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# A Conceptual Analysis of Capabilities: Identifying and Classifying Sources of Competitive Advantage in the Wood Industry

## ABSTRACT

*The resource-based, dynamic-capability and knowledge-based views of the firm focus on identifying company-internal success factors. However, their empirical research and its managerial implications suffer from a lack of conceptual clarity and understanding of the structural and hierarchical complexity of resources and capabilities. This paper suggests a three-step capability-classification system that takes into account 1) the division between company-specific and industry-significant capabilities, 2) hierarchies of task-specific, functional and cross-functional capabilities, and 3) the structure of individual capabilities. We tested the usability of the theoretical construct by identifying and classifying the capabilities of the leading North American and European wood-industry case companies. Our study introduces conceptual tools for those aiming to do empirical research on capabilities, explores the interaction between a firm's capabilities and its competitive environment, and exposes the capability portfolio of wood-industry companies.*

**Key words:** Resources, capabilities, core competence, wood industry, competitive advantage

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## 1 INTRODUCTION

### 1.1 Focus on resources and capabilities

Researchers have debated the extent to which superior performance occurs at the level of the firm, the business unit, the corporation and the industry (Powell 2001; Brush et al. 1999; McGahan and Porter 1997; Rumelt 1991). Favourable market positions (Porter 1985), and heterogeneous, immobile resources (Barney 1991) have been the most frequently cited determinants of competitive advantage. The literature on strategy management is increasingly focusing on company resources to explain persistent performance differences (Ireland et al. 2003; Hitt et al. 2001; King and Zeithaml 2001; Grant 1996a).

Yet, the value of a firm's resources must be understood in the specific market context, and interaction occurs over time between resources and competitive environment (Priem and Butler 2001; Hunt and Morgan 1995). Global competition, innovations in finance, consolidation of the customer-base and the increasing influence of institutional shareholders are a few examples of changes in the contemporary market environment world-wide (Siitonen 2003; Williamson 2003). Restructuring the portfolio of resources and capabilities has a key role in the adaptation process of companies (Ireland et al. 2003).

### 1.2 The need for conceptual clarity

The frequently used terms resources, capabilities and competencies have long featured in research on strategic management (e.g., Hill and Jones 1989; Kotler 1988; Wernerfelt 1984; Hofer and Schendel 1978; Selznick 1959; Penrose 1959). Three schools of thought have emerged that specifically focus on the role of firm-internal factors (resources and capabilities) in the development of sustainable competitive advantage: the resource-based (RBV), the dynamic-capability/ competence-based (DCV) and the knowledge-based (KBV) views of the firm. From a strategic perspective, these views suggest that competitive advantage is a function of the assets the firm develops or acquires in order to implement its strategy. The three research approaches are summarised in Table 1: they are neither contradictory nor mutually exclusive (Tuominen et al. 2003). They could be best thought of as a theoretical continuum, DCV and KBV being an extension of RBV (Priem and Butler 2001; Barney 2001; Grant 1996b; Mahoney and Pandian 1992).

All these views suffer from conceptual ambiguity (Galunic and Rodan 1998; Collis 1994). In much of the empirical work, researchers have simply cited the original RBV terms<sup>1</sup> that are

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<sup>1</sup> "By a resource is meant anything that can be thought of as a strength or weakness of a given firm. More formally, a firm's resources at a given time could be defined as those (tangible and intangible) assets which are tied semipermanently to the firm." (Wernerfelt 1984: 172)

**TABLE 1. The resource-based, dynamic-capability and knowledge-based views of the firm**

<i>The view</i>	<i>The main assumptions concerning the nature of the firm, and the creation and maintenance of sustainable competitive advantage</i>	<i>Examples of seminal works</i>
<b>Resource-based view</b>	<ul style="list-style-type: none"> <li>– The firm is a bundle of heterogeneous resources that are partly immobile (non-tradeable)</li> <li>– Sustainable competitive advantage is derived from the possession and utilisation of valuable, rare, inimitable, non-substitutable resources</li> <li>– In the long run, a firm continues to exist if it is more effective than its rivals at picking resources with heterogeneous productivity (creating Ricardian rents)</li> </ul>	Rumelt 1984; Wernerfelt 1984; Conner 1991; Barney 1991; Grant 1991; Peteraf 1993
<b>Dynamic-capability/competence-based view</b>	<ul style="list-style-type: none"> <li>– The firm is a repository of knowledge the accumulation of which proceeds in an incremental and path-dependent way</li> <li>– The firm’s capability base is the evolutionary outcome of its experiences and acts both as a source of competitive advantage and as a constraint</li> <li>– In the long run, a firm continues to exist if it leverages and develops capabilities sooner, more inventively or more fortuitously than the competition (creating Schumpeterian rents)</li> </ul>	Nelson and Winter 1982; Dierickx and Cool 1989; Prahalad and Hamel 1990; Leonard-Barton 1992; Amit and Schoemaker 1993; Grant 1996a; Teece et al. 1997; Eisenhardt and Martin 2000
<b>Knowledge-based view</b>	<ul style="list-style-type: none"> <li>– The firm is a knowledge-creating function that integrates the knowledge resident in individuals into goods and services- Knowledge is the principal productive resource of the firm</li> <li>– Competitive advantage conferred by an organisational capability depends upon the efficiency of knowledge integration</li> <li>– In the long run, a firm can exist only if its knowledge conversion rate is higher than that of the market</li> </ul>	Nonaka 1994; von Krogh et al. 1994; Grant 1996b; Spender 1996; Nonaka 2002; Nonaka and Toyama 2003

claimed to be all-inclusive and vague (Priem and Butler 2001), and did not distinguish resources from capabilities. With the coming of the DCV, the distinction between resources and capabilities has strengthened (Galunic and Rodan 1998; Grant 1998; Teece et al. 1997; Amit and Schoemaker 1993), although a wide stream of research has continued to refer to the con-

“In this article, firm resources include all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness” (Barney 1991: 101)

cepts interchangeably, or then capabilities are thought to be a subset of resources (King and Zeithaml 2001; Foss 1999; Powell and Dent-Micallef 1997; Day 1994). The conceptual diversity is also evident in the industrial context, and discussion includes companies' success factors, SWOTs and core competencies.

We claim that the question of definitions and hierarchies is not purely semantic. Current DCV research focuses on capability development (Mowery et al. 1996). Hierarchies of organisational capabilities and resources have been approached from both the RBV and DCV perspectives, and in the industry and the firm contexts (de Haan et al. 2002; Walsh and Linton 2001; Grant 1998; Grant 1996a; Day 1994; Amit and Schoemaker 1993). However, with the exception of a few papers (e.g., Amit and Schoemaker 1993), the interaction between firm-specific and industry-wide assets is not explicitly acknowledged as the building blocks of competitive advantage. Moreover, scholars aiming to do empirical RBV or DCV research and to operationalise the key terms have often had to narrow the focus for practical reasons, or to rely on extensive resource listings. The extent to which results based on such lists can be generalised has been debated. The atomistic and static explanation of the success (or failure) of a company is one of the main problems associated with empirical RBV and DCV research (Powell 2001; Porter 1996).

The focus of this paper is on capabilities. They are often complex and difficult to change over time, and are more likely to produce sustainable competitive advantage than other company assets (Hitt et al. 2001; Hunt and Morgan 1995). Capability analysis integrates firm-external and -internal perspectives (Eisenhardt and Martin 2000). Distinguishing capabilities from resources and understanding their architecture enables us to comprehend the sources of competitive advantage, and thus to reduce causal ambiguity. This contributes to the effective management of asset portfolios, and it may have a direct effect on company practice through the better measurement and manipulation of intangible assets such as tacit knowledge. Attention to value creation through capabilities and the dynamic analysis of sustained competitive advantage are advocated to be a fruitful next step RBV development (Priem and Butler 2001; Barney 2001; Galunic and Rodan 1998).

## 2 THE PURPOSE AND IMPLEMENTATION OF THE STUDY

In theoretical terms, the purpose of this paper is (1) to clarify the interplay between firm-internal and -external factors in the development of capability portfolios, and (2) to enhance our understanding of the mechanisms by which capabilities contribute to the competitive advantage of a company. Empirically, the aim is to develop conceptual tools in order to analyse the capability portfolios of the leading North American and European wood-industry companies,

and thus to offer guidelines for both researchers and industry practitioners. The specific questions in focus are:

Q1: What kind of classification system of capabilities best reflects their contribution to the competitive advantage of a company and the dynamics of the capability portfolio?

Q2: What kind of capability portfolio prevails in the leading wood-industry companies and why?

Given the research objectives, the general outline of this study is presented in Figure 1.

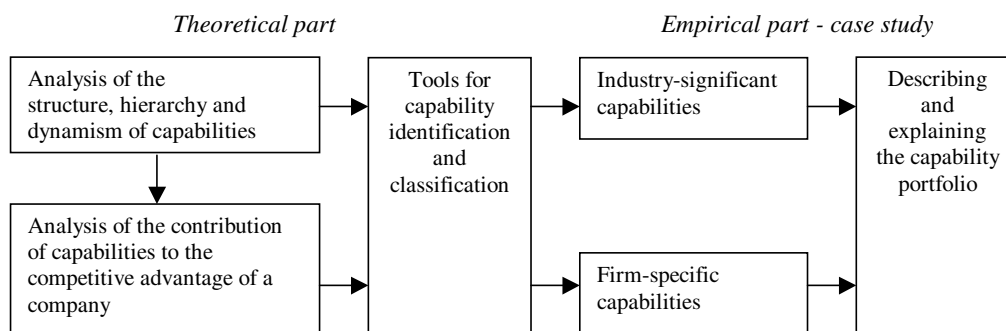


FIGURE 1. A general outline of the study.

### 3 THEORETICAL BACKGROUND

The theoretical framework of the study was created by conducting a conceptual analysis based on the three closely related fields of research referred to above: the resource-based view, the knowledge-based view, and the dynamic-capability view of the firm. In order to identify and classify capabilities, we will first clarify the structure of individual capabilities, the capability hierarchy and the industry-significant and company-specific division. It is from these three analytical levels that we will proceed to explicate capabilities as a source of competitive advantage.

#### 3.1 The structure of capabilities

Together, resources and capabilities include all the assets owned, controlled or otherwise occupied by a firm that are leveraged to develop and implement a set of specific decision options (strategies) (Hunt and Morgan 1995; Barney 1991; Wernerfelt 1984). The following three points show the major differences between resources and capabilities.

