

Linking Resource-Based View with Business Economics of Woodworking Industry: Earlier Findings and Future Insights

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The business environment and sources of competitiveness in the woodworking industry have changed notably since the 1990s. Wood products are traded globally, and with the increase of trade, abundant forest resources are no longer the main source of sustainable competitiveness. Competition within the woodworking industry is increasing both between European and non-European enterprises, as well as within the EU. Capability to create value-added, making rational strategic choices, and creative usage of intangible and tangible resources have been emphasized as crucial for sustaining woodworking industry competitiveness in higher cost-level countries. Resource-based view (RBV) defines the availability of intangible assets, capabilities and tangible resources, and their heterogeneous combination to form the basis for company success. The objective of this review is to examine the possibilities to employ the RBV to the study of the woodworking industry by combining existing empirical results of the factors of companies' competitiveness with assessment of the RBV. In the existing literature, strategies implemented in woodworking companies have been approached rather widely, while the role of intangible and tangible resources in building firm-level success has received less focus. In addition, a significant gap exists in linking firms' financial accounting information with empirical data on their resource-usage and business strategies. In future studies, more information of the effects of these strategic elements on the actual business success of the firms would be needed.

Key words Competitiveness, enterprises, resources, strategy, woodworking firms

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1 Introduction

The business environment and sources of competitiveness in the woodworking industry have changed notably since the 1990s. In internationalized markets, wood products and raw materials are traded globally and competitiveness of the companies can no longer be built on abundant forest resources within national boundaries. Nevertheless, since wood costs form a notable share of the total costs in the woodworking industry, the availability and price of raw material are still crucial operational preconditions. Considering both primary and secondary processing, for example, the wood costs of Finnish woodworking enterprises comprise over one third of their total expenses. However, the real price of sawnwood exported from Finland during the period 1997–2004 decreased 15 percent, and the downward trend is forecast to continue (Finnish Forest Research Institute, 2005). Thus, especially in higher cost-level areas such as Western Europe and North America, raw material and production costs must be counterbalanced by manufacturing higher-priced value-added products aimed at selected customer segments with greater spending power (UNECE 2005).

In 2002, the 100 000 woodworking enterprises of the EU15 area generated gross turnover of 154 billion euros and employed directly 2.7 million workers. Consequently, as a source of income, employment and rural development, the competitiveness of woodworking sector plays an important role in the whole European economy. In countries such as Finland and Sweden, the significance is even higher. Globalization is presenting an increasing challenge for the European woodworking enterprises, not only from their traditional rivals in North America but to a larger extent also from the emerging economies, e.g. China and Russia. Competition within the European woodworking industry is also increasing due to the enlargement of EU to 25 Member States in 2004 and the ongoing relocation of production into new member countries (CEI-Bois 2004).

In Nordic countries alone, the production value of the woodworking sector is about 12 billion euros, and the net export value is 5 billion euros (Nordic Industrial Fund 2002). The majority of

the woodworking companies, that directly employ 135 000 workers, are small- and medium-scaled enterprises* often located away from large urban centers. Thus, the vitality of the Nordic woodworking sector is strongly linked to sustaining employment and rural livelihood, as it is elsewhere in Europe. In the heavily forested nations such as Finland, Norway and Sweden the operational conditions of the woodworking industry are closely linked to the economical, biological and social sustainability of the whole forestry and wood sector.

Survival in the increasingly tightening market competition requires strategic decision-making and the constant development of business and manufacturing processes as well as product innovations. In Nordic countries, research activities connected to the technological issues of the woodworking sector have recently been diverse (Nordic Forest Research Cooperation Committee 2002), while the business economics perspective has been lower on the agenda. However, along with technological advances, new information is also needed on managerial issues of the woodworking industry. In addition, a large part of the research in the woodworking industry that has had a strategic management perspective has been done in the context of North American enterprises. In the U.S. practical guides based on theoretical literature are provided by public authorities for strategic planning of small- and medium-scaled wood products companies (see, e.g. Howe and Bratkovich 2005). Although important insights can be derived from the business economic literature on North American woodworking industries, the competitiveness of European, and especially Nordic woodworking companies, needs to be examined in context, taking into consideration their own specific characteristics.

