering oriented capability sets.* Almost all the case firms highlighted the importance of customers and customer relationships. Considering the resource allocation dimension of the capability set, the importance was typically connected to resource allocations to key account managers, other relationship-specific investments and social (or relational) capital in the form of company trustworthiness in general and good personal relationships. In terms of the knowledge aspect, this type of capability set includes knowledge of the customer and of the customer's industry but also of certain boundary-spanning activities such as logistics, technology, and sourcing services. According to the principles of the capability architecture, both resources and knowledge represent first-level capabilities, which have to be activated through processes or activities (the second-level capabilities) in order to attain the third-level capabilities. In the generalized set of customer and offering oriented capabilities, several second-level activities were found to comprise the third level capability sets. An attempt to build deep customer relationships in order to get relevant customer information and even to influence customers' R&D activity to make it fit their own technology better appeared to be a dominant logic for many of the firms involved in the research. In addition, such activities as customer

training, customer selection, and holistic customer responsibilities were reported as important activities that employ allocated resources and the acquired knowledge. This particular capability set manifests networking capability as such. As a boundary-spanning activity, customer and offering oriented capabilities are a key area of expertise with respect to relational business logic.

*Technology oriented capability sets* refer to various manufacturing and engineering technologies a firm identifies as important factors in securing its competitive advantage. These are distinct from production capabilities, because they refer to the technology as such, not to the production that is enabled by the technologies. However, the technology oriented and production oriented capabilities are closely related. Two firms of the six possessed this kind of capability set (PIPE and COMP). For PIPE the technological capability represents the nurturing of specialized manufacturing technology (a combination of welding and bending tubes of various material and sizes) and for COMP technological capability manifests itself in five different technologies it possesses and can combine to resolving its customers' manufacturing problems. Interestingly, both firms seemed to define this particular capability set as a dynamic capability. It is represented in the activities (second-level capabilities) within the sets. For PIPE technological resources and knowledge are maintained and developed through 'learning from mistakes' (mostly through customer claims), 'production method development' and 'weekly production cell-specific meeting practices'. For COMP, the dynamic capability is represented by an activity defined as the continuous search for new technology-related knowledge. This is partly achieved in close cooperation with the world's leading technology firms. It is thus evident that the activity elements in the capability sets manifest themselves in the form of dynamic capability and outside-in processes, which are at least partly realized through relational processes. This proves that a networking capability can position itself inside a capability set (third-level capability) as an operational activity (competence leveraging) or a dynamic activity (competence building).

*Production oriented capability sets* supposedly reside in the capability configurations of most manufacturing companies. In our investigation all but one (MINK) reported such a capability set to be an important area of competitive advantage. In most cases production capability is linked to machinery as the basic resource of production by stressing the specialty nature of it (heavy machinery in WELD), certain qualities of machinery (level of automation in COMP and multi-functionality in MACH) or location-specificity (a low-cost manufacturing plant in COMP). Interestingly, two firms do not refer at all to production machinery as an important source of competitive advantage with VRIN qualities. Both PIPE and SHEET underlined the importance of the local supplier network as a resource for a production oriented capability set of their own ("Profitable and flexible production" for PIPE and "High quality and reliable operations" for SHEET). The strong network orientation of the two firms also came out in the knowledge dimension as they both strongly emphasized the importance of "an ability to build trust" and "an ability to develop the supplier network." It is also possible to find clues to networking capability in the more machinery-focused sets of production capabilities, as three of the firms connected knowledge of the customer or the customer's product with effective production or operations (PIPE, COMP, and WELD). Various activity-level principles were presented as important elements of production oriented capability sets. Very often, they refer to efficient production control (PIPE, SHEET, COMP, and MACH), smooth flow of materials (SHEET), and efficient use of capacity (MACH). It is possible to see networking capability in some of the activity-level principles (flexibility through proximity in PIPE and network-level lead-time focus in SHEET). Overall, networking capability seems to be embedded in production oriented capability sets by

two logics. First, production efficiency is expected to increase in close customer relationships owing to a better operational and technological fit between customer needs and technology available through the supplier. Second, for some firms production capability is not based on machinery as such, but on an effective interplay with the local supply network.