1. Whereas resources are either tangible or intangible, capabilities combine both (Galunic and Rodan 1998): *capabilities are clusters of tangible, input resources and knowledge-based, intangible resources*
2. Unlike resources, capabilities have an operational, process dimension – they are not factor stocks, but they are factor flows (Makadok 2001; Winter 2000; Warren 2000; Yeoh and Roth 1999; Vorhies et al. 1999; Grant 1998; Mahoney and Pandian 1992): *capabilities present what a firm can do, they are activities, organisational rather than individual skills*
3. Capabilities often take a routine-like form and are path-dependent (Helfat and Peteraf 2003; Spanos and Lioukas 2001; Makadok 2001; Winter 2000; Brush and Artz 1999; Foss 1999; Black and Boal 1994): *if a company were to be dissolved, its capabilities would disappear as well*

Figure 2 shows the inference in each capability of an infrastructure and a bundling process (Sirmon et al. 2005; Ireland et al. 2003; Gold et al. 2001). The necessary knowledge component (tacit and explicit) is embedded in the organisation's technological and managerial systems, as well as in individual employees (Loasby 1998; Leonard-Barton 1992). Knowledge surfaces only when exploited in activities, and its diffuse nature is the key to explaining the causal ambiguity and untransferability of capabilities (Conner and Prahalad 1996; Grant and Badenfuller 1995; Nonaka 1994). The infrastructural part of capability releases the knowledge embedded in the organisation and enables the clustering of resources. The process part integrates knowledge with other resources. The former involves *technology* (such as IT systems), which mobilises the tangible and intangible resources, organisational *structure*, which creates a platform for combining resource flows, and organisational *culture*, which binds the resources into the company values and vision (Sirmon et al. 2005; Siggelkow 2002; Gold et al. 2001; Leonard-Barton 1992). Bundling processes involve *stabilising* (combining resources in order to maintain, reinforce or increase the scope of an existing capability), *creating* (developing new capabilities through exploratory learning), and *trimming* (deleting a capability or certain resources) (Sirmon et al. 2005; Siggelkow 2002; Ahuja and Lampert 2001; Brown and Eisenhardt 1999).

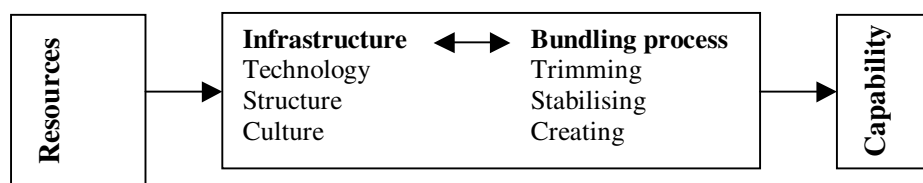


FIGURE 2. A capability as an organisationally embedded bundling process of resources.

In sum, capabilities are organisational resource-bundling processes that are developed and used with the ultimate aim of distinguishing the firm along the dimensions that bring value to its customers and/ or create market or industry change (Grewal and Tansuhaj 2001; King and Zeithaml 2001; Eisenhardt and Martin 2000; Vorhies et al. 1999; Teece et al. 1997; Grant 1996a; Day 1994; Markides and Williamson 1994; Amit and Schoemaker 1993). They transform knowledge embedded in the organisation in order to develop and deploy its resources further (Eisenhardt and Martin 2000; Yeoh and Roth 1999; Grant 1996a; Day 1994).

### 3.2 Hierarchies of capabilities

Capabilities range from simple bundles of resources that are designed to perform less complex activities to higher-order combinations (Brown and Eisenhardt 1999). The hierarchy stems from the integration of knowledge<sup>2</sup> into the resources of the company, and from resource accumulation in the organisation (Eisenhardt and Martin 2000; Grant 1996b) (Figure 3).

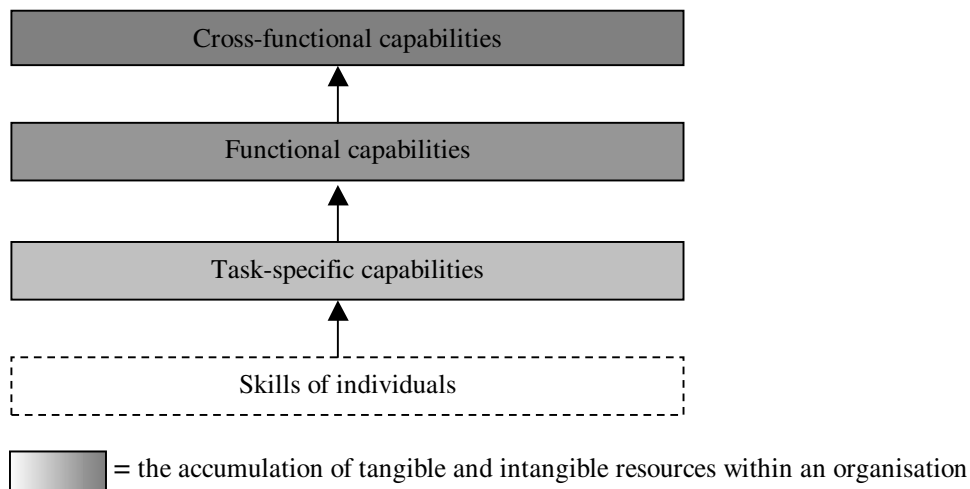


FIGURE 3. A hierarchy of capabilities.

<sup>2</sup> The need for and the speed and intensity of knowledge integration depend on the market environment. Within capabilities, a common distinction is between the dynamic and the operational. Basically, dynamic capabilities contrast with operational (ordinary) capabilities by being concerned with change (Winter 2000; Teece et al. 1997). They transform products, processes, scales or customers served (the Schumpeterian 'creative destruction'). However, the division between these concepts is not clear-cut. All capabilities, not only the dynamic ones, have the potential to accommodate change, and the patterns vary with the market dynamism (Helfat and Peteraf 2003). When markets are stable or moderately dynamic, dynamic capabilities resemble the traditional concepts of routines, i.e. operational capabilities (Eisenhardt and Martin 2000). In contrast, in high-velocity markets they become more experimental (entrepreneurial) and unstable processes that rely on quickly created new knowledge.

Following the logic of Grant (1998), we suggest that the key question in grouping and classifying capabilities concerns how widespread the integration of resources and the co-ordination of activities has to be to promote a certain capability in a company. A firm's capabilities can usually be identified and appraised by utilising a standard functional classification of company activities, i.e. locating the resources and the main responsibility for developing a certain set of capabilities within functional boundaries (Grant 1998). Accordingly, promoting, developing and maintaining higher-order, cross-functional capabilities (in particular those that become core competencies) is the responsibility of top management and cannot be directly linked to any individual function (Prahalad and Hamel 1990).

Thus, the base of the hierarchy combines the knowledge of individuals that is deployed in order to accomplish specialised tasks (e.g., finger-jointing, market analysis). Special tasks can be highly product / process-specific. On the second level, task-specific capabilities are combined related to company functions (such as marketing, manufacturing, materials management and logistics). The highest-level capabilities demand the wide-ranging, cross-functional integration of tangible and intangible resources (e.g., networking, cost control).

Lower-order capabilities are needed to create and maintain a higher-order capability. Thus, the notion of capability hierarchies is the key to understanding core competencies<sup>3</sup> (Nelson 1991). Core competencies are non-product-centric capabilities that bring value to the customer and span multiple lines of product markets (Miller et al. 2002; Grant 1998; Hamel and Prahalad 1996; Prahalad and Hamel 1990). They are the complex and deeply organisationally embedded subset of capabilities that involve multiple lines of company functions, and bind many levels of people<sup>4</sup> (Grant 1996a). They are always valued relative to other firms, since they utilise the asymmetries discovered between the company and its competitors (Hamel and Prahalad 1996). According to this definition, core competencies cannot be found among the capabilities that are basic requirements in the industry because they do not differentiate the company from its counterparts.

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<sup>3</sup> Having carried out on an extensive literature review, Grant (1998) found that the most common trend in recent research was not to make a distinction between capabilities and competencies. However, Prahalad and Hamel's seminal work (1990) on core competencies popularised the term for good in both theory and business practice.

<sup>4</sup> Porter (1996) states that it is not a single competence that leads to sustainable competitive advantage, but that the more complicated the combination of different resources and capabilities is, the more likely a firm is to beat its competitors by differing from them. Thus, according to him, the focus on core competencies is misleading. However, in order to create and maintain core competencies, a company usually has to manage a wide variety of capabilities and resources within an effective organisational structure. Furthermore, contrary to Barney's (1991) notion, a single resource or capability that in itself is not valuable, rare, inimitable or non-substitutable may contribute to longer-term competitive advantage as part of a higher-order capability.



### **3.3 The division between industry-significant and company-specific capabilities**

It is the comparison of a firm's capabilities with those of its competitors within a certain market and industry that brings us to the third dimension of capability analysis. Capabilities and resources can be identified and classified on both industry and firm levels. On the industry level, Amit and Schoemaker (1993) introduce SIFs (Strategic Industry Factors) as the portfolio of resources and capabilities that have become the prime determinants of economic rent in a certain industry. SIFs are determined in the market, they change over time and drive competition. SAs (Strategic Assets), in turn, are the distinguishable resources and capabilities that have the potential to establish the firm's competitive advantage. In this paper, we build on these concepts. We call capabilities that are the consensus-part of SIFs 'industry-specific capabilities' (also thought as industry recipes (Spender 1989)), and those that belong to SAs 'firm-specific capabilities'. Industry and market contexts determine which resources and capabilities are basic requirements for a company, and which can differentiate the firm from its counterparts. The relative value of capabilities and resources varies over time.

### **3.4 Capabilities as a source of competitive advantage**

Basically, any firm's strategy is aimed at achieving competitive advantage that contributes to wealth creation and growth over time (Ireland et al. 2003). A firm's strategy selection, in turn, is based on the careful evaluation of its resource and capability portfolios and reflects the market influence (Barney 1991). Managers have choices to make about alternative strategic options, but the prevailing resource and capability framework eventually limits them. Well-performing companies have more accurate expectations about the future value of resources than their competitors. The value of resources is dependent on factors exogenous to the firm (Spanos and Lioukas 2001). According to the logic of Amit and Schoemaker (1993), managers have to be able to identify the present set of SIFs, as well as to assess possible future sets. They also have to identify, *ex ante*, a set of SAs for establishing the firm's competitive advantage.

Companies develop their asset portfolios by either picking or bundling resources (building capabilities internally) (Makadok 2001; Mahoney and Pandian 1992). If resource picking prevails, then the management role is to realise expectations in terms of the value of the company's resources, which would mainly involve adapting knowledge from the market environment and carrying out acquisitions and mergers. On the other hand, if capability building (resource bundling) is the main source of profit, then managers make their contribution largely through developing capabilities internally. It follows that the emphasis should be more holistic: managers should focus not only on the raw materials (resources) from which capabilities derive, but also on the structural principles behind their appropriate building up, and on the

construction techniques used (Makadok 2001).