In the strategic management literature, the sources of company success may be scrutinized both from the perspective of industry characteristics (e.g. Porter 1980) and with respect to the companies operating in a certain industry (e.g. Barney 1991). Resource-based view (RBV) represents

* According to European Commission (2006a), a small and medium-scaled enterprise has fewer than 250 employees and either annual turnover not more than 50 million euros, or balance sheet not exceeding 43 million euros.

the latter approach by defining the availability of resources and their heterogeneous combination to form the basis for company success. So far, very few studies (Siitonen 2003, Korhonen and Niemelä 2004, Korhonen and Niemelä 2005, Bull and Ferguson 2005, Korhonen 2006) have used the RBV approach to studying the strategic issues of woodworking companies.

The aim of this review is to outline the possibilities to employ RBV in future research into the success factors and strategies of the Nordic woodworking industry. This is done by examining the general management literature linked to resource-based thinking and evaluating the empirical findings concerning the factors of competitiveness in woodworking enterprises. In this study, woodworking industry is defined according to NACE (Nomenclature des Activités dans la Communauté Européenne) (e.g., European Commission 2006b). Thus, the focus of the literature review has been on sawmilling, planing, and impregnation of wood (DD.20.10), manufacture of veneer sheets, plywood, laminboard, particle board, fibre board, and other panels and boards (DD.20.20), and manufacture of builders' carpentry and joinery (DD.20.30). The paper proceeds from the general strategic management literature to the existing empirical business economics literature on the woodworking industry. After that, a tentative empirical and methodological framework for applying RBV in studying woodworking industry business will be presented. In the end follows a discussion on the main findings together with proposals for further research.

2 Interaction of Company Resources, Strategies, and Competitiveness

2.1 Resource-Based View

The evolution of RBV started in the 1950s from Penrose's view of enterprise as a pool of resources that created the basis for growth when organized into their best use (Penrose 1995). In Rubin's (1973) work, business expansion was modeled economically with the assumption of firm-specific resources. A similar perspective was also utilized

in Wernerfelt's (1984) study, where economic tools for analyzing firm's resource position and strategic options were developed.

In RBV, the intangible and tangible resource endowments that are valuable, rare, hard to imitate and without strategically equivalent substitutes are considered as the prerequisites for an enterprise's competitiveness (Barney 1991). Resources are regarded to be strategic to the extent that they are non-tradeable, non-imitable and non-substitutable (Dierickx and Cool 1989). As one of the main advocates of the RBV, Conner (1991) considered RBV to be developing into a new theory of the firm, since along with a strong cumulative industrial organization economics heritage, it is also unique, incorporating major differences from each of the previous theories.

2.2 Resources as a Starting Point for Strategy Formulation

Tangible resources compose only assets, while intangible resources comprise both assets and capabilities. Simplified, as a contrast to assets, which are something a firm "has", capabilities are something that a firm "does" (Galbreath 2005). Both resources and capabilities should be the basis for the long-term planning, since they provide the basic direction to a firm's business strategy and form the primary source of a firm's economic success (Grant 1991). Acquiring sustainable competitive advantage requires gathering, developing, and combining resources that are scarce in the industry in question (Collis and Montgomery 1995).

The combination of resources used in any company is a product of its history, strategy, and the strategic fit of the resources and the external business environment (Blank and Boal 1994). The more heterogeneous the resources on which the competitiveness of a firm is based, the better the possibility to sustain its competitive advantage (Hunt and Morgan 1996). Human resources play a crucial role in company success (Barney and Wright 1998), and for this reason corporate strategy should focus on core competencies developed within the organizational learning process (Prahalad and Hamel 1990), in which the role of individuals is crucial (Senge 1990). In

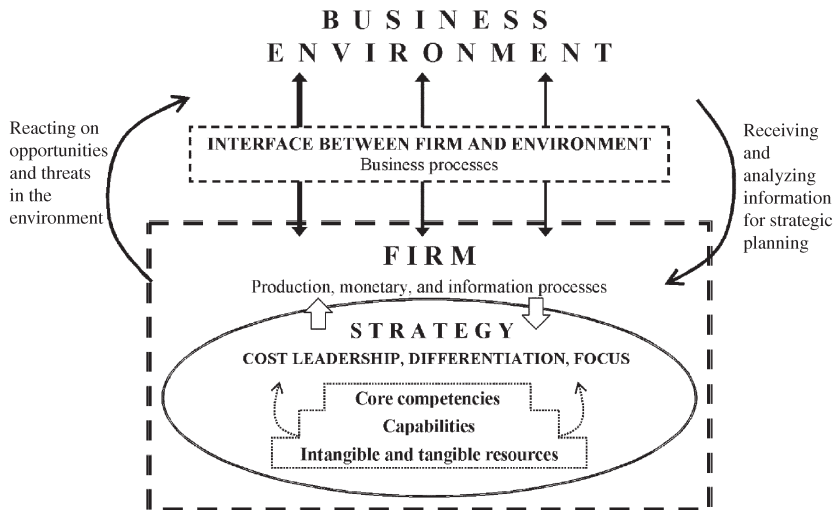


Fig. 1. The structure of firm's strategy is dependent upon resources, capabilities and core competencies together with the interaction between a firm and the business environment (adapted from Grant (1991) and Bull and Ferguson (2005)).

