

Benchmarking the Canadian Value-Added Wood Products Sector:  
Competitive Factors that Contribute to its Success

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## ABSTRACT

In recent years, there has been considerable interest in the secondary wood manufacturing sector across Canada. Strengthening and facilitating the secondary wood manufacturing or value-added sector is seen as the next step to creating a more sustainable economy across Canada. This research considered all secondary wood manufacturers across Canada and has provided standardized information for the entire sector as a benchmark. In order to evaluate the competitive position of the Canadian secondary wood manufacturers, two steps were undertaken. First, factors that have determined success in other sectors were identified. Secondly, the sector's current business environments and their emphasis on the factors that contribute to success were evaluated. The majority of businesses in this sector are small to medium enterprises (SMEs) and have common concerns that effect SMEs. Problems obtaining financing for expansion, market research, expanding to new markets, and upgrading employees' skills are examples. There is also opportunity for increasing efficiencies through lean manufacturing and optimizing supply chains. These types of initiatives will require education and training. Logistic regression analysis found that being a member of an industry association greatly increased the probability of a business being profitable. Industry associations are likely an effective conduit for the required training and education.

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## 1.0 INTRODUCTION

Canada is the largest exporter of forest products in the world. In 2002, the value of Canada's forest industries exports was \$42.9 billion, accounting for 18 percent of world trade in international forest products. It is a key driver of the Canadian economy and directly employs about 361,000 people, supporting nearly 350 rural communities and providing significant employment in large urban centers like Vancouver, Montreal and Toronto (Canadian Forest Service-Industry and Trade 2004).

Since the early 1960's, the forest industry has faced remarkable changes in its operating conditions throughout the world. From the early 1960's, the world experienced sustained economic growth and demand for forest products increased steadily. In the early 1970's, the "oil crisis" resulted in increased energy prices (Martikainen 1994). At the same time, there was increased concern about the limits of natural resources and pollution of the environment. Competition in the world market intensified as a result of the internationalization of business, scarcities of resources and the acceleration of technological innovations (Porter 1991). During the 1980's, conditions began to change from a situation of growing demand and production to a maturing demand and decreasing production (Martikainen 1994). Through the 1990's, intensifying competition, more demanding customers, and environmental awareness all challenged the operating conditions of the major forest product producing countries around the world (Korhonen and Niemela 2004).

As timber supply in Canada declines, and costs of production go up, it becomes increasingly difficult to compete in the global markets for primary forest products (Globerman *et al.* 1999). Martin and Porter (2000) emphasized that Canadian firms may not be prosperous into the 21<sup>st</sup> century unless they embrace innovation, uniqueness and differentiation. Maintaining the economic contribution from the forest will require diversification, and a maximization of the value of each unit of fibre cut (Stennes and Wilson 2002). Many timber producing jurisdictions, including Scandinavia, Chile, New Zealand, and the US Pacific Northwest, are trying to find ways to encourage the

development of the value added or secondary wood products manufacturing as production can no longer expand by drawing on additional timber reserves (Wilson *et al.* 2001; Jensen International 1991). It is seen by governments as a vehicle to maintain or expand the level of economic activity generated from timber harvest (Kozak *et al.* 2004). Value-added or secondary wood products can be defined as production activities that transform primary products (lumber and panels) into other wood products. Examples include engineered building products (EBP), finished building products (FBP), mouldings and millwork, furniture, pallets, containers and shakes and shingles (Kozak and Maness 2001). The secondary manufacturing sector in Canada tends to be smaller, less capital intensive and not as rurally based, as the primary lumber producing sector (Kozak *et al.* 2004). This sector is growing and, over the last ten years, revenues have increased from \$3.6 billion in 1990 to \$7.6 billion in 2002<sup>1</sup>(Canadian Industry Statistics 2004).

As more and more countries in the world provide guidance and assistance to their secondary wood products industries, it is important to know which Canadian sectors are most competitive in the increasingly global market place. The outlook is particularly promising as housing starts in the US are expected to be very strong during the next decade, keeping demand for wood products high (Mukumoto Assoc. 1996; Schuler and Adair 2002).

In order to evaluate the competitive position of the Canadian secondary wood manufacturing sector, it is useful to identify factors that have determined success in other sectors. Chapter 2 provides an overview of factors found to contribute to the success of a business. An overview of the Canadian secondary wood manufacturing sector by region is also provided in Chapter 2. Chapter 3 outlines the research methodology and includes the mail survey techniques. A self administered survey was designed to Chapter 4 presents results of the mail survey and analysis. Chapter 5 discusses the results and Chapter 6 presents the recommendations and conclusions.