Capability building plays an important role in renewing competitive advantage over time (Priem and Butler 2001). A firm is said to have competitive advantage when it is engaging in activities that increase its efficiency in ways that escape competing firms (Barney 2001). Specifically, Hunt and Morgan (1995) state that the key to a firm's superior financial performance is *comparative* advantage in its assets. Competitive advantage results when

*"a company's resources assortment (e.g., its competencies<sup>5</sup>), enables it to produce a market offering that, relative to extant offerings by competitors, (1) is perceived by some market segments to have superior value and/ or 2) can be produced at lower costs."*  
(Hunt and Morgan 1995: p. 7)

It follows that competitive advantage is always defined relative to the company's closest competitors within a certain market context, and it is an inherently dynamic concept leaning on a heterogeneous and partly immobile selection of assets.

A strategy can generate *sustainable* competitive advantage only if the assets contributing to it are valuable, rare, inimitable and non-substitutable (Grant 1998; Barney 1991; Dierickx and Cool 1989). The value of a particular asset depends on the specific market and industry context in which it is deployed. Rareness does not mean possessing unique assets. However, if a valuable resource or capability is widely available among the companies within the selected market, it becomes the prerequisite for staying in business, but not the basis for outperforming the other companies. Thus, valuableness and rareness are needed for creating and establishing competitive advantage in the first place. Inimitability and non-substitutability contribute to maintaining the advantage.

Capabilities may be highly inimitable due to the complementary of resources, time compression diseconomies, asset mass efficiencies and causal ambiguity (Dierickx and Cool 1989). This means that they are difficult to transfer or replicate. Organisational embeddedness is the key to understanding the low transferability of these factors. In socially complex organisations, the multi-level capabilities that combine both tangible and intangible resources become impossible to transfer separately: the higher the capability is in the hierarchy, the more embedded it is in the organisation due to knowledge-based resource accumulation. These capabilities are often the ones that become core competencies, but they are also the ones that may turn out to be core rigidities in a fast-developing market environment (Leonard-Barton 1992). This is also the case with intangible resources such as organisational culture, values, reputation and relationships.

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<sup>5</sup> Used analogously to our definition of capabilities.

Nevertheless, a resource or capability cannot be a source of *sustainable* competitive advantage if it has strategically equivalent substitutes that are not in themselves rare or costly to imitate (Barney 2001). In terms of substitutability, organisational capabilities are a problematic source of sustainable competitive advantage. Even though it has been accepted that they may, per se, contribute to competitive advantage (Eisenhardt and Martin 2000; Collis and Montgomery 1995), they are vulnerable to erosion as the firm adapts to changes: they may be replaced by a different capability or be surpassed by a better one (Collis 1994). Most importantly, there are multiple paths to the same capability, one building block may be substituted by another even when two companies are pursuing the same strategy, and in that sense, every case of superior performance is unique and non-generalisable (Starbuck 1993, 1992). The limitless number of capabilities and resources enables competitors to change the competitive landscape and exploit new factors.

Thus, we could claim that, in the long run, the only way to ensure *sustainable* competitive advantage is to develop new capabilities at a faster pace than the competitors (Nonaka and Toyama 2003; Eisenhardt and Martin 2000). For the reasons explained earlier, the sources of *longer-term* competitive advantage are more likely to lie in the higher-order capabilities (Hunt and Morgan 1995). A *temporary* source of competitive advantage, in contrast, is to be found on a number of levels, and valuable capabilities and resources are dependent on the industry and market contexts and on time. It is also important to remember that structuring and bundling resources is not enough, and the capabilities have to be successfully leveraged within and across business units and organisational functions (Ireland et al. 2003; Hitt and Ireland 1986).

Nevertheless, knowing the industry recipes – the organisational routines necessary to compete in a particular industry – provides a basis for guiding managerial actions (Spender 1989). A deep knowledge of those recipes, together with creativity, enhance the likelihood of identifying and building the new and novel capabilities needed for differentiation. Thus, even though we accept that the traditional RBV emphasis on sustainable competitive advantage is often unrealistic and static (Powell 2001; Priem and Butler 2001; Eisenhardt and Martin 2000), it is important to identify the portfolio of resources and capabilities that contribute to longer-term superior financial performance (competitive advantage).

## 4 METHODOLOGY AND DATA

### 4.1 Methodology and case selection

Despite the already extensive body of RBV, DCV and KBV studies, empirical research on capabilities is still at an early stage. Thus, the main methodological problem was to connect the

theoretical constructs with empirical evidence, and to decide on the desired level of generalisability. Excluding the research focusing on one capability only (e.g., Adner and Helfat 2003; Ritter et al. 2002; Makadok and Walker 2000), the capability sets of companies have been studied by using predetermined lists (e.g., Zander and Kogut 1995) or by leaving the questions as open as possible and not imposing a ready-made capability concept (e.g., Verona and Ravasi 2003).

Henderson (1994), Lee (1999) and Eisenhardt and Martin (2000) observe that due to their embedded and process nature capabilities are very difficult to identify through quantitative research. Rouse and Daellenbach (1999) conclude that it would be better in empirical research adopting the resource-based approach to use outcome-based case studies: to analyse the specific success factors in a given industry through in-depth fieldwork. Furthermore, our research concerned a contemporary phenomenon in a real-life context, and our focus was on the why and the how. Thus, the chosen method was to carry out a descriptive multiple-case study as advocated by Hall and Rist (1999), Remenyi and Williams (1998), Yin (1994) and Eisenhardt (1989), among others. In contrast to the grounded theory approach that aims at building a new theory, we used the extended case method that contributes to the integration of existing concepts and theories (Daneels 2002). We used the evolutionary approach, in which the system dynamics are studied by comparing the state of the system at one time with its state at a later time, in order to capture the changes in the capability portfolios (Barney 2001).

We relied on 'purposive sampling' in our case selection (Silverman 2000). This requires thinking critically about the population parameters and selecting the cases that best illustrate a feature or process that the research is theoretically relevant to. This approach is similar to Yin's (1994) 'replication logic'. We decided to focus on the leading wood-industry companies in 1998–2001 for the following reasons.

- By observing companies in the basic industry in which volume-oriented growth based on tangible resources has been the norm rather than the exception, we were able better to capture the transformation in thinking related to the intangible company assets, assuming that such a change exists.
- The period 1998–2001 included both an economic upswing and a slowdown, which made wood-industry companies rethink their capability portfolios. Accordingly, the research issue was relevant and topical in most of the companies, and the amount of data was controllable.
- The leading-edge companies are in many ways the forerunners in their industry. They have a wide geographical scope, they have more resources to fund innovation, and their customer base connects them to a wide network that can be used in market sensing (Ahuja and Lampert 2001). Thus, observing the leading companies enabled us to describe the general trends in the industry in foresight.

The unit of analysis was an independent wood-industry company or, if the company was part of a larger corporation, a wood-industry subsidiary or part of it. The research focus on North American and European companies was motivated by their accessibility, and by the fact that worldwide industry consolidation has resulted in the concentration of the leading companies in these two continents. We believe that the worldwide presence of the case companies enabled us to broaden the geographical scope of the research.

In order to identify the leading wood-industry companies in each country, we used a multi-phase case-selection process. This enabled us to pick out the leading companies by using a multidimensional performance measurement based on financial performance, operational performance and organisational effectiveness (Venkatraman and Ramanujam 1986). Our first step was to create a list of 120 leading forest-industry companies from 12 countries. In that task we utilised already existing lists such as PriceWaterhouseCooper's Top 100 forest-industry companies from 1998–2001. We then ruled out 80 companies according to the following three criteria:

- The company had no wood-industry activities (panel, sawmilling or engineered wood products), or such activities accounted for less than 10% of its revenue in 2000
- The company was not an established one. For the purposes of this study, we defined an established company as one that was more than 10 years old and was among the 10 biggest wood-product-industry companies in its home country measured by revenue and production figures
- Not enough secondary information was available to enable us to decide whether the company met the criteria.

The remaining 40 companies were analysed in detail from the available secondary material in order to identify the industry leaders, and the lists were compared and discussed with seven Scandinavian, long-serving wood-industry experts from forest-industry co-operative organisations and companies. The contributions of the experts were valuable, particularly in the case of private companies with relatively little published information.

The final case-selection strategy we used within the industry was based on a division by core businesses and business culture, and resulted in a group of 27 case companies from seven countries (as an example of a similar selection strategy, see Gersick 1988 and Harris and Sutton 1986). They were chosen on the grounds that they represented the leading edge of the industry in three sectors (panels, sawmilling and engineered wood products). Albeit closely linked, they all had strong characteristics of their own. For the sake of comparison, the companies were also grouped into Anglo-Saxon, Germanic and Scandinavian cases according to their business culture and organisation type. This division was based on studies by Ferner et al.

(2001), Fincham and Rhodes (1994) and Rodgers (1986) about cultural differences and their effect on business. The spread of the case companies roughly reflected the actual production volumes from each continent and the importance of different core businesses within the wood industry. Thus, the US and Canadian producers outnumbered the producers from Germany, Austria, Sweden and Finland, and the number of timber and panel producers outnumbered the EWP producers.

Primary data was collected from 11 case companies, which were selected to represent each business culture and the three main core businesses (timber, panel and EWP) (Table 2). Four cases were further selected for in-depth study, again chosen on the grounds of representing each business culture and the main business. This was done to control different types of environmental variation in order to explore and explain the capability portfolio within the selected group of companies.

**TABLE 2. Background variables of the case companies.**

BACKGROUND VARIABLE	Number of cases		
	27	11	4
<b>Business culture</b>			
Anglo-Saxon (the US, Canada, the UK)	12	6	2
Germanic (Austria, Germany)	9	2	1
Scandinavian (Sweden, Finland)	6	3	1
<b>Core business in the wood industry</b>			
Timber	4	2	2
Panel	5	3	1
Panel + timber	4		
EWP + panel	2		
EWP + timber	4	1	1
EWP + timber + panel	8	5	
EWP (Engineered wood products) = glued laminated timber (glulam); structural composite lumber (SCL) consisting of laminated veneer lumber (LVL), parallel strand lumber and oriented strand lumber; wood I-beams. Panel = fibreboard (including MDF), particleboard (including OSB), and plywood.			

The study followed a multiple-case-replication logic (Yin 1994) and a 'T-design' (Thölke et al. 2001). Accordingly, the purpose of analysing the first 27 cases and the following 11 was to explore the general phenomenon, i.e., changes in the market environment and the prevailing capability portfolio at the industry level, thus forming the horizontal dimension of the T-design. The final set of four cases allowed us to connect the firm-specific capabilities to the company objectives, its organisation, history, and the market and industry contexts, and to

explore the research domain in-depth (i.e., the vertical dimension of the T-design). Within each of the three groups of cases, we used the principle of literal replication, according to which each case is considered analogous to an experimental logic (Yin 1994).

## 4.2 Data and analysis

The data for the study reported in this paper was gathered during 2002–2003 in connection with a study that aimed at identifying how the leading European and North American wood-industry companies adapted to the changes in the market environment in order to maintain or improve their competitive position (Korhonen and Niemelä 2003).