a recent study of Galbreath (2005), capabilities were found to contribute significantly on firm success, although also other intangible and tangible resources had a role in sustainable business practicing. In woodworking industries, availability of intangible resources is meaningless if there is a lack of required technology or raw material (Korhonen 2006).

2.3 Enterprise Strategy and Competitiveness within Business Environment

In the course of market globalization, the sources of competitiveness have changed from static efficiency and physical factors of production such as land and labor (Marshall 1972) to dynamic processes requiring continual learning and innovations (Porter 1994). The competitiveness of an industry is affected by its structure and the strategic decisions made by firms within the industry (Porter 1985), while at the firm-level, financial performance is a consequence of enterprise strategy and a firm's organizational structure (Caves 1980).

In studies where both industry- and firm-level effects on firm performance have been examined, both resources and industrial structures have been found to be important for company

success (e.g., Mauri and Michaels 1998, Spanos and Lioukas 2001, Hawawini et al. 2003). In advanced economies, the effects of business environment have become more cluster-driven (Porter 1998). Clusters form economic organizations, where resources are shared between firms locally (Mathews 2002). As a result, they impact on competition by increasing productivity, actuating innovations, and stimulating new business formation. Sawmills, for example, are a part of system composed of the reliable availability of high-quality timber and the ability to put all the timber into its best use (Porter 1998). Yet, since forest cluster products are traded internationally, there are also other factors affecting the location of woodworking industries than only the proximity of raw material resources (Porter 2003), and ability of firms within a cluster to compete in world markets defines the success of the whole cluster (Simmie 2004).

The focus of enterprise strategy should be to define the means for ensuring competitiveness and positive future development. According to Porter (1980) the options for a firm aspiring to superior performance within industry are in cost leadership, differentiation and focus. From the perspective of RBV the implementation of these generic strategies based on low costs or product

uniqueness is grounded on the distinctiveness of the resources employed in the manufacturing processes (Conner 1991). Internal assessments of the resources and capabilities controlled by a firm and its choice of strategies that adjust these firm-specific resources to its business environment may create unique resource combinations that lead to good financial performance (Barney 1986). Since out of some exceptions, there are no commonly accepted methods for reporting intangible resources in the balance sheet, identifying and appraising them is especially challenging (Powell 2003, Høegh-Krohn and Knivsflå 2000, Grant 2005).

Aharoni (1993) defines strategy as unique, specific to the resources of the firm tailored to achieve highest profits in a certain business environment. The resources and capabilities possessed by a company are linked to the business environment by the firm's business processes such as material purchasing, product manufacturing and service providing (Ray et al. 2004). The core task of managers is to design the learning processes that support the ability to understand the internal and external forces that impact on the company operations (Senge 1990). Fig. 1 illustrates the interrelationships between concepts of business environment, strategy, resources, capabilities and core competencies discussed in this chapter.

3 Research on Strategies and Factors of Business Success in Woodworking Industry

3.1 Empirical Literature Cited

This section reviews the existing empirical research results concerning strategic choices made, resources affecting competitiveness and financial performance of woodworking industry in the changing business environment. Due to the complexity of the problem area, there are limited possibilities to make unambiguous comparisons based on the existing empirical literature. First, strategic management issues can be examined from different perspectives simply by emphasizing different areas of interest, e.g. strategic

planning, implementation of the strategic plans or monitoring the results of the decisions made. This does not, however, jeopardize the possibility of making comparisons at a general level, but properly transmitting and condensing the information of the original research results then requires special attention. Secondly, there are both large, medium- and small-sized enterprises in the various sub-sectors of the woodworking industry that creates diversity in the data involved. Business economic viewpoints of the woodworking industry can also vary in these studies. In order to clarify the above matters, the empirical studies cited and their key results are divided into two parts: Table 1 focuses on research on sawmilling, and Table 2 focuses on research on secondary woodworking firms and wood processing firms integrated within the pulp and paper industry.