*Human resource oriented capability set.* In the sample of six manufacturing firms only one (PIPE) highlighted the human resource factor as an important part of its capability configuration. There seemed to be no connection to networking capabilities in that particular set of capability and we do not elaborate on that type more thoroughly here.

*A group –oriented capability set* was the fifth independent set of capabilities extracted in our study. Two firms highlighted this kind of capability as an important part of their capability configuration (MINK and WELD). While PIPE, SHEET, and COMP did belong to or possess a form of group structure, none highlighted it as an important competitive feature. A group-level resource base represents the basic resource allocation aspect of the capability set. In MINK, it manifests itself in the form of diverse capacities of the member firms (engineering capacity in one and project management capacity in another). In WELD, there are varying production capacities in partner firms and an engineering capacity in another member of the group. Both cases represent the rather standard group logic based on economies of scale and scope. In order to achieve these economies, the distinct resources and knowledge have to be coordinated effectively. In MINK, the activities that mobilize separate resources and knowledge are joint projects, often dealing with complex system-level deliveries and effective division of work between the units. In addition, in WELD, the specialization by unit and effective division of work is important. WELD also seeks effective group coordination through business area management. Learning is also emphasized in WELD through benchmarking the best practices across the group. As with the customer and offering oriented capabilities, the set of group oriented capabilities also represents networking capability as such.

To summarize the above cross-case analysis of the generalized capability sets, it is possible to highlight the following findings with respect to the appearance and positioning of networking capabilities within these sets. First, two capability sets turned out to be complete network capability sets as such. The customer and offering oriented and the group oriented capability sets thus position themselves as third-level capabilities in the capability architecture defined earlier in this article. Second, networking capabilities also manifest themselves as embedded in other capability sets. In this study we were able to extract these as first-level capability factors (suppliers as resources, customer knowledge, abilities to build trust and coordinate the supply chain) and second-level resource mobilizing activities (with a focus on material flow and lead-times along the supply chain, and on critical product and customer selection) as part of production oriented capability sets. Furthermore, the embedded nature of networking capabilities proved to belong to technology oriented capabilities. Here, they were also connected with dynamic capabilities (continuous technology development through allying with technology leaders).

**Table 3.** General capability sets identified by the cross-case analysis

Capability (3 <sup>rd</sup> level) and CASE	Resources at disposal and allocated (1 <sup>st</sup> level)	Skills and knowledge (1 <sup>st</sup> level)	Processes, activities or guiding principles (2 <sup>nd</sup> level)
<b>A. Customer and offering -oriented capability sets</b>			
“Customer oriented way of action” SHEET	- Customer specific investments - Trustworthiness and commitment	- Good knowledge of customer’s activities and processes - Flexible service capability - Ability to get and use new knowledge	- Close interaction with customers through customer specific production cells - Longstanding and deep customer relationships - Fast reactions to customer’s claims, initiatives and other contacts
“Sensible customer orientation” COMP	- Key account managers	- Deep knowledge of customers (due to longstanding relationships)	- Customer training - Building up a wide customer scope (several connections to various functions) - Trying to get deep in to the customer mindset - Efficient marketing through wide scope of services
“Customer oriented action” MINK	- Customer specific manufacturing cells - Localized activity; proximity - Personal relationships	- Good knowledge of customer activity	- Holistic customer responsibilities
“Customer oriented action” MACH	- Engineering -capacity - EDI -tools - Key account managers	- Knowledge of logistics, technology and sourcing services - EDI expertise - Good knowledge of customer and customer’s industry	- Customer specific services - Customer relationship management, customer selection and mutual openness - Acting through the key account organization
“Wide product/service offering” WELD	- Engineering capacity - Component manufacturing capacity - Assembly capacity	- Engineering know-how - Component manufacturing expertise - Assembly expertise related to product functionalities	- Conceptualizing services
<b>B. Technology –oriented capability sets</b>			
Tube-manufacturing technology and its continuous development” PIPE	- Specialized machinery	- Prototyping knowledge - Product technology (tank-building know-how)	- Learning from mistakes (documentation) - Production method development - Weekly production cell-specific meeting practices
“Diverse technology base” COMP	- 5 different but compatible manufacturing technologies	- Knowledge to use various technologies together	- Continuous search for new technology-related knowledge - Close interaction with the leading producers of new manufacturing technology