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<sup>1</sup> Includes revenues from millwork, wooden doors and windows, prefabricated homes, manufactured homes, pallet and container manufacturers.

## 2.0 BACKGROUND

### 2.1 FACTORS THAT DETERMINE SUCCESS

According to prevalent thinking, labour costs, interest rates, exchange rates, and economies of scale are the most potent determinants of competitiveness (Porter 1990). While these factors are important in more resource dependant industries like primary lumber saw milling, Porter (1990) believes this approach to be flawed as firms move up the value chain. It may even be too simplistic for some commodity producers (Hansen *et al.* 2002). Hansen *et al.* 2002 investigated strategies implemented by 52 sawmills in the Pacific Northwest, including British Columbia, and found that many “commodity” producers actually employ some kind of differentiation strategy to gain a competitive edge. In a recent study looking at how leading European and North American (primary) wood industry companies are remaining competitive, the general view of the future market environment was one of rapid change and consolidation, leaving room for both large production structures with a broad product portfolio and flexible niche-players (Korhonen and Niemlea 2003). Value-oriented growth is slowly replacing the objective to increase volume. The basis of competitiveness has moved from tangible assets (i.e., raw materials and equipment) and physical processes (i.e., distribution and production) to intangible resources and capabilities. Knowledge, and sharing and managing it within companies, is becoming a key characteristic for success (Korhonen and Niemlea 2003; Cohen and Kozak 2001; Dawson 2000).

The following factors of success are discussed:

- Costs
- Innovation
- The human resource
- Market orientation
- Knowledge-based orientation

### **2.1.1. Costs**

Companies can concentrate on lowering their raw material, labour, and physical asset costs as a means to compete. However, there are usually tight limits to cost containment and most firms may only gain few new opportunities through cost reduction. Although cost control is necessary, it is often no longer sufficient for market improvement (Korhonen and Niemela 2004). More frequently, significant opportunities for real market improvement seem to involve moving to more unique or differentiated operations (Jaques 1995). Furthermore, firms that do not attempt to develop unique strategies and concentrate purely on cost control are also more likely to face more competition from substitute products (Jaques 1995; Martikainen 1994). In an assessment of opportunities for BC moulding producers to expand their market share in the US, Cohen *et al.* (1997) concluded that they could expect moderate gains at best, because of the influx of cheaper suppliers and substitute products like MDF.

Over a decade ago, Finnish forest industries recognized that they could not maintain competitiveness based on low cost labour and raw materials or simple bulk products (Martikainen 1994). They have since become more customer-oriented and have developed more specialty products and products designed to satisfy specific customers needs (Korhonen and Niemela 2003). In previous sector and benchmarking studies, Jaakko Poyry (2001) found that the successful performers in a particular industry or segment are not always those that have the lowest factor input costs. It was typically other, qualitative factors, such as management capability and entrepreneurial orientation, work force skills, innovation, and adoption and use of new technologies, which determined successful performance (Jaakko Poyry 2001).

### **2.1.2 Innovation**

The process of seeking uniqueness and differentiation requires innovation. Porter (1990) emphasizes that companies achieve competitive advantage through innovation. This always involves investments in skills and knowledge (Rogers 1995). Good information plays a large role in the process of innovation and development. Information that is not available to competitors or that they do not seek can create competitive advantage. Once

a company achieves competitive advantage, through innovation, it can sustain it only through relentless improvement (Porter 1990). Innovation is playing a larger role in obtaining and preserving the competitive advantage of exporting firms in developed countries as it becomes more difficult to compete on the basis of price with low-wage countries in undifferentiated commodity markets such as lumber (Globerman *et al.* 1999).

Han *et al.* (1998) conclude that past research shows a positive relationship between innovation and firm performance. Innovation can occur at any level of a business, from product design and processes, to new ways of training, to perceiving entirely new market opportunities (Porter 1990). Hovgaard and Hansen (2004) summarized the process of innovation into three categories:

**1) Product development or improvement.** Good product design can help firms stand out in the marketplace and play a particularly important role in fashion-conscious industries like furniture (Bumgardner *et al.* 2000).

**2) Process.** Process innovation includes the technologies and improvements that aid in making products. As markets and products mature over time, the innovation emphasis switches from developing new products to increasing the efficiency with which the products are produced (Hovgaard and Hansen 2004).

**3) Business Systems.** Business systems innovation includes all types of innovations that do not fall under the product or process categories. Management and marketing techniques that improve businesses are included (Hovgaard and Hansen 2004).