3.2 Primary Processing – Sawmilling

Porter's (1980) notion of generic strategies has played an important role in the existing empirical literature on the strategies of primary woodworking enterprises. The results obtained by different studies concerning the choices made in sawmills nevertheless do not provide consensus on the strategic orientation, but present a wide variety covering cost leadership, differentiation and focus strategies as well as their diverse combinations. Due to the heterogeneous raw material properties the production process of a sawmill provides a wide variety of products suitable for several markets, and because of this, sawmills have limited possibilities to concentrate on one competitive strategy type (Niemelä and Smith 1997). However, according to Hansen et al. (2002), especially in smaller sized sawmills this multi-faceted approach is less likely to lead into business success, due to the lack of adequate resources needed in operating successfully on multiple arenas.

Bush and Sinclair (1991), report that especially for large companies in the U.S. hardwood sawmills, there has been evidence of a change from raw material and technology centered cost leadership strategies towards increased differentiation. Bush et al. (1991) present similar results, in which cost leadership and differentiation strategies, or combinations of these, were most commonly

Table 1. Literature cited on sawmill industry comprising perspectives of business economics.

Area(s) of interest	Author(s)	Major findings
U.S., Can..	Cohen & Sinclair (1990)	Implementing focused growth strategy reflects in much better than average performance in terms of increase in market share and high levels of profitability.
U.S.	Narver & Slater (1990)	Market orientation in terms of understanding the buyers' businesses is strongly related to profitability both in commodity and special product markets.
U.S.	Bush & Sinclair (1991)	Largest companies turn from cost- and production oriented strategies to differentiation. Focusing strategy provides an opportunity for smaller firms.
U.S.	Bush et al. (1991)	Cost leadership and differentiation are common strategies, while focusing is uncommon. Quality, customer services, and price are the most important elements of competition.
U.S., Can.	Sinclair & Cohen (1992)	Continuous process technology adoption is positively associated with above-average performance. Firm-size or vertical integration appears to have little impact on the ability to adopt new technologies.
U.S.	Idassi et al. (1994)	Creating and delivering customer value are central to strategy. Customer value is a multidimensional concept including much more than product attributes.
Finland, Can., U.S.	Niemelä & Smith (1996)	Change is ongoing in the way business is practiced and in the business environment. Firms are shifting towards specialization and customized products.
Finland, Can., U.S.	Niemelä & Smith (1997)	Differentiation and focus strategies are typical in Finland. U.S. and Canada exhibit all types of strategies. Components of more than one basic strategy type are found in firms' in business strategies in every country.
Sweden	Roos et al. (2001)	Adding value increases profit margins, while the relationships between productivity, company size and with profits is not so clear.
Sweden	Roos et al. (2002)	Manufacturing more specific and higher value-added products may be associated with higher profit margins.
U.S.	Hansen et al. (2002)	Sawmills are not usually focused exclusively on one strategy type. Large companies may be able to implement successfully multiple strategies, but for smaller producers this is less likely.
U.S.	Smith et al. (2004)	Including value-added processes would be important for developing the hardwood lumber business. Larger sawmills are more active in implementing value-added processes than their smaller counterparts.
Nordic Countries, Germany	Toivonen et al. (2005)	To improve their competitiveness in German markets Nordic suppliers should pay attention to improving their services and other intangible quality characteristics.
U.S.	Hansen et al. (2006)	Market orientation has a positive effect on firm performance, although the effects of different strategic orientations on business success are not so evident.

applied. The smallest enterprises in these studies did not implement focusing strategy by concentrating on certain market segments, despite the fact that for those it might have been an option for aspiring business success in a modern market environment (Bush and Sinclair 1991, Bush et al. 1991).

A study by Niemelä and Smith (1996) concerning the Finnish, Canadian and U.S. softwood sawmills found increasing specialization

to targeted, well-defined customer segments and market areas. The authors indicated that this may be future direction for enterprise strategies. In a later study based on the same enterprises, the competitive strategies of the companies were found to vary between different countries and areas (Niemelä and Smith 1997). In large companies, cost leadership and differentiation were the most common strategies, while in small- and medium-sized companies, differentiation and

Table 2. Literature cited on secondary wood processing firms and wood processing firms within pulp and paper industry including business economic viewpoints.