First, a detailed analysis was conducted based on available secondary material about the 27 companies in order to explore the problem area and map their overall objectives and strategic responses. In addition, secondary material was used throughout the research to provide background information, to ensure construct validity and reliability, and to minimise the time spent in the companies (Table 3).

**TABLE 3. Data sources.**

Data source	Number
<b>Secondary data</b>	
Annual reports, environmental reports 1998–2001	53
Newspaper clippings and articles 1998–2001	298
Company brochures and other printed material, videos	14
Company web pages (mainly for access to public speeches, and press releases 1998–2001)	
<b>Primary data</b>	
Interviews, Anglo-Saxon companies	20
Interviews, Germanic companies	6
Interviews, Scandinavian companies	5
<i>Total number of interviews (length from 45 minutes to 3 hours)</i>	<i>31</i>

Following the analysis of the secondary material, we conducted interviews in the case companies in two phases. The first stage, from March 2002 to May 2002, focused on the identification of the most important capabilities of the industry. This was a necessary step in exploring the dynamism between industry-significant and firm-specific capabilities in order to make a distinction between them at a later stage. The second phase of the research, from December 2002 to April 2003, focused on the identification of firm-specific capabilities and on clarifying their contribution to the development of competitive advantage, with a view to broadening our understanding of the interaction between a firm's capabilities and its environment.

The first-stage interviews in the 11 companies were semi-structured and based on a pre-determined selection of industry-significant, basic capabilities drawn from an analysis of previous research. From existing wood-industry studies we were able to utilise the lists of SWOTs and core competencies drawn up by Humala and Peltoniemi (2001) and Niemelä (1993), as well as research reports 'Trämekanisk Framsyn' (2000) and 'Global drivers and megatrends of the wood-products industry to the year 2010' (1998). We also compared the lists with the capability studies conducted within US pharmaceutical companies (Yeoh and Roth 1999), on the top SMEs in Singapore (Ghosh et al. 2001), and on the Finnish meat-processing industry (Hyvönen 2001) given the fairly similar research approach. The chosen capabilities were either related to a certain function (e.g., manufacturing, marketing, R&D, logistics) or they were more general capabilities spread over the company. Task-specific capabilities were not included due to their product-specific nature and their very wide range in each functional capability.

The resulting list of 54 capabilities (see the Appendix) was piloted and tested on six Scandinavian mechanical-forest-industry experts. It was thus compiled following the normal procedure for drawing up a survey questionnaire (for a similar approach, see King and Zeithaml 2001), and it presented a consensus of the key capabilities at the wood-industry level. The higher-order capabilities identified as important in previous wood-industry studies (e.g., cost reduction, flexibility, customer service) were partly unbundled utilising existing research on these specific topics in order to provide a more fine-grained analysis. Thus, some of the capabilities in the list were strongly interrelated, and this was taken into consideration in the interview analysis. Given the small number of interviewees, the list served, first and foremost, as an interview outline with a view to forming a basis for explaining why these capabilities were industry-relevant. For the purpose of the interviews, the capabilities were presented under seven functional and one general capability groups following the procedure advocated by Grant (1996a).

The interviewees were vice presidents of the wood-industry SBUs, deputy managing directors, R&D directors and marketing directors, or their assignments were otherwise related to strategic planning and business development. The informants were first asked to identify the three most important capabilities in each group and then to explain their choice. This was to focus the interview and to pinpoint a more fine-grained but still holistic selection of the listed capabilities. The following discussion not only clarified the reasoning behind the capability selection, but also ensured that the possible differing opinions, the relatedness of the capabilities, and those not included in the list were recorded. The first-phase interviews were transcribed and analysed, and 11 cases were written and approved by the informants before we moved on to the second-phase interviews.

Four companies were involved in the second phase, three of which had been included in the first-phase interviews and the fourth being added in order to test the emerging generalisa-



tions (Silverman 2000; Mason 1996). The interviewees were selected so as to present a variety of functional viewpoints from within each company (e.g., marketing, R&D, raw-material supply, logistics and manufacturing), one informant always presenting the whole company (e.g., managing director, business manager). The selection of the informants reflected Grant's (1996a) notion that capabilities can be identified related to functional area, and that core competencies are created through the integration of functional capabilities. The questions were open-ended, and the interview outline is given in Table 4. A similar procedure has been used by Verona and Ravasi (2003) in their study on dynamic capabilities.

**TABLE 4. Interview outline – second-phase interviews.**

- 1. The informant's background and the role his/ her function played in the organisation**
- 2. The recent organisational changes, and the reasons and aims behind them**
- 3. The capabilities that are the prerequisites for a wood-industry company to stay in business**
- 4. Valuable capabilities that would differentiate the case company from its competitors**
- 5. The difference between the current/ future and the past capability portfolio**
- 6. The connection between organisational changes and the capability portfolio**

We avoided using the concepts 'capability' or 'competence' during the second-phase interviews, but talked about 'organisational skills' or 'what a firm can do' (Grant 1996a). Multiple informants from each company reviewed and commented on the reports that were written based on the interviews in their own organisation. In order to ensure the anonymity of the case companies, the interviewees were not informed about the other participants in the research, and their geographical location by country was also kept confidential.

As advocated by Yin (1994) and Eisenhardt (1989), the chosen general analytic strategy was to use pattern matching relying on theoretical propositions. The final product may be concepts, conceptual frameworks, propositions or midrange theories (Eisenhardt 1989). In this study, it was a conceptual hierarchical framework aiming at analysing the company capabilities. Within our general analytic strategy, we used a technique devised by Miles and Huberman (1994). At the data-reduction and display stage, the secondary material and the interview transcripts were coded according to six themes that were identifiable at the manifest level and derived from the interview outline presented in Table 4 (Boyatzis 1998). The industry-significant and firm-specific capabilities identified from the in-depth interviews were first grouped under different functions depending on how the responsibility and the resources needed for their development were allocated (Winter 2000; Grant 1998). The most important industry-significant capabilities identified during the first-phase interviews were then compared with the ones derived from the in-depth, second-phase interviews in order to obtain a holistic

understanding of each capability portfolio. Following the within-case analysis, we conducted a cross-case analysis. In our conclusion drawing and verification, we used the case-study tactics recommended by Silverman (2000) and Yin (1994) in order to safeguard the quality of the research design (see Table 5).

**TABLE 5. Tactics for ensuring the quality of the research design.**

TESTS	TACTICS USED IN THIS STUDY	PHASE OF RESEARCH IN WHICH THE TACTIC WAS USED
Construct validity (correct operational measures for the concepts being studied)	<ul style="list-style-type: none"> <li>– multiple sources of evidence (data triangulation)</li> <li>– key informants reviewed draft case-study reports</li> </ul>	– data collection and composition
External validity composition (the domain within which a study's findings can be generalised)	<ul style="list-style-type: none"> <li>– replication logic in the context of multiple-case design</li> <li>– purposive and theoretical sampling</li> <li>– comparing the case results with already existing related studies</li> </ul>	– research design and data collection
Reliability (the study can be repeated achieving the same results)	<ul style="list-style-type: none"> <li>– case-study protocol</li> <li>– case-study database</li> </ul>	

## 5 FINDINGS

### 5.1 Industry-significant capabilities in the wood industry

From the in-depth and structured interviews we identified five functional (HRM, logistics, marketing and sales, materials management and manufacturing) and two cross-functional (cost-control and information and knowledge management) industry-significant capability groups. We further analysed the hierarchy and dynamics of the portfolio (1) by explaining how the firm-external factors had affected the importance of each identified capability group, (2) by illuminating the relationships between the capabilities within each group, and (3) by clarifying how cross-functional capabilities were realised through the functional ones.

**HRM capabilities (Table 6)** Managing human capital through recruiting, training and repositioning employees remained an essential capability. Motivating employees and trust management had become increasingly important due to the ongoing restructuring and industry consolidation. There was a strong relationship between employee motivation and information sharing in the company. As one informant remarked:

*"Whenever you develop a company and it gets bigger, morale, motivation and all those things become really important because everybody is afraid of how things have already changed and how are they going to change in the future. I really think that the real way to motivate employees you have to keep them involved in the business. There has to be willingness in the company to share information, to talk about things, to talk about direction."* Director, strategic planning/ North America

**TABLE 6. Industry-significant functional capabilities – human-resource management.**

In-depth interviews (4 case companies)	Structured interviews (11 case companies)
<ul style="list-style-type: none"> <li>• Choosing the right people for the right positions</li> <li>• Motivating and coaching employees</li> <li>• Recruiting and retaining people with the right contacts and an ability to solve regional problems</li> <li>• Communicating about the importance of safety and the importance of environmental awareness</li> </ul>	<ul style="list-style-type: none"> <li>• Maintaining trust between management and employees</li> <li>• Training employees</li> <li>• Motivating employees</li> </ul>

**Marketing and sales capabilities (Table 7)** Even though the marketing and sales function was no longer the primary boundary spanner between the markets and the company, its role as a gatherer and producer of market-related information and knowledge had strengthened. Information on the general market situation was needed for the pricing and investment decisions on the one hand, and for selecting key customers and developing a relationship with them on the other. Segmentation enabled the companies to better combine economies of scale with a thorough knowledge base. The focus on key customers affected the whole company:

*"Solving problems together with the customer, that's very important and we have some very good experience on that and we have done some R&D with the customers... and solving problems, that could normally lead to developing joint business. If you are distributing to the DIY retailers then of course it is that you have a broad product range, you have cheap material, sawn goods and everything but ...if you are in the building industry they want to have system solutions."* Director, marketing/ Europe

**Materials-management capabilities (Table 8)** The wood industry is largely raw-material driven. Thus, raw-materials management formed the basic capability portfolio, and it was principally related to ensuring cost-effectiveness and continuous supply. There are two conflicting

**TABLE 7. Industry-significant functional capabilities – Marketing and sales.**

In-depth interviews (4 case companies)	Structured interviews (11 case companies)
<ul style="list-style-type: none"> <li>• Active monitoring of the market and maintaining keen market intuition, especially related to the price level</li> <li>• Selecting the key accounts and maintaining a close relationship with them</li> </ul>	<ul style="list-style-type: none"> <li>• Solving problems together with the customer</li> <li>• Strengthening and developing brand image</li> <li>• Increasing the degree of value added</li> <li>• Maintaining a good relationship with marketing-channels intermediaries</li> <li>• Building long-term customer relationships</li> </ul>

trends in sawmilling: the need to focus on and specialise in certain customers and certain products, and the need to optimise yield within a wide range of raw materials. The latter results in a wide product palette, and prevents specialisation. The quality of the raw material largely determines the quality of the end product:

*“Our marketing strategy is clearly and our company approach is that we want to make a quality product and you can’t make quality without quality raw material and the continuity of raw material is also very important. We get quite a lot of stuff in the raw material flow that is very difficult to use.”* Vice-president / North America

The capability portfolio was developed with a view to balancing the existing raw material and meeting the needs of the market.