**Table 3.** General capability sets identified by the cross-case analysis (cont.)

Capability (3 <sup>rd</sup> level) and CASE	Resources at disposal and allocated (1 <sup>st</sup> level)	Skills and knowledge (1 <sup>st</sup> level)	Processes, activities or guiding principles (2 <sup>nd</sup> level)
<b>C. Production oriented capability sets</b>			
“Profitable and flexible production”  PIPE	- Flexible (local) supplier network - Inter-organizational trust - Good internal work climate	- An ability to coordinate the supply chain - Good knowledge of customer’s way of acting - An ability to bargain in a network context - An ability to build trust in the supply chain	- Flexibility through proximity (suppliers) - Flat and simple organization - Flexible manufacturing control (to cope with multiple small patch production) - Continuous improvement
“High quality and reliable operations”  SHEET	- Local supplier network	- An ability to develop the supply chain - An ability to build trust in the supplier network	- Continuous improvement - Focus on the process lead-time and flow within the whole supply chain - Focus on production control
“Effective component production” COMP	- Low-cost resources - Highly automated machinery	- Good knowledge of customer’s way of acting - Knowledge of factory automation	- Manufacturing control: proactivity; reliable tooling; mass-customization - Manufacturing method optimization
“Effective manufacturing”  WELD	- Heavy machinery	- Knowing the customer’s product - Specialized production know-how	- Critical product selection (product – machinery –fit) - Method development: mechanization, automation - Documentation
“Operations efficiency”  MACH	- Multi-function machinery - Modern machinery	- Manufacturing control for multi-function machinery	- Good production control - Efficient use of capacity (3- and 5-shift operations; optimizing resources) - Efficiency through deep customer relationships
<b>D. Human resources –oriented capability sets</b>			
“Motivated and committed personnel”  PIPE	- Good working climate - More immediate superiors than average	- Multiple skilled workers - Participative leadership skills	- Organization of work (holistic work roles; teamwork, wide responsibilities) - Knowledge development (e.g., use of knowledge matrices) - Continuous leadership development
<b>E. Group and alliance –oriented capability sets</b>			
“Group activity”  MINK	- Engineering and project management capacity	- Engineering expertise - Project management capability	- Joint projects - Integrated systems deliveries - Division of work between the units
“Working as a group”  WELD	- Alliance partners - Relationships	- Diverse but compatible expertise - Economy of scale	- Specialization and division of work of the manufacturing plants - Definition of diverse business areas - Cross-benchmarking between units

## DISCUSSION

Network capability can be considered a multi-level and cross-level concept (see, Tyler, 2001) that allows firms to leverage other capabilities and, in configuration with them, to generate competitive advantage. This study has attempted to position network capabilities within the overall configuration of a firm's capabilities by explicitly defining capability architecture as a framework for empirical analysis. The framework was used as a guiding principle in the participatory research process conducted with the management groups of six small and medium-sized suppliers. As our main theoretical premise was to address networking capabilities as a part of the overall capability configuration of a firm, we were able to elicit the embedded nature of networking capabilities in the overall configuration of capabilities. It seems evident that networking capabilities form independent capability sets as in the case of customer orientation. However, networking capabilities do have a role within other capability sets as resources, customer specific knowledge, or activities (a focus along the whole supply chain).

In terms of the logic by which firms deploy networking capabilities, the study identified three different ways in which management teams utilize and perceive network capability as a part of the core capability configuration of the firm. We have termed these *partnering*, *value streaming* and *horizontal allying* logics. In the partnering logic, the network capability relates to in-depth relationships with customers that in turn, enable firms to participate in their customer's processes and affect in them through co-creation or joint value creation. The *partnering* logic represents the most widely discussed manifestation of network capability in the industrial supplier environment. The management of strategically important customer relationships is often argued to be a vital, or even the only, source of competitive differentiation among the commoditized supplier markets (Piercy, 2009). Customer relationship capabilities, reacting, adapting, and learning from, and with, the customers play a key role. The more proactive of these firms even get involved at an early stage of the customer's product development processes, in an effort to ensure a long-term partnership with the customer.