Area(s) of interest	Author(s)	Business(es) branch(es)	Major findings
U.S.	Rich (1986)	Forest Products	A change occurred from cost leadership strategy to differentiation and focus strategies in the mid 1980s.
N America	Booth & Vertinsky (1991)	Sawmilling, Pulp and Paper	Product differentiation and new technologies provide opportunities to increase returns and decrease risks.
N America	Cohen & Sinclair (1992)	Wood Building	Increasing relative market share has little affect on profitability. Higher profitability is related to new technologies, investments and producing value-added products.
U.S.	Hoff et al. (1997)	Secondary wood products	Multidisciplinary research that combines economic and engineering analyses is required when studying competitiveness. Understanding the interrelationships between firm-level and industry-level competitiveness is important.
Global	Siitonen (2003)	Pulp and Paper	The preconditions for global success in manufacturing commodity products are a cost-effective asset base, capacity management and investment efficiency.
Europe, N America	Korhonen & Niemelä (2004)	Wood Products	The importance of efficient, large-scale production has not diminished in the wood industry. Maintaining the richness of the intangible and tangible resource-base is important.
N America	Eastin et al. (2004)	Carpenter products	The most successful exporters of wood building products to Japan have significantly higher percentage of value-added products in their commodity mix than others.
Australia, New Zealand	Bull & Ferguson (2005)	Wood Products	Core capabilities of firms influence the outcome for wood product innovations driven by appropriate technology, governance structure and firm-level learning culture.
Europe, N America	Korhonen & Niemelä (2005)	Wood Products	The leading wood-industry companies have to develop and maintain a wide selection of resources and capabilities despite of their core business.
Finland	Välämäki et al. (2005)	Wood Products	Innovativeness of firms has a positive effect on competitiveness and profitability.

focus strategies were more often followed. On the other hand, even for smaller sawmills, creating value-added was seen as an option for surviving in the modern competitive arena (Bush and Sinclair 1991). In some studies very large sawmills have been found to be more active in producing value-added products than their smaller counterparts (Smith et al. 2004).

In the course of time, the factors of competitiveness in sawmilling have been affected by the changes in business practices and business environment (Niemelä and Smith 1996). Quality, customer services and product price have been shown to be the most important elements of competition (Bush et al. 1991), which is why the focus of sawmilling strategies, as well, should be to create and deliver customer value in selected customer segments (e.g., Idassi et al. 1994). The importance of customer-orientation in sawnwood

marketing has been emphasized by Juslin and Hansen (2002). In terms of business success, some proof of this has been found in the studies of Narver and Slater (1990) and Hansen et al. (2006).

In the sawmilling industry, customer value is a multidimensional concept including much more than product attributes (Idassi et al. 1994). Since relatively uniform grading standards create little basis for uniqueness in sawmill products, the creation of value-added products is largely composed of services and other intangible values perceived to be important for selected customers (Niemelä and Smith 1997). In the recent study of Toivonen et al. (2005), for example, improving services and other intangible product quality dimensions were found to provide means for enhancing Nordic suppliers' competitiveness in German markets.

Information concerning the effects of the differ-

ent strategic choices on the financial performance of sawmills is scarce. However, a few studies include comparisons between strategic choices and financial performance information. These have shown positive relationship between specialization and business success. In North American softwood timber and plywood industries, adoption of innovative processing technologies was found to be linked with superior business performance measured with Return on Sales (ROS), Return on Assets (ROA), and relative market share (Cohen and Sinclair 1990, Sinclair and Cohen 1992). Even if in a modern competitive environment the sources of future competitiveness and growth are more in factors supporting innovation, following and utilizing the latest technological development is still an important contributor to cost-efficiency (Korhonen 2006).

In a Nordic study, Roos et al. (2001) compared the economic performance of Swedish sawmills with their strategic orientations. The three main strategic dimensions studied were adding value to products with advanced production, decreasing fixed costs by pooling the production into larger units, and increasing efficiency by investing in modern technology. Value-added production was found to increase the profit margin levels, while the effects of reduced costs and higher efficiency on profits were not so clear. Similar results were also obtained in a study concerning the most common value-adding combinations of Swedish sawmills (Roos et al. 2002). Linkages between further processing of customer-oriented products and higher value products were associated with higher profit margins.

3.3 Secondary Processing Firms and Wood Products within Pulp and Paper Industry Firms

The change from cost leadership strategies to differentiation and focusing strategies started to emerge in wood-based industries in the 1980s. In addition, compared to the 1970s, these strategies were found to be more profitable than those aimed at cost leadership (Rich 1986). However, it has been argued (e.g., Siitonen 2003) that companies' characteristics influence the suitability of their strategic choices. Competing globally in

the commodity product markets still requires a cost-effective asset base and application of inter-continental strategies, while companies highly dependent on local raw material resources may survive better with intra-regional strategies based on high asset quality.