**TABLE 8. Industry-significant functional capabilities – materials management.**

In-depth interviews (4 case companies)	Structured interviews (11 case companies)
<ul style="list-style-type: none"> <li>• Harvesting and controlling the raw-material supply chain</li> <li>• Organising the raw-material supply so that it meets the demands of the changing market environment</li> <li>• Identifying the company fit in the supply chain by knowing the fibre base</li> </ul>	<ul style="list-style-type: none"> <li>• Ensuring continuous raw-material flows</li> <li>• Using high-quality raw material</li> </ul>

**Manufacturing capabilities (Table 9)** Utilising modern technology in production had shifted from being a primary source of competitiveness to belonging to the portfolio of basic capabilities, as the following comments explain:

*“We invest in the latest technology, but on the other hand, to invest too heavily in the new technology because the old technology will function relatively well... I think it is*

*of some interest to follow the development and technology, but it is not as important as the other things*" Vice-president/ Europe

*"Utilising the latest technology enables you to reduce costs, so it is almost one and the same"* Director, strategic planning/ North America

*"We are fairly progressive in technology, but the whole motivation is to reduce costs"* Vice-president/ North America

There were three main reasons for the change. Firstly, computer-based processes needed highly-professional employees, but the same knowledge was basically available to everyone. Secondly, all companies could buy the same equipment, and a number of firms thus had the very same technology. Thirdly, the difficult economic situation did not encourage companies to invest in new, innovative technology. In the manufacturing, making continuous process improvements and utilising modern technology were important ways of increasing cost efficiency through improved efficiencies of scale, optimum resource use, and quality assurance.

**Table 9. Industry-significant functional capabilities – manufacturing.**

In-depth interviews (4 case companies)	Structured interviews (11 case companies)
<ul style="list-style-type: none"> <li>• Keeping up with the changes in production technology</li> <li>• Maintaining a high yield</li> <li>• Maintaining a good product knowledge</li> <li>• Keeping up the volume in commodity business</li> <li>• Controlling quality</li> <li>• Having the capabilities to keep the equipment running and optimised</li> </ul>	<ul style="list-style-type: none"> <li>• Utilising the latest technology</li> <li>• Being flexible in manufacturing</li> <li>• Repeating process innovations</li> <li>• Maintaining stable product quality</li> </ul>

**Logistics capabilities (Table 10)** The shortening marketing channels, bigger key customers and their demand for JIT deliveries made the companies emphasise their punctuality, reliability and environmental friendliness in distribution. They had started to adopt logistical solutions from other industries, and to invest in their own delivery systems. Reliable deliveries, together with a stable product quality, were the key things that the customers demanded of their suppliers.

*"This system is all about logistics and responding to the... the customer need is JIT. So it is getting the order... it is getting the inventories right and then being able to dispatch."* Deputy managing director/ Europe

**TABLE 10. Industry-significant functional capabilities – logistics.**

In-depth interviews (4 case companies)	Structured interviews (11 case companies)
<ul style="list-style-type: none"> <li>• Developing fast, reliable, effective delivery systems</li> <li>• Shortening channels of physical distribution</li> </ul>	<ul style="list-style-type: none"> <li>• Handling large volumes</li> <li>• Ensuring punctual deliveries</li> </ul>

The most important cross-functional capabilities were related to cost control and information and knowledge management.

**Cost-control capabilities (Table 11)** Given the mature nature of the industry and the prevailing overcapacity in the panel and sawmilling sectors, relentless cost-cutting was thought to be the only way to fight the price downturn. It was also what the shareholders expected. Cost control spanned the whole company, it was realised in every function, and it was not dependent on a specific strategic orientation, as the following comments demonstrate:

*"We are in the commodity business still ...cost cutting has to be our number one priority"* Vice president/ North America

*"And even though you are going to be a market-oriented player in the business you still have to know where your costs are. If the costs are raging, we are wasting our time."* R&D manager/ Europe

*"If you talk about really basic skills in this industry, it is low production cost and high yields, one can say it's cost efficiency all the way."* Product manager/ Europe

The contribution of two functions to the cost-control capability was particularly significant. The capability portfolios in manufacturing and materials management were intertwined to realise cost-efficiency and stable quality. As the interviewees emphasised:

*"When you look at the production functions... in the products that we are in, the three most important things are cost, cost and cost. Because the market sets our prices, we don't. You've got to have stable product quality, you've got to have low cost and then third, you've got to have technology and flexibility and what not."* Deputy managing director/ Europe

*"Cost is got to be the top priority in managing raw-material supply. Because in a saw mill or a plywood plant, 70% of our cost in the US is in wood... so your highest degree of leverage and improving profitability is to manage wood costs."* Director, strategic planning/ North America

**Table 11. Industry-significant cross-functional capabilities – cost control.**

In-depth interviews (4 case companies)	Structured interviews (11 case companies)
<ul style="list-style-type: none"> <li>• Controlling costs</li> <li>• Maintaining the cost focus</li> </ul>	<ul style="list-style-type: none"> <li>• Reducing production, raw material, maintenance and labour costs</li> </ul>

**Information- and knowledge-management capabilities (Table 12).** These capabilities were needed for two reasons. Firstly, the demand for flexibility and optimisation of the business required getting away from batch processes. The complexity of the processes had to be broken down, the potential nodes between the stages had to be identified, and then they had to be linked seamlessly, as the following comment demonstrates:

*“In this industry you have to bring the capabilities together. The market capabilities must be in harmony with the operational capabilities in business and if there is disharmony, then you fall over... the operational people can’t be thinking in isolation, they must be thinking in terms of the market. At the same time, the market, the sales people, absolutely can’t be thinking in isolation, they must think of the operational strengths, opportunities, weaknesses within the business. And the raw-material side, they must fit into the picture.”* CEO/ Europe

Secondly, the objective for market-driven business required efficient information flows from the market to the company and within it. The need to develop information and knowledge-management capabilities had become evident in recent years in the case companies. They were dealing with an increasing amount of firm-external and –internal data, but had problems focusing on the essentials. The lack of planning capabilities was one possible reason why the competitive edge had been lost in the past, and the companies now put special emphasis on them. One informant summarised the situation:

*“I think in today’s environment the key thing is the ability to build effective relationships...number two is having the analytical capacity... any successful company can analyse and understand their business decisions quickly... I think the third thing is the ability to have good strong internal flows of information and knowledge, and I mean retention as well as sharing... I think all those relate to people.”* Chief forester/ North America

**TABLE 12. Industry-significant cross-functional capabilities – information and knowledge management**

In-depth interviews (4 case companies)	Structured interviews (11 case companies)
<ul style="list-style-type: none"> <li>• Getting away from batch processes by defining the joints between different processes and then linking them (particularly spanning and integrating marketing people into sawmilling and production)</li> <li>• Sharing and understanding company goals (by having leadership and local management that stands behind and develops the chosen strategy)</li> <li>• Ensuring internal information flows</li> <li>• Firm-internal and -external networking</li> <li>• Planning and analytical capabilities (including IT capabilities)</li> </ul>	<ul style="list-style-type: none"> <li>• Sharing knowledge inside the organisation</li> <li>• Adapting market knowledge into practise</li> </ul>

## 5.2 Firm-specific capabilities among the case companies

There were three main ways<sup>6</sup> in which the companies had bestowed competitive advantage through firm-specific capabilities (Table 13): (1) the proactive development of capabilities due to a better understanding of the upcoming changes in the competitive landscape, (2) the reactive utilisation of existing capabilities following favourable changes in the competitive landscape, and (3) the possession of resources and capabilities that consistently maintained their value over time (indicating that neither the assets nor the market conditions contributing to their value had radically changed).

In their proactive development, the companies had actively started to build up a capability earlier than their competitors within a certain market context (advantage through proactiveness). As an example, HRM capabilities were strongly present in the industry-significant capability portfolio, and indeed, human capital and its effective management are claimed to be an integral part of any organisation's success (e.g., Tannenbaum and Dupree-Bruno 1994). The forest industry competes for transferable individual skills (technical trades, accounting) with other industries, and one of the challenges is to find enough motivated, skilled employees, especially in relatively remote areas. Yet, Cases 1 and 4 did not include HRM in their differentiating capabilities, whereas companies 2 and 3 emphasised maintaining their distinguishable capabilities related to the function. The ultimate differentiating factor for the former was at the resource level, in their current pool of employees and their skills, but not in the way

<sup>6</sup> These are roughly analogous to Barney's (1986) notion that firms may obtain above-normal returns only when they have superior information, when they are lucky, or both.



**Table 13. Firm-specific functional and cross-functional capabilities (N = 4).**

	COMPANY 1	COMPANY 2	COMPANY 3	COMPANY 4
<b>Core business</b>	Sawmilling + EWP	Panels	Sawmilling	Sawmilling
<b>Number of interviews</b>	3	6	5	7
<b>Business culture</b>	Scandinavian	Germanic	Anglo-Saxon	Anglo-Saxon
<b>Functional capabilities</b>				
Human resource management		<i>Recruiting the best people, maintaining a good relationship with universities, and having excellent training programmes</i>	<i>Choosing the right people and realising the human capital</i>	
R&D		<i>Benefiting from a history of innovations while developing and maintaining a broad product range</i>		
Marketing and sales			<i>Learning from the experiences of the past export programmes</i>	<b>Constantly improving the service level</b>
Materials management	<i>Developing a market-driven raw-material supply chain</i>		<i>Having access to an excellent fibre base</i>	
Logistics	<b>Developing advanced distribution</b>			
<b>Cross-functional capabilities</b>				
Internal integration	<i>Utilising the advantages of belonging to a strong group</i>	<b>Utilising the synergy benefits and co-operation within the group</b>		<i>Combining the benefits of being a national player with local skills</i>
Organising and business development	<i>Maintaining credibility in the main market areas</i> <b>Long-term planning</b>	<i>Being a forward thinker in the branch</i>	<b>Developing simple business models and executing them quickly</b> <b>Being an easy company to do business with</b>	<i>Maintaining and developing a good knowledge base of the business</i> <b>Being flexible</b>
Cost control		<i>Maintaining efficiencies of scale and cost control</i>	<b>Developing a cost focus</b>	<b>Understanding the cost structure</b>

**Bold** = the company is creating the capability      *Italics* = the company is stabilising the capability

they intentionally managed this human capital. Cases 2 and 3, in turn, had both anticipated the decrease in the relative attractiveness of the forest industry as an employer in their country/state, and had built up capabilities in recruiting and training HRM based on their history as a generous employer. Intentionally shaping up the human resources to better match the company's objectives was part of their long-term strategy implementation.