Product innovation or product development has been described as essential for firm success (Lynn *et al.* 1999; Rogers 1995). Close contact with consumers and strong feedback loops between them and producers are distinguishing features of technologically innovative firms (Globerman *et al.* 1999). Firms that are successful in developing and introducing new products or differentiating existing products are those with a first hand understanding of the changing needs, tastes, and preferences of

consumers (Globerman *et al.* 1999). The Canadian forest industry does not have close contact with the final consumers of its products and little research has been specific to the forest products industry (Globerman *et al.* 1999; Hovgaard and Hansen 2004).

In an exploratory study of 17 small forest product firms in Alaska and Oregon, innovation in product and process development was found not to be consistent (Hovgaard and Hansen 2004). Small firms lack the resources to implement consistent, structured innovation practices. Hovgaard and Hansen (2004) concluded that there are clear opportunities to assist small forest product firms in enhancing their innovation efforts. In a review of specialty wood products manufacturers (including furniture, cabinets, store fixtures, furniture components, architectural millwork, mouldings, doors/windows, novelties, and packaging products) in the United States, Taylor and Assoc. (1998) found that the fastest growing companies were continually developing new products.

Technological innovation can fall into any of the three classic categories of innovation. It can assist firms in differentiating their products, better match their outputs to specific consumer requirements, and develop niche markets. Finland has pursued opportunities to develop technology niches by focusing activities on the forest industry specifically. The Canadian forest industry has not focused on the development of technological opportunities. Nelson (1994) argues that technological progress is not simply a source of growth, it is *the* source of economic growth (in Globerman *et al.* 1999).

Many factors influence the innovation investment behavior of firms. Firms with inelastic demand<sup>2</sup> and elastic supply feel that they must pass the benefits of technology through to the customer without retaining any of the benefits. The consumer benefits because of reduced price, but firms have difficulty capturing any of the profit. Thus, firms in such sectors (i.e. commodity lumber producers) tend not to invest in developing new technology and are more often technology-takers (Globerman *et al.* 1999)

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<sup>2</sup> Inelastic demand is if price changes a small amount, demand changes a small amount. Elastic supply is if price changes a small amount supply changes be a larger amount.

For high value-added regions like Germany and Denmark, the interdependency between value-added manufacturers and local suppliers is strong. Vertical and horizontal integration make innovation, technology and know-how easily transferable. While there is some competitiveness in the cost of raw materials, there is also a willingness for suppliers to adapt products, be flexible, and support product development (Jaakko Poyry 2001). In more resource-based regions like Canada, competitiveness in the value-chain comes from low cost raw materials, but there is limited flexibility to adapt to the needs of value-added manufacturers (Kozak *et al.* 2004).

Innovation tends to be facilitated by the presence of a cluster, particularly where the cluster is concentrated geographically (Martin and Porter 2001). Germany and Denmark are examples. Firms within a cluster are often able to more clearly and rapidly perceive customer needs than competitors that are isolated. Firms within a cluster can also commercialize innovations more rapidly and efficiently because of their ability to source needed components, machinery, and services. Closer proximity also improves communication (Globerman 2001). Competitive pressure, peer pressure and constant comparison between firms, also reinforces the innovative advantage of clusters (Martin and Porter 2001).

### **2.1.3. The Human Resource**

The quality of the human resource, from top managers to workers, is perhaps one of the more commonly cited critical business success factors in the literature (Ghosh *et al.* 2001). Recent studies have concluded that the nature of the management team can have critical impacts on a firm's success (Strandholm *et al.* 2002; Ghosh *et al.* 2001; Minguzzi and Passaro 2000). Evans and Evans (1986) assert that a firm's success is directly related to human resources development and top management's involvement with all phases of the operation.

#### **2.1.3.1 Managerial Expertise**

Ghosh *et al.* (2000) identified key success factors that were commonly practiced by very successful or "tiger" SME's in Singapore. A committed, supportive and strong

management team was the highest ranked success factor common to the 50 companies surveyed (Ghosh *et al* 2000). In the specialty wood products businesses in the US and BC, Taylor and Assoc. (1998) found that key factors for success can vary considerably between companies, but a common factor was the commitment and focus of company management to gain and maintain some kind of competitive advantage.