The *value streaming* logic builds on the system integrator approach in which the firm acting as a network hub builds vertical relationships with both customers and suppliers. The value streaming logic illustrates the successful alignment of customer relationship management with supplier relationships as was proposed by Piercy (2009). It appears that these firms have managed to build an internal organization capable of dealing effectively with relationships across functional boundaries. Seamless customer and supplier relationship management is aided by the other technological and production capabilities of the firm, most notably in the case of SHEET.

In *horizontal allying*, the partnering firms seek to build ecosystems, in which they can collaborate by sharing resources, knowledge, policies, and best practice. Horizontal allying offers a logical solution to the demands of large industrial customers, something that has been increasingly discussed lately. Small suppliers have been urged to merge and form alliances in order to reduce the purchasing (transaction) costs arising for the large corporations from the large number of suppliers. Large corporations have been increasingly reducing the numbers of their suppliers, concentrating purchases with larger "system integrators" and hence limiting their own supplier relationship activities to these key suppliers. Nevertheless, these key suppliers require more than an ability to interact with customers; they need the relational capabilities aligned

towards horizontal allying, and especially in the case of supply clusters in which the “super-supplier” is not a single entity but a network.

All of these differing logics are used by firms to boost the technological and other production capabilities at their disposal. Whether the network capabilities that emerged are also competences or distinctive capabilities is a matter of subjective judgment. However, the aim of the study was to extract organizational abilities that possess VRIN qualities, and therefore these arguably represent the firms’ competences or core competences (the third level). Logically, firms with a very high level of network capability would also be able to combine the logic of horizontal allying with the partnering or value streaming logic. However, this level of network capability was not discernible among our case firms. While maintaining network capability itself is resource consuming, it may be a question of resource scarcity. Managerially these findings suggest that networking capabilities are useful and could be developed not only in terms of customers, but also within the firm, its horizontal partners, and suppliers. While the specialist and social networking qualification required from customer facing personnel may be well understood, arguably those are different competencies than those required for creating successful network relationships with suppliers or horizontal alliance partners.

Our results indicate how industrial, small and medium sized suppliers use and link their network capability as a part of their core capability configuration; however, our findings should be generalized only with caution. Our data, albeit obtained in relatively long, in-depth processes in collaboration with the companies, is based on only six companies operating within the business-to business environment of metal industry subcontracting. The study had an explorative character, and it is possible that other firms have different capability configurations and entirely different ways to utilize their network capabilities. We encourage other researchers to apply our method to investigate the role of the network capabilities in other industries and countries in order to explore other manifestations. Another limitation of the study is that it requested only top management teams to identify and analyze the capabilities at the firm level. Clearly, relational capabilities are relationship specific and a more objective understanding of the true capabilities of these and other firms could be obtained by identifying key customers and interviewing them about their relationship with these particular firms at the dyadic or network level of analysis. Third, while we tried hard to build a research setting marked by trust and open discussion, and only steered the framework of the workshops to the extent that we did not influence the actual content of the discussions, this type of research is always subject to participation bias. The interpretation of the discussions of the management teams is also clearly subjective, yet by allowing senior management to approve and correct our interpretation, we believe we have presented a reasonably realistic picture of management teams’ views of their firm’s capabilities.

The goal of this study was to investigate the role of network capability in the configuration of other capabilities. We found that in customer oriented capability sets, network capabilities are central to the formation of those capabilities. However, in other types of capability sets too, networking capabilities play an important role as assets (e.g. customer specific knowledge) in the formation of the capability sets. Furthermore, we identified that the networking capabilities act in unison with other capabilities through three different logics, termed partnering, value streaming and horizontal allying. Managerially these findings extend the focus on important networking activities beyond the customer interface.