Cohen and Sinclair (1992) found that an increasing relative market share had only a small effect on the profitability of the sawmills and plywood industry that supplied material for wood building industry, whereas the adoption of new technologies, investment intensity and the production of value-added products had positive influence on the supplier companies' economic performance. In the study of Eastin et al. (2004) the successful wood building material exporters were found to have significantly higher proportions of value-added products in their product mix and better knowledge of their customer segments than the less successful exporting companies.

Irrespective of the core business, developing and maintaining a wide selection of tangible and intangible resources and capabilities is the key to sustain and increase competitiveness. The more global the firm is aiming to become, the more important is the diverse resource base (Korhonen and Niemelä 2004, Korhonen and Niemelä 2005). The core capabilities of a firm have a positive influence on the outcome of wooden products innovations (Bull and Ferguson 2005). Innovativeness has been found to have positive impacts on the competitiveness and profitability of wood products enterprises (Välämäki et al. 2005). According to Korhonen (2006), creative use of information and combination of new knowledge linked to innovations are prerequisites for growth. Despite of this, according to, e.g., Porter (2003), innovative activity of forest product cluster is well below numerous other clusters.

4 Applying RBV in Studying Woodworking Industry Strategies and Business Success

The purpose of this section is to examine in detail the resource pools of companies defined in the RBV setting, and link these findings made in management literature into tangible and intangible factors, which have gained notion in woodworking industry literature. In addition, a tentative framework for analyzing the linkages between firm-level strategies and resource usage decisions as well as their effects on business success in woodworking industry will be introduced.

Common conceptualization for company resource portfolio does not exist, although the matter has been approached in various studies (Fahy 2000). Thus, classifications of tangible and intangible resources presented in Tables 3 and 4 are based on results of several studies (Barney 1991, Grant 2005, Fernández et al. 2000, Galbreath 2005) examining the RBV characteristics in detail. Barney (1991) and Grant (2005) contributed to the development of theoretical RBV framework and resource assessments. Galbreath (2005) studied the relative contribution levels of various resources on firm success and combined the results of previous studies to conceptualize firms' tangible and intangible resource constructs.

The strategic value of intangible resources was examined in the research of Fernández et al. (2000).

Studies approaching woodworking industry features within RBV framework are scarce, comprising merely the work of Siitonen (2003), Korhonen and Niemelä (2004), Korhonen and Niemelä (2005), Bull and Ferguson (2005), and Korhonen (2006). In addition, detailed analysis of the priorities of different factors within woodworking firms' resource portfolios in implementing different types of strategies is still lacking. Yet, in studies with linkages to woodworking industry, references to the factors of production important for sector operations are numerous. These elements cited in various studies have been fitted into RBV framework in Tables 3 and 4. The illustrations show that apart from norms and guidelines, industrial models and drawings, and copyrights, a multitude of factors of production appropriate to be set in RBV framework have been acknowledged in forestry and woodworking industry literature.

Economics has a long tradition of looking at economic units from the perspective of their resource endowments. However, Wernerfelt (1984) has argued that due to the "unpleasant" properties of some resources for modeling purposes, the analyses have typically been restricted to factors of production already acknowledged in the nineteenth century (e.g. Marshall 1972). The application of RBV in economics has been

Table 3. Tangible resources (adapted from Barney 1991, Grant 2005, Fernández et al. 2000, Galbreath 2005) and examples of tangible factors of production mentioned in woodworking industry literature.

Tangible resource cited in RBV literature	Tangible factor of production cited in woodworking industry literature	Author(s) of woodworking industry literature examples
Geographic location	Proximity of forest cluster branches	Porter (1998)
Raw material	Wood quality and dimensions	Kivinen et al. (2005)
	Wood price and availability	Zhou & Buongiorno (2005)
Employment	Availability of educated and trained labor	Vlosky et al. (1998)
	Labor productivity	Roos et al. (2001)
Plant	Production unit sizes	Roos et al. (2001)
Machinery	Process automation	Sinclair & Cohen (1992)
	Fiber usage efficiency	Lee et al. (1999)
	Production technology levels	Nyrud & Baardsen (2003)
Financial capital	Appropriate production technologies	Bull & Ferguson (2005)
	Allocation of scarce financial resources to alternative needs	Cohen & Sinclair (1990)

Table 4. Intangible resources (adapted from Fernández et al. 2000, Galbreath 2005) and examples of intangible factors of production cited in woodworking industry literature.