Companies engaged in reactive utilisation possessed and used resources and capabilities that had become advantageous after market/industry change (advantage through reactivity). Learning from a successful export programme (case 3) was an example of capability development that had become applicable to a new market context: the company had originally established a Japanese export programme, but noticed later that the concept also served the domestic market that had started to become more demanding.

In the third category, the company possessed capabilities the value of which had been generally acknowledged, but they had remained rare in the market and industry contexts (advantage through protectiveness). Maintaining credibility in the main market areas (case 1) and maintaining and developing a good knowledge of the business (case 4) were heavily dependent on one building block (reputation, a deep knowledge base) that was immobile, inimitable and non-substitutable in itself, mainly due to time-compression diseconomies and causal ambiguity. Having access to an excellent fibre base (case 3) was difficult to imitate or substitute due to the location of the mills and the related timber tenures.

Benefiting from a history of innovations while developing and maintaining a broad product range (case 2) was a capability that combined all three ways of bestowing competitive advantage. The firm operated in the panel business, where the demand for innovative products had been evident longer than in sawmilling, and the company already had many well-established brands. However, Case 2 had changed its emphasis from firm-driven to customer-driven innovation, as the following excerpt reveals:

*"In former times we had a R&D department with more than 12 people which made basic research and sometimes a new product could be created... In former times the way we most often had was that the input came from the R&D department, they had an idea, presented their idea to the sales people and asked for feedback... and now we concentrate the other way round trying to identify as early as possible the market needs."*  
Product manager/ Europe

36 Cases 1, 3 and 4 were more focused on improving their basic service. As one informant from Case 4 described the role of R&D in their company:

*"We were getting lost in trying to be too smart, too fancy... our research into new pro-*

*ducts and new ways of working was continued, but doing the basics well, which we didn't four or five years ago."* Marketing manager/ Europe

All in all, the wood industry has constantly emphasised the need for value-added, innovative offerings. This is also repeatedly mentioned as the backbone of any industry competing in modern markets (e.g., Hamel 2000). However, the market context did not encourage the companies to be experimental, but rather lead them to favour incremental, customer-driven process and product innovation.

The capabilities that were currently created (in bold in Table 13) all represented attempts to establish competitive advantage through proactiveness, excluding the reactive way in which Case 2 had started to benefit from co-operation within the Group. Financially stretched, it had become part of a multinational corporation a few years previously in a hostile takeover, and was now learning to utilise its existing capability set significantly better as part of a strong Group.

The importance of the cross-functional capabilities related to internal integration was interesting in the light of the on-going spin-offs in the forest industry. These capabilities were based on the notion that belonging to a strong group enabled the companies to combine their local skills with an international presence, and doing this effectively was considered to be a differentiating capability. As one of the informants said:

*"And the absolute focus is to maximise the strength of the group... and at the same time to obtain balance at the local level, giving the autonomy, giving the structure to the local operations for them to get the benefit from the local mill."* CEO/ Europe

The importance of internal integration was acknowledged in Case 3, but its business units were encouraged to be much more independent – a result of its growth history under a very entrepreneurial manager.

Even though being a large company was not thought to be a differentiator in itself, it gave a certain freedom of action, which was needed especially in difficult economic circumstances. In the first place, the companies tried to improve communications and share assets within the group divisions, including the pulp and forest divisions. Furthermore, some of the groups operated in a variety of industries in addition to the wood industry. This gave a unique opportunity to benchmark and develop processes that compared with those in telecommunications, the retail industry and shopping centres, to name a few.

Among the capabilities that were under development, we could also identify a set of skills that enabled the companies to continue being proactive. Developing simple business models and executing them quickly (case 3), being flexible (case 4), and long-term planning (case 1)

were all aimed at staying ahead of the competition by developing capabilities at a faster rate than the rivals. Table 13 further shows that many of the firm-specific capabilities were closely connected to the industry-significant capabilities, and that suggests that the two are complementary and dynamic (what was once considered to be a firm-specific capability could become an industry-significant capability, and in rare cases, the other way round). The industry-significant functional and cross-functional capability groups set up a threshold level for staying in business, whereas the firm-specific functional capabilities complemented them.

For example, when appearing as a differentiating capability, maintaining the cost focus was a part of the company identity, the most determinative characteristics of the firm:

*"We're a very utilitarian company. We do what we have to do but we don't consume time and money and energy on fancy but unnecessary things."* Vice-president/ North America

Furthermore, given the fact that the cost focus in some companies had been slackened and then tightened again, there was room for differentiation through finding a balance between operational efficiency in terms of cost reduction and long-term profitability. This required developing capabilities in cost tracking. Manufacturing capabilities no longer appeared among the firm-specific capabilities, although as an industry-significant capability set they contributed particularly strongly to cost-efficiency.

## 6 SUMMARY AND CONCLUSIONS

In this study, we sought to achieve two objectives. First, we have reviewed and consolidated past research in order to create a conceptual framework that will help in identifying and classifying capabilities empirically. Second, we have used the conceptual tools to explore and explain the content and dynamics of the prevailing capability portfolio within one industry.

We define capabilities as organisational skills: resource-bundling processes that transform knowledge embedded in the organisation. They are developed and used with the ultimate aim of achieving competitive advantage through distinguishing the firm along the dimensions that bring value to its customers and/ or create market change. We propose an identification and classification system that takes into consideration the following three dimensions: (1) the dynamism between firm-specific and industry-significant capabilities, (2) the hierarchies of capabilities and (3) the internal structure of individual capabilities.

Those aiming to identify the capabilities contributing to competitive advantage should first decide which ones are needed for staying in business within their own industry. After that

they should identify the ones that are rare among their competitors within a selected market and industry context. From them it is then possible to find capabilities that are valuable in the context, inimitable and hard to substitute. In this task, defining the hierarchical level helps to predict the sustainability of the competitive advantage. The higher the hierarchical level of the capability, and the wider the required resource integration in a company, the more likely it is to produce long-term competitive advantage assuming the market and industry context does not change profoundly and rapidly. Once the required and desired capability portfolio has been identified, it is worth analysing the input resources, infrastructure and processes needed for building each individual capability.

We identified three ways in which companies had bestowed their current competitive advantage through firm-specific capabilities: (1) through proactiveness (the company had sensed market change earlier than its competitors, and had systematically started to develop matching capabilities), (2) through reactiveness (the market/ industry context had changed in a way that had made the company's existing capabilities advantageous), and (3) through protectiveness (the company possessed capabilities heavily dependent on one building block (a deep knowledge base, reputation, fibre) that was immobile, inimitable and non-substitutable in itself). Industry-significant and firm-specific capability portfolios were complementary, dynamic and interlinked.

The leading wood-industry companies aiming at competing in today's market environment have to develop and maintain a wide selection of resources and capabilities despite their focus on core businesses. This diversity derives partly from the path-dependency and immobility of the capabilities and the contributing resources such as wood raw material (it takes time to change the portfolio), but it is also a result of conscious choice as companies try to combine efficiencies of scale and scope with innovativeness. The demands on mature-industry firms reflect the wood-industry capability portfolio. Our study shows that the importance of cost effectiveness has remained strong over the past decade, whereas knowledge and information management presents a capability group on the rise. Customer-driven, incremental process and product innovation was preferred to firm-driven innovation through experimental learning due to the conservative customer base and overall cost-effectiveness. The non-product-specific nature of the higher-order capabilities made it possible to establish competitive advantage through internal integration. A distinctive element of the firm-specific capabilities under development were 'metacapabilities' which could be utilised to stay ahead of the competition by developing new capabilities at a rate faster than the rivals.

## 7 DISCUSSION

As far as industry-significant capabilities are concerned, we invite researchers to test the portfolio presented in this study on a larger sample of wood-industry companies. If the smallest companies are included, and issues such as legitimacy have to be considered, we assume it to widen the capability portfolio. Furthermore, our research did not empirically test the relationship between capabilities and firm performance, as the case companies were selected from the historically best-performing firms in the industry. It would also be interesting to combine firm-internal and customer perspectives, and to compare the customer requirements and the capability portfolios of the companies. Within the wood industry, one relevant division could be into industrial and DIY customers.

Our empirical results are based mainly on direct and indirect interviews with managers, and on the texts written by them. Firstly, we noticed a problem related to identification of the company-specific capabilities. As Amit and Schoemaker (1993) noted, managers make their decisions about strategic assets under conditions of uncertainty, complexity and conflict, and may thus over-emphasise past industry-significant factors and the company-specific capabilities associated with them. People generally repeat what has succeeded previously. Thus, the domination of cost control in wood-industry capabilities could result from the previous emphasis on cost effectiveness that was rewarded by investors. Secondly, managers often have to simplify and map out important futures, and specify yardsticks by which to measure company-specific capabilities (Russo and Schoemaker 1989) in order to keep the decisions within the cognitive bounds of a human being. Thus, a portfolio of capabilities is always 'a managerial best guess'. Finally, the capability portfolio is not always the result of careful consideration, and may be a compromise bounded by a multitude of organisational participants and resource limitations stemming from the past of the company. Data triangulation in terms of trade journals and investor reports helped us to verify the interview data in terms of industry-significant capabilities across the companies. Our multiple informants within each organisation helped us with our in-company verification. We were able to identify a widespread consensus related to the industry-significant capabilities, while company-specific capabilities are always speculative by nature.

## 8 RESEARCH AND MANAGERIAL IMPLICATIONS

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The meaningfulness of capability research from both academic and managerial perspective stems from carefully evaluating the extent of generalisation. Given the division between industry-significant and firm-specific capabilities and their contribution to the competitive ad-

vantage of a company, we suggest that the survey method is appropriate for listing the portfolio of capabilities at the industry level. However, even if the capability may serve the same purpose among a number of companies, it may still be an outcome of different resource combinations. In terms of firm-specific capabilities, case analysis (with a quantitative or qualitative approach depending on the objectives) is more fruitful, since the generalisability does not concern the portfolio of capabilities as such, but rather reflects the building process and interaction between industry-significant assets and the market context. Furthermore, when the discussion centres on capabilities and their significance to the company or industry, the hierarchical level of the debate must be clarified. A resource may be as valuable as a higher-order capability depending on the time scope and the market context.