## REFERENCES

- Abell, D.F. (1993). *Managing with Dual Strategies: Mastering the Present, Preempting the Future*, The Free Press, Boston.
- Amit, R., & Schoemaker, P. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, 14(1), 33–46.
- Barney, J.B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
- Berghman, L., Matthyssens, P., & Vandenbempt, K. (2006). Building competences for new customer value creation: An exploratory study. *Industrial Marketing Management*, 35(8), 961-973.
- Bessant, J., & Francis, D. (1999). Developing strategic continuous improvement capability. *International Journal of Operations & Production Management*, 19(11), 1106-1119.
- Blomqvist, K., & Levy, J. (2006). Collaboration capability – a focal concept in knowledge creation and collaborative innovation in networks. *International Journal of Management Concepts and Philosophy*, 2(1), 31–48.
- Bougon M., Weick K. & Binkhorst D. (1977), Cognition in organisations: an analysis of the Utrecht Jazz Orchestra, *Administrative Science Quarterly*, 22(4), 606-639.
- Capaldo, A. and Petruzzelli, A.M. (2011). In search of alliance-level relational capabilities: Balancing innovation value creation and appropriability in R&D alliances. *Scandinavian Journal of Management* 27(3) 273-286
- Cheng, H.M. & Chang W.Y. (2010). The essence of the competence concept: Adopting an organization's sustained competitive advantage viewpoint. *Journal of Management & Organization*, 16(5), 677–699.
- Day, G. (1994). The capabilities of market-driven organizations. *Journal of Marketing*, 58(4), 37–52.
- Dierickx, I. & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35, 1504-1511.
- Dosi, G. and Teece, D. (1998). Organizational competencies and the boundaries of the firm. In Arena, R. and Longhi, C. (eds.), *Markets and Organization*. Springer-Verlag, New York. p. 281-301
- Hafeez, K., Zhang, Y. B., & Malak, N. (2002a). Identifying core competence. *IEEE Potentials*, 21(2), 2–8.
- Hafeez, K., Zhang, Y. B., & Malak, N. (2002b). Determining key capabilities of a firm using analytic hierarchy process. *International Journal of Production Economics*, 76(1), 39–51.
- Håkansson, H. (1987). *Industrial technological development: A network approach*. London: Croom Helm.

- Hamel, G., & Prahalad, C. K. (1994). Competing for the future. *Harvard Business Review*, 72 (4), 122–129.
- Heimeriks, K. H., & Duysters, G. (2007). Alliance Capability as a Mediator Between Experience and Alliance Performance: An Empirical Investigation into the Alliance Capability Development Process. *Journal of Management Studies*, 44(1), 25-49.
- Helfat C, Peteraf M. (2003). The dynamic resource-based view: capability lifecycles. *Strategic Management Journal*, October Special Issue 24: 997–1010.
- Henderson, R.M. & I.M Cockburn (1994). Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic Management Journal*, 15 (1994), pp. 63–84
- Human, G., & Naude, P. (2009). Exploring the relationship between network competence , network capability and firm performance : A resource-based perspective in an emerging economy. *Management Dynamics*, 18(1), 2-15.
- Hunt, S. D., & Morgan, R. M. (1995). The Comparative Advantage Theory of Competition. *Journal of Marketing*, 59(2), 1-15.
- Hooley, G.J., Greenley, G.E., Fahy, J. & Cadogan, J.W. (2001). Market-focused resources, competitive positioning and firm performance. *Journal of Marketing Management*, 17(5/6), 503-520.
- Kale, P., & Singh, H. (2007). Building firm capabilities through learning: the role of the alliance learning process in alliance capability and firm-level alliance success. *Strategic Management Journal*, 28(10), 981–1000.
- Kogut B, & U. Zander (1992). Knowledge of the enterprise, combinative capabilities and the replication of technology. *Organizational Science* 3(3): 383–397.
- Kor, Y.Y & A. Mesko (2013) Dynamic Managerial Capabilities: Configuration and Orchestration of Top Executives' capabilities and the firm's dominant logic. *Strategic Management Journal* 34 (2) 233-244.
- von Krogh G. & J. Roos (1996). A tale of the unfinished. *Strategic Management Journal* 17(9) 729-737
- Lambe, C., R.Spekman, & Hunt (2002). Alliance competence, resources, and alliance success: conceptualization, measurement, and initial test. *Journal of the Academy of Marketing Science*. 30(2) 141-158.
- Leonard-Barton, D. (1992). Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13(1), 111–125.
- Long, C. and Vickers - Koch, M. (1995). Using core capabilities to create competitive advantage. *Organizational Dynamics*, 24(1), 7–22.