Intangible resource cited in RBV literature	Intangible factor of production cited in wood processing industry literature	Author(s) of woodworking industry literature examples
HUMAN CAPITAL – CAPABILITIES		
Manager expertise	Business and production management skills	Vlosky et al. (1998)
	Leadership and management skills	Michael & Leschinsky (2003)
	Ability to define the scope of business and innovation capabilities	Hovgaard & Hansen (2004)
Employee know-how	Capability to bring new and innovative knowledge into processes and products	Van Horne et al. (2005)
	Expertise in manufacturing	Vlosky et al. (1998)
External relationships	Judgment and control of technology for adding production value and flexibility	Lee et al. (1999)
	Ideas for innovations	Hovgaard & Hansen (2004)
	Forms of buyer-seller relationships	Simpson & Wren (1997)
	Vertical collaboration in manufacturing	Syme & Duke (1994)
	Information flow between firms and between firms and public organizations	Van Horne et al. (2005)
ORGANIZATIONAL CAPITAL		
Databases	Product and customer databases	Toivonen (1999)
Organization routines	Governance structure	Bull & Ferguson (2005)
	Marketing structures and functions	Niemelä (1993)
Corporate culture	Learning culture	Bull & Ferguson (2005)
Co-operation agreements	Joint venture arrangements	Nyrud & Bergseng (2002)
	Contracts with wood suppliers	Helstad (2006)
Norms and guidelines		----
TECHNOLOGICAL CAPITAL		
Hold-in-secret technology	Improvements in raw material utilization, computer-aided manufacturing, machinery customizing	Hovgaard & Hansen (2004)
Patents and trademarks	Timber treatment methods	Yang et al. (2004)
	Engineered wood products	Davis & Claisse (2000)
Designs	Timber component building systems	Bergström & Stehn (2005)
Industrial models and drawings, copyrights		----
RELATIONAL CAPITAL		
Operational reputation	Customer services	Niemelä & Smith (1997)
	Reliability of deliveries	Toivonen et al. (2005)
Product reputation	Product quality	Bush et al. (1991)
	Product-related services	Toivonen et al. (2005)
Brands	Green labeling	Niemelä & Smith (1997)
	Certification labelling	Owari et al. (2006)
	Quality assurance labels	Kozak & Maness (2001)
Long-term relationships	Close personal customer relationships	Idassi et al. (1994)
	Establishing close and long-term relationships with suppliers	Helstad (2006)
Commercial name and shop sign		----

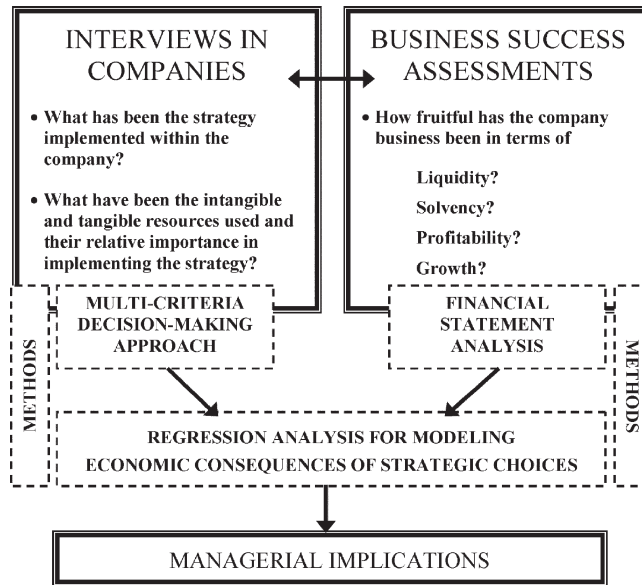


Fig. 2. Applying financial statement analysis and multi-criteria decision-making system methods in modeling the effects of strategic decisions on the financial performance of woodworking firms.

criticized for example by Foss (1998), for being terminologically ambiguous, suffering from a lack of empirical testability and lacking a conceptual model of the endogenous creation of new resources. On the other hand, Mathews (2002) has considered RBV approach as dynamic, evolutionary and have a merit of being empirically oriented compared to traditional economical analysis made in the neoclassical context.