This paper offers an alternative view on the ongoing spin-off of the wood-industry business from the paper business and the focus on core business. The importance of internal integration as a source of competitive advantage for wood-industry business units gives us reason to expect that these companies benefit from belonging to a strong group. Developing the ability to fully utilise the capabilities and resources within the group could become a differentiator within the industry, and contribute to sustained superior performance in the company. Furthermore, the Group could provide the necessary financial backbone for the time it takes to benefit from rapid innovation through experimentation. As the high-rent-creating capabilities are often of a higher order (i.e. not directly related to particular products or customer groups), the synergy benefits could be significant. ■

## LITERATURE

- ADNER, R. and HELFAT, C.E.** 2003. Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*. Vol.24: 1011–1025.
- AHUJA, G and LAMPERT, C.M.** 2001. Entrepreneurship in the large corporation: A longitudinal study of how established firms create breakthrough inventions. *Strategic Management Journal*. Special issue. Vol.22: 521–543.
- AMIT, R. and SCHOEMAKER, P.J.** 1993. Strategic assets and organizational rent. *Strategic Management Journal*. Vol.14: 33–46.
- ANDREWS, K.R.** 1971. *The concept of corporate strategy*. Don Jones Irwin. Homewood. Illinois.
- BARNEY, J.B.** 1986. Strategic factor markets: Expectations, luck and business strategy. *Management Science*. Vol.32: 1231–1241.
- BARNEY, J.B.** 1991. Firm resources and sustained competitive advantage. *Journal of Management*. Vol.17: 99–119.
- BARNEY, J.B.** 1995. Looking inside for competitive advantage. *The Academy of Management Executive*. Vol.9: 49–61.
- BARNEY, J.B.** 2001. Is the resource-based "view" a useful perspective for strategic management research? Yes. *The Academy of Management Review*. Vol.26: 41–56.
- BLACK, J.A. and BOAL, K.B.** 1994. Strategic resources: Traits, configurations and paths to sustainable competitive advantage. *Strategic Management Journal*. Vol.15: 131–148.

- BROWN, S.I. and EISENHARDT, K.M.** 1999. Patching: Restitching business portfolios in dynamic markets. *Harvard Business Review*. Vol.77: 72–82.
- BRUSH, T.H. and ARTZ, K.W.** 1999. Toward a contingent resource-based theory: The impact of information asymmetry on the value of capabilities in veterinary medicine. *Strategic Management Journal*. Vol.20: 223–250.
- BRUSH, T.H., BROMILEY, P. and HENDRICKX, M.** 1999. The relative influence of industry and corporation on business segment performance: an alternative estimate. *Strategic Management Journal*. Vol.20: 519–547.
- COLLIS, D.J.** 1994. How valuable are organizational capabilities? *Strategic Management Journal*. Vol.15: 143–152.
- COLLIS, D.J. and MONTGOMERY, C.A.** 1995. Competing on resources. *Harvard Business Review*. Vol.73: 118–128.
- CONNER, K.R.** 1991. A historical comparison of resource-based theory and five schools of thought within industrial organization economics: Do we have a new theory of the firm? *Journal of Management*. Vol.17: 121–154.
- CONNER, K.R. and PRAHALAD, C.K.** 1996. A resource-based theory of the firm: knowledge versus opportunism. *Organization Science*. Vol.7: 477–501.
- DANEELS, E.** 2002. The dynamics of product innovation and firm competences. *Strategic Management Journal*. Vol.23: 1095–1121.
- DAWSON, R.** 2000. Knowledge capabilities as the focus of organisational development and strategy. *Journal of Knowledge Management*. Vol.4: 320–327.
- DAY, G.S.** 1994. The capabilities of market-driven organizations. *Journal of Marketing*. Vol.58: 37–52.
- DIERICKX, I. and COOL, K.** 1989. Asset stock accumulation and sustainability of competitive advantage. *Management Science*. Vol.35: 1504–1511.
- EISENHARDT, K.M.** 1989. Building theories from case study research. *Academy of management review*. 14(4): 532–550.
- EISENHARDT, K.M. and MARTIN, J.A.** 2000. Dynamic capabilities: What are they? *Strategic Management Journal*. Vol.21: 1105–1121.
- FERNER, A., QUINTANILLA, J. and VARUL, M.Z.** 2001. Country-of-origin effects, host-country effects and the management of HR in multinationals: German companies in Britain and Spain. *Journal of World Business*. Summer 2001. 36(2): 107–127.
- FINCHAM, R. and RHODES, P.S.** 1999. *Principles of organisational behaviour*. Oxford University Press. Oxford. 588 pp.
- FOSS, N.J.** 1997. The classical theory of production and the capabilities view of the firm. *Journal of Economic Studies*. Vol.24: 307–323.
- FOSS, N.J.** 1999. Networks, capabilities, and competitive advantage. *Scandinavian Journal of Management*. Vol.15: 1–15.
- GALUNIC, C.D. and RODAN, S.** 1998. Resource recombinations in the firm: Knowledge structures and the potential for Schumpeterian innovation. *Strategic Management Journal*. Vol.19: 1193–1201.
- GERSICK, C.** 1988. Time and transition in work teams: Toward a new model of group development. *Academy of Management Journal*. 31(1): 9–41.
- GHOSH, B.C., LIANG, T.W, MENG, T.T. and CHAN, B.** 2001. The key success factors, distinctive capabilities, and strategic thrusts of top SMEs in Singapore. *Journal of Business Research*. Vol.51: 209–221.
- Global drivers and megatrends of the wood-products industry to the year 2010.** 1998. Timwood AB. Stockholm.
- GOLD, A.H., MALHOTRA, A. and Segars, A.H.** 2001. Knowledge management: An organisational perspective. *Journal of Management Information Systems*. Vol.18: 185–214.
- GRANT, R.M.** 1991. The resource-based theory of competitive advantage: implications for strategy formulation. *California Management Review*. Vol.33: 114–135.
- GRANT, R.M.** 1996a. Prospering in dynamically-competitive environment: organizational capability as knowledge integration. *Organization Science*. Vol.7: 375–387.
- GRANT, R.M.** 1996b. Toward a knowledge-based theory of the firm. *Strategic Management Journal*. Winter Special Issue. Vol.17: 109–122.



- GRANT, R.M.** 1998. Contemporary strategy analysis. 3<sup>rd</sup> ed. Blackwell Publishers.
- GRANT, R.M. and BADENFULLER, C.** 1995. A knowledge-based theory of inter-firm collaboration. Best Paper Proceedings 1995. Academy of Management. Pp. 17–21.
- GREWAL, R. and TANSUHAJ, P.** 2001. Building organizational capabilities for managing economic crisis: the role of market orientation and strategic flexibility. *Journal of Marketing*. Vol.65: 67–80.
- HAAN, J.A.C. de, VOORDIJK, J.T. and JOOSTEN, G.-J.** 2002. Market strategies and core capabilities in the building industry. *Construction Management and Economics*. Vol.20: 109–118.
- HALL, A.L. and RIST, R.C.** 1999. Integrating qualitative research methods (or avoiding the precariousness of a one-legged stool). *Psychology & Marketing*. July. 16(4): 291–304.
- HAMEL, G.** 2000. Leading the revolution. Harvard Business School Press. Boston, MA.
- HAMEL, G. and PRAHALAD, C.K.** 1996. Competing for the future. Harvard Business School Press. Boston.
- HARRIS, S. and SUTTON, R.** 1986. Functions of parting ceremonies in dying organisations. *Academy of Management Journal*. 29(1): 5–30.
- HELFAF, C.E. and PETERAF, M.A.** 2003. The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*. Vol.24: 997–1010.
- HENDERSON, R.** 1994. The evolution of integrative capability: innovation in cardiovascular drug discovery. *Industrial and corporate change*. Vol.3: 607–630.
- HILL, C.W.L. and JONES, G.R.** 1989. Strategic management theory: An integrated approach. Houghton Mifflin Company. Boston.
- HITT, M.A. and IRELAND, R.D.** 1986. Relationships among corporate level distinctive competencies, diversification strategy, corporate strategy and performance. *Journal of Management Studies*. Vol.23: 401–416.
- HITT, M., IRELAND, R.D., CAMP, S.M., and SEXTON, D.L.** 2001. Strategic entrepreneurship: Entrepreneurial strategies for wealth creation. *Strategic Management Journal*. Vol.22: 479–491.
- HOFER, C.W. and SCHENDEL, D.** 1978. Strategy formulation: Analytical concepts. West Publishing.
- HOOPES, D.G., Madsen, T.L. and WALKER, G.** 2003. Guest editors introduction to the special issue: Why is there a resource-based view? Towards a theory of competitive heterogeneity. *Strategic Management Journal* 24: 889–902.
- HUMALA, I. and PELTONIEMI, J.** 2001. Puutuotealan pk-yritysten asiakaslähtöisten liiketoimintakonseptien kehittäminen (Development of the customer-based business concepts in the wood-industry SMEs). Kauppa- ja teollisuusministeriön tutkimuksia ja raportteja 1/2001. Helsinki. In Finnish.
- HUNT, S.D. and MORGAN, R.M.** 1995. The comparative advantage theory of competition. *Journal of Marketing*. Vol.59: 1–15.
- HYVÖNEN, S.** 2001. Resurssiperusteinen kilpailuetu ja menestyminen lihajalostusalan yrityksissä (The resource-based advantage and performance of firms in the meat processing industry). Helsingin yliopisto, Taloustieteen laitos. Julkaisuja nro 32, Markkinointi. In Finnish.
- IRELAND, R.D., HITT, M.A. and SIRMON, D.** 2003. A model of strategic entrepreneurship: The construct and its dimensions. *Journal of Management*. Vol.29: 963–989.
- KING, A.W. and ZEITHAMI, C.P.** 2001. Competencies and firm performance: examining the causal ambiguity paradox. *Strategic Management Journal*. Vol.22: 75–99.
- KOGUT, B. and ZANDER, U.** 1992. Knowledge of the firm, combinative capabilities, and the replication of technology. *Organization Science*. Vol.3: 383–397.
- KORHONEN, S. and NIEMELÄ, J.S.** 2003. Strategy analysis of the leading European and North American wood-industry companies in 1998–2001. Research report. University of Helsinki. Seinäjoki Institute for Rural Research and Training. Series B:30.
- KOTLER, P.** 1988. Marketing management: Analysis, planning, implementation and control. 6<sup>th</sup> ed. Englewood Cliffs. New Jersey. Prentice Hall, Inc.
- LADO, A.A. and WILSON, M.C.** 1994. Human resource systems and sustained competitive advantage: A competency-based perspective. *Academy of Management Review*. Vol.19: 699–727.
- LEE, T.W.** 1999. Using qualitative methods in organisational research. Sage. Thousand Oaks, CA:
- LEONARD-BARTON, D.** 1992. Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*. Vol.13: 111–125.
- LOASBY, B.J.** 1998. The organisation of capabilities. *Journal of Economic Behavior & Organization*. Vol.35: 139–160.