- Lorenzoni, G., & Lipparini, A. (1999). The leveraging of interfirm relationships as a distinctive organizational capability: A longitudinal study. *Strategic Management Journal*, 20(4), 317-338.
- Lewis, M.A. (2003). Analysing organizational competence: implications for the management of operations. *International Journal of Operations & Production Management*, 23(7/8), 731 – 756.
- Mascarenhas, B., A. Bajeva & M. Jamil (1998). Dynamics of Core Competencies in Leading Multinational Companies. *California Management Review*, 40(4) 117 -132.
- Mills, J., K. Platts & M. Bourne (2003). Competence and resource architectures. *International Journal of Operations & Production Management*, 23(9), 977–994.
- Mort, G. S., & J. Weerawardena (2006). Networking capability and international entrepreneurship: How networks function in Australian born global firms. *International Marketing Review*, 23(5), 549-572.
- Pagano, A. (2009) The role of relational capabilities in the organization of international sourcing activities: A literature review. *Industrial Marketing Management* 38(8), 903-913
- Pandza, K., Horsburgh, S., K.Gorton & A. Polajnar (2003). A real options approach to managing resources and capabilities. *International Journal of Operations & Production Management*, 23(9), 1010-1032.
- Piercy, N.F. (2009) Strategic relationships between boundary-spanning functions: Aligning customer relationship management with supplier relationship management, *Industrial Marketing Management* 38(8) 857-864
- Plakoyiannaki, E., & N. Tzoukas (2002). Customer relationship management: A capabilities portfolio perspective. *Journal of Database Marketing*, 9(3), 228-237.
- Penrose, E.T. (1959). *The Theory of the Growth of the Firm*. New York: John Wiley.
- Prahalad, C.K. & G. Hamel (1990). The core competence of the corporation. *Harvard Business Review*, 68(3), 79 – 91.
- Ritter, T., & H.G. Gemünden(2003). Network competence: Its impact on innovation success and its antecedents. *Journal of Business Research*, 56(9), 745-755.
- Ritter, T., Wilkinson, I. F., & W.J. Johnston(2002). Measuring network competence: some international evidence. *Journal of Business & Industrial Marketing*, 17(2/3), 119-138.
- Sanchez, R. (2004). Understanding competence-based management Identifying and managing five modes of competence. *Journal of Business Research* 57, 518– 532.
- Sanchez, R. & A. Heene (1997). Reinventing Strategic Management: New Theory and Practice for Competence-based Competition. *European Management Journal* Vol. 15, No. 3, pp. 303—317.

- Schreiner, M., P. Kale & D. Corsten (2009). What really is alliance management capability and how does it impact alliance outcomes and success? *Strategic Management Journal*, 30(13), 1395-1419.
- Sivadas, E., & F.R. Dwyer(2000). An Examination of Organizational Factors Influencing New Product Success in Internal and Alliance-Based Processes. *Journal of Marketing*, 15(1), 21-49.
- Tracey, M., Lim, J. S., & M.A. Vonderembse (2005). The impact of supply-chain management capabilities on business performance. *Supply Chain Management: An International Journal*, 10(3), 179–191.
- Tyler, B. (2001). The complementarity of cooperative and technological competencies: a resource-based perspective. *Journal of Engineering and technology management*, 18, 1-27.
- Walter, A., Auer, M., & T. Ritter(2006). The impact of network capabilities and entrepreneurial orientation on university spin-off performance. *Journal of Business Venturing*, 21(4), 541-567.
- Wang, C.L. and P. K. Ahmed (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, 9(1), 31 – 51.