Rouse and Daellenbach (1999) have emphasized the well-established economic research approaches based on large, multi-industry, single-time period samples to be unsuitable for isolating the sources of competitiveness theoretically predicted by RBV. Consequently, they have called for combining the traditional methods with new approaches. In economics, the gap between the theoretical and practical utility of resource-based thinking has been narrowed, e.g., by integrating transaction cost reasoning into the RBV (Silverman 1999) and operationalizing the RBV framework with a Bayesian modeling methodology (Hansen et al. 2004). Complementary to economic analyses, Lockett and Thompson (2001) have suggested including case study method-

ologies and qualitative methods abreast with the traditional quantitative approaches.

In the future, utilizing the methods of financial statement analysis and multi-criteria decision-making (MCDM) systems in modeling the factors of woodworking industry business success might bring new perspectives for the existing research tradition (Fig. 2). Employing financial statement analysis provides an opportunity for assessing at firm-level the business success in terms of liquidity, solvency, profitability, and growth describing financial performance of forest industries over time (e.g., Toppinen et al. 2006). MCDM methodologies serve as a device for clarifying the multidimensionality of management situations (Zopoundis and Doumpos 2002). For example, MCDM approach has been utilized by Korpela et al. (1998) to the logistic service management in wood industry, Sirikrai and Tan (2006) in industrial competitiveness analysis based on firm- and industry-level drivers, and Leskinen et al. (2006) in a strategy process of a forest research station. Especially in RBV framework, applying MCDM aid could facilitate to assess the priorities of different types of resources within companies

implementing various competitive strategies. In addition, by quantifying the research problem with MCDM, clarification for the complexity connected to employing RBV framework might be found.

5 Discussion

Despite the common quest among industry representatives and public decision-makers to develop and support the operational preconditions of the European woodworking sector, very little of business economics oriented research has been published. This paper has identified 24 studies that are directly or indirectly relevant to these questions. Twelve of the papers were published in the last five years. Six of the papers addressed the woodworking industry especially from a European perspective, while in others the focus was either on a more global level or merely on companies outside Europe.

Since the early 1990s, companies' resource portfolios and the importance of their rational exploitation in creating strategies and aspiring business success have gained increasing attention in management literature. Despite of this, the main interest in most of the woodworking business studies has been in the strategic choices made in relation to the business environment. The internal perspective of firms, e.g. identifying the effects of company resources on the implementation of the selected strategies has been largely ignored. Nevertheless, the need to understand the interrelationships between firm-level and industry-level factors on the competitiveness of the woodworking industry has been emphasized by e.g. Hoff et al. (1997). They have also argued for research that combines economic and engineering analyses as well as the division between internal-external factors behind the competitiveness of firms.

In empirical studies of the woodworking industry, both tangible and intangible firm resources have been found both to have crucial role in creating value-added, enhancing competitiveness, and achieving success in a modern business environment. Recently, some proof of this has been obtained by Korhonen and Niemelä (2005); for example. However, there is still a sig-

nificant gap in research concerning the interplay between woodworking companies' resources and their strategic choices, as well as in regard to the interaction between the selected strategies and financial performance. In assessing performance, in most cases instead of looking at the financial measures, the focus has been on production efficiency (e.g., Campbell and Jennings 1990, Puttock and Prescott 1992, Baardsen 2000, Nyrud and Bergseng 2002, Nyrud and Baardsen 2003, Salehirad and Sowlati 2005). As important as efficiency is in successful business practices, it does not indicate firm business success, since the capability to create value-added strongly impacts on profits.

Due to the crucial role of the availability of the various resources in creating the basis for implementing a certain strategy, a thorough analysis of financially feasible combinations of resources utilized and strategic choices applied is required. Outside of Cohen and Sinclair (1990) and Sinclair and Cohen (1992), the existing empirical literature concerning woodworking companies that apply economic information fails to address the effects of different strategic choices on performance measures based both on income statement and balance sheet information.

In this review, tangible and intangible factors that have gained notion in woodworking industry literature were fitted into RBV framework. Further, a system for analyzing the interdependencies between company-wise resource portfolios, strategic choices, and business success within woodworking industry was constructed. The idea of the framework is to employ both economic information and material gathered with interviews. In the data analyses the first one is scrutinized with financial statement analysis and the latter one with MCDM. Applying MCDM methodologies provide a tool for assessing quantitatively resource priorities within companies implementing different types of strategies. In future studies, this twofold approach both in regard to the data composition and analyze methodologies might be an option to serve as a device for getting novel research information and bringing new insights both for woodworking industry managers and public authorities in their decision-making processes.

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Total of 101 references