- MAHONEY, J.T. and PANDIAN, J.R.** 1992. The resource-based view within the conversation of strategic management. *Strategic Management Journal*. Vol.13: 363–380.
- MAKADOK, R.** 2001. Toward a synthesis of the resource-based view and dynamic capability views of rent creation. *Strategic Management Journal*. Vol.22: 387–401.
- MAKADOK, R. and WALKER, G.** 2000. Identifying a distinctive competence: Forecasting ability in the money fund industry. *Strategic Management Journal*. Vol.21: 853–864.
- MARKIDES, C.C. and WILLIAMSON, P.J.** 1994. Related diversification, core competences and corporate performance. *Strategic Management Journal*. Vol.15: 149–165.
- McGAHAN, A. and PORTER, M.** 1997. How much does industry matter, really? *Strategic Management Journal*. Summer Special Issue. Vol.18: 5–14.
- MILLER, D., EISENSTAT, R. and FOOTE, N.** 2002. Strategy from inside out: Building capability-creating organizations. *California Management Review*. Vol.44: 37–54.
- MOWERY, D.C., OXLEY, J.E. and SILVERMAN, B.S.** 1996. Strategic alliances and interfirm knowledge transfer. *Strategic Management Journal*. Winter Special Issue. Vol.17: 77–91.
- NÄSI, J., LAMBERG, J.-A., OJALA, J. and SAJASALO, P.** 2001. Metsäteollisuusyritysten strategiset kehitysoptiot (The strategic development options of the forest-industry companies). Research report. National Technology Agency of Finland. In Finnish.
- NELSON, R.R.** 1991. Why do firms differ, and how does it matter? *Strategic Management Journal*. Vol.12: 61–74.
- NELSON, R.R. and WINTER, S.G.** 1982. The Schumpeterian tradeoff revisited. *The American Economic Review*. Vol.72: 114–133.
- NONAKA, I.** 1994. A dynamic theory of organizational knowledge creation. *Organization Science*. Vol.5: 14–37.
- NONAKA, I.** 2002. A firm as a dialectical being: towards a dynamic theory of a firm. *Industrial and Corporate Change*. Vol. 11: 995–1009.
- NONAKA, I. and TOYAMA, R.** 2003. The knowledge-creating theory revisited: knowledge creation as a synthesizing process. *Knowledge Management Research & Practise*. Electronic journal. Accession number: ppl\_kmrp\_8500001. Date accessed: 23.5.2003.
- PENROSE, E.** 1959. *The theory of the growth of the firm*. New York: Wiley.
- PETERAF, M.** 1993. The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*. Vol.14: 179–191.
- PORTER, M.** 1985. *Competitive advantage*. Free Press. New York.
- PORTER, M.** 1996. What is strategy? *Harvard Business Review*. Vol.74: 61–78.
- POWELL, T. and DENT-MICALLEF, A.** 1997. Information technology as competitive advantage: The role of human, business, and technology resources. *Strategic Management Journal*. Vol.18: 375–405.
- POWELL, T.C.** 2001. Competitive advantage: logical and philosophical considerations. *Strategic Management Journal*. Vol.22:875–888.
- PRAHALAD, C.K. and HAMEL, G.** 1990. The core competence of the corporation. *Harvard Business Review*. Vol.68: 79–91
- PRIEM, R.L. and BUTLER, J.E.** 2001. Is the resource-based "view" a useful perspective for strategic management research? *Academy of Management Review*. Vol.26: 22–40.
- REMENYI, D. and WILLIAMS, B.** 1998. *Doing research in business and management. An introduction to process and method*. Sage, London. 309 pp.
- RITTER, T., WILKINSON, I.F. and JOHNSTON, W.J.** 2002. Measuring network competence: Some international evidence. *The Journal of Business & Industrial Marketing*. Vol.17: 19–138.
- RODGERS, I.** 1986. Making cultural differences work for you. *Industrial and commercial training*. May/June. 18(3): 15–18.
- ROUSE, M.J. and DAELLENBACH, U.S.** 1999. Rethinking research methods for the resource-based perspective: isolating sources of sustainable competitive advantage. *Strategic Management Journal*. Vol.20: 487–494.
- RUMELT, R.** 1984. Towards a strategic theory of the firm. In a publication: *Competitive strategic management*. Lamb, R. (Ed.). Englewood Cliffs, NJ. Prentice Hall. Pp. 556–570.
- RUMELT, R.** 1991. How much does industry matter? *Strategic Management Journal*. Vol.12: 167–185.

- RUSSO, J.E. and SCHOEMAKER, P.J.H.** 1989. Decision traps: Ten barriers to brilliant decision making and how to overcome them. Doubleday. New York.
- SELZNICK, P.** 1957. Leadership in administration. Harper & Row. New York.
- SIGGELKOW, N.** 2002. Evolution toward fit. *Administrative Science Quarterly*. Vol.47: 125–159.
- SIITONEN, S.** 2003. Impact of globalisation and regionalisation strategies on the performance of the world's pulp and paper companies. Doctoral dissertation. Helsinki School of Economics. A–225.
- SILVERMAN, D.** 2000. Doing qualitative research – A practical handbook. Sage, London. 316 pp.
- SIRMON, D.G., Hitt, M.A. and IRELAND, R.D.** 2005. Managing resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*. In press
- SPANOS, Y.E. and LIOUKAS, S.** 2001. An examination into causal logic of rent generation: Contrasting Porter's competitive strategy framework and the resource-based perspective. *Strategic Management Journal*. Vol.22: 907–934.
- SPENDER, J-C.** 1989. Industry recipes: the nature and sources of managerial judgement. Oxford. Blackwell Publishers.
- SPENDER, J-C.** 1996. Making knowledge the basis of a dynamic theory of a firm. *Strategic Management Journal*. Vol.17: 45–62.
- STARBUCK, W.** 1992. Learning by knowledge-intensive firms. *Journal of Management Studies*. Vol.29: 713–740.
- STARBUCK, W.** 1993. Keeping a butterfly and an elephant in a house of cards: the elements of exceptional success. *Journal of Management Studies*. Vol.30: 885–921.
- TANNENBAUM, S.I. and DUPUREE-BRUNO, L.M.** 1994. The relationship between organizational and environmental factors and the use of innovative human resource practises. *Group & Organisational Management*. Vol. 19: 171–202.
- TEECE, D.J., PISANO, G. and SHUEN, A.** 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*. Vol.18: 509–533.
- TEECE, D.J., RUMELT, R, DOSI, G. and WINTER, S.** 1994. Understanding corporate coherence: Theory and evidence. *Journal of Economic Behavior and Organization*. Vol.23: 1–30.
- THÖLKE, J.M., HULTINK, E.J. and ROBBEN, H.S.J.** 2001. Launching new product features: a multiple case examination. *The Journal of Product Innovation Management*. 18(1): 3–14.
- Trämekanisk Framsyn.** 2000. Fact pack containing basic analysis of the wood products industry in Scandinavia and North America. Timwood AB.
- TUOMINEN, M., RAJALA, A., MÖLLER, K. and ANTTILA, M.** 2003. Assessing innovativeness through organisational adaptability: a contingency approach. *International Journal of Technology Management*. Vol.25: 643–657.
- VaikuttajaForum Metsäteollisuus.** 1.–2.10.2003. Forest industry seminar. Majvik, Kirkkonummi. Kontakti.net.
- VERONA, G. and RAVASI, D.** Unbundling dynamic capabilities: an exploratory study of continuous product innovation. *Industrial and corporate change*. Vol.12: 577–606.
- von KROGH, G., ROOS, J. and SLOCUM, K.** 1994. An essay on corporate epistemology. *Strategic Management Journal*. Vol.15: 33–71.
- VORHIES, D.W., HARKET, M. and RAO, C.P.** 1999. The capabilities and performance advantages of market-driven firms. *European Journal of Marketing*. Vol.33: 1171–1202.
- WALSH, S.T. and LINTON, J.D.** 2001. The competence pyramid: A framework for identifying and analyzing firm and industry competence. *Technology Analysis & Strategic Management*. Vol.13: 165–177.
- WARREN, K.** 2000. The softer side of strategy dynamics. *Business Strategy Review*. Vol.11: 45–58.
- WERNERFELT, B.** 1984. A resource-based view of the firm. *Strategic Management Journal*. Vol.5: 171–180.
- WILLIAMSON, O.E.** 1999. Strategy perspective: governance and competence perspectives. *Strategic Management Journal*. Vol.20: 1087–1108.
- WILLIAMSON, P.** 2003. What becomes different when local innovation becomes global?. Presentation in a symposium How to create globally?. Helsinki School of Economics, CKIR. August 21, 2003.
- WINTER, S.G.** 2000. The satisficing principle in capability learning. *Strategic Management Journal*. Vol.21: 981–996.

- YEOH, P-L. and ROTH, K.** 1999. An empirical analysis of sustained advantage in the U.S. pharmaceutical industry: impact of firm resources and capabilities. *Strategic Management Journal*. Vol.20: 637–653.
- YIN, R.K.** 1994. Case study research. Design and methods. 2<sup>nd</sup> Ed. Applied social research methods series. Vol. 5. Sage, London. 153 pp.
- ZANDER, U. and KOGUT, B.** 1995. Knowledge and the speed of the transfer and imitation of organizational capabilities: An empirical test. *Organizational Science*. Vol.6: 76–93.

**APPENDIX: List of wood-industry-significant capabilities**

1. Ensuring continuous raw-material deliveries
2. Using high-quality raw material
3. Bringing the customer perspective into forest practices
4. Reducing costs in purchasing (raw-materials cost)
5. Being flexible in manufacturing
6. Utilising the latest technology
7. Maintaining stable product quality
8. Improving product quality
9. Reducing costs in materials management/ production scheduling ( inventory, stockouts)
10. Reducing costs in production (changeovers, rejects)
11. Reducing costs in maintenance
12. Adapting market knowledge into practice quickly and consistently
13. Being flexible in invoicing and payment
14. Ensuring flexible after-sales service
15. Collecting customer data
16. Collecting information from other market environments (e.g., competitors)
17. Maintaining a good relationship with marketing-channel intermediaries (agents, importers etc.)
18. Developing new brands
19. Launching new brands
20. Maintaining brand image
21. Strengthening brand image
22. Communicating effectively (i.e. sales promotion and other marketing communication)
23. Doing e-business
24. Being flexible in distribution
25. Handling large volumes
26. Ensuring punctual deliveries
27. Maintaining and improving a well-designed distribution system
28. Informing and listening to customers
29. Solving problems together with the customer
30. Developing joint business with the customer
31. Providing the customer with system solutions
32. Repeating process innovations
33. Increasing the degree of value added
34. Recognising potential commercial adaptations from technical innovations
35. Recruiting new employees
36. Motivating employees
37. Training employees
38. Maintaining trust between management and other employees
39. Executing decisions on the spot
40. Keeping promises
41. Making acquisitions
42. Making joint ventures
43. Outsourcing
44. Sharing knowledge inside the organisation
45. Predicting changes in the market environment
46. Being innovative
47. Building long-term customer relationships
48. Co-operating with research institutes and universities
49. Co-operating with NGOs (i.e. environmental organisations)
50. Maintaining trust between the stakeholders and the company
51. Maintaining a good relationship between the company and governmental organisations
52. Maintaining a good relationship between the board of directors and the management
53. Reducing labour costs
54. Structuring the company image