Different types of strategic focus require different types of managerial expertise. Strandholm *et al.* (2002) examined the interrelationships among perceived environmental change<sup>3</sup>, strategic response, managerial characteristics, and organizational performance. In organizations that perceive the level of environmental change to be high, managers will pursue a market-focused strategy and have a greater propensity for risk-taking. Organizations that perceive the level of environmental change to be relatively low will pursue an efficiency-focused strategy and have a lower propensity for risk-taking. The knowledge and skills required for effective management under these two perceptions of the environment are different. For example, an efficiency-focused strategy requires an organization to achieve a lower cost structure than its rivals, which would be accomplished through a vigorous pursuit of cost reduction. Research suggests that success in controlling costs and increasing efficiency generally comes from understanding the internal aspects of the organization with respect to production, engineering, accounting, and finance (Govindarajan 1989). Alternatively, the successful implementation of market-focused strategies will require managers with more of an external focus. This requires managers with backgrounds in marketing, sales, merchandizing, and product research and development (Govindarajan 1989). Not only is the complete alignment of strategy and managerial characteristics required for superior performance, but it is also necessary that the strategies be aligned with the environment (Strandholm *et al.* 2002). There is general agreement that the future market environment in the wood products industry is one of rapid change (Korhonen and Niemlea 2003), suggesting that firms with a market-focused strategies and managers with more of an external focus will be more successful into the future.

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<sup>3</sup> Environmental change refers to the changes in the business environment in which a firm has to operate.

In a study of Michigan hardwood producers, Dickerson and Stevens (1998) found that, although the firms had goals of expanding exports, they were having difficulties doing so because of a lack of support from managers. They concluded that the exporters would likely have difficulty cultivating foreign markets because of the low overall allocation of personnel to export programs and effective training programs. In other words, managerial actions did not line up with actual firm strategies.

### **2.1.3.2 Investing in Education and Training**

Martin and Porter (2000) stress that investments in education, training, and specialized skills upgrading have among the highest pay-offs of any investment that can be made in improving business. Taylor and Assoc. (1998) proposed a strategy for enhancing and expanding the value-added wood products sector in the Kootenay-Boundary region of BC. A key part of this strategy was a comprehensive plan for training and upgrading the skills of the existing workforce to meet the needs of the value-added industry.

### **2.1.4 Market Orientation**

According to Han *et al.* (1998), a market-oriented corporate culture increasingly has been considered a key element of superior performance. A market orientation, as a corporate culture, is a firm's disposition to continuously deliver superior value to its customers and to know how to adapt and change to a continuously changing environment. Ghosh *et al.* (2001) concluded that firms need to pay attention to markets and should have strong market orientation capability to achieve excellence in performance. Part of a successful market orientation is understanding the complexities of customer value perceptions, processes for customer value monitoring, and processes for leveraging organizational knowledge (Flint 2004).

Varadarajan (1985) focused on two market environments (consumer and industrial) and a subset of competitive strategy variables (marketing strategy variables). He looked at whether marketing strategies in the consumer and industrial markets could be classified

as either failure preventers<sup>4</sup> or success producers. He concluded that different strategies are necessary for different types of businesses. For example, advertising is the most important promotional tool in consumer markets and personal selling is the most important in industrial marketing. However, advertising can still function as a failure preventer in the industrial market by building awareness, reassurance, generating leads, and insuring the company's legitimacy. Ideally, businesses should expend no more than the minimum amount to prevent failure occurrence and then determine the optimal allocation of resources between success producing variables.

Understanding the market environment can also help in minimizing mistakes when deciding on expansion strategies. Vlosky *et al.* (1998) presented a Directional Policy Matrix (DPM) planning tool that assesses an industry's sector potential involvement along two dimensions: competitive position and market attractiveness (Table 1).

Table 1. Generic market strategy characteristics (adapted from Vlosky *et al.* 1998)

	Competitive Strength		
	<i>Strong</i>	<i>Moderate</i>	<i>Weak</i>
Market Attractiveness			
<i>High</i>	Extend Position	Invest to build	Build cautiously
<i>Medium</i>	Build selectively	Invest selectively	Limit expansion
<i>Low</i>	Protect and refocus	Harvest	Divest

In Louisiana, architectural millwork and ready-to-assemble furniture were recommended for new investment (*Invest to build*, Table 1) because of their high market attractiveness and moderate competitive strength. Cabinets and pallets were targeted for limited expansion (*Limited Expansion*, Table 1) because of limited geographic markets and applications (Vlosky *et al.* 1998).

<sup>4</sup> Failure preventers: a certain minimum effort (on parity with competitors) is required to prevent failure. However, additional resources will not necessarily attain a position of competitive advantage. A drop from competitive advantage to parity will not necessarily decrease market share. However, declining competitive disadvantage will decrease market share (Vasconellos e Sa 1988).

Defining market needs and performing market research is where small companies commonly fail (Hovgaard and Hansen 2004). Market orientation is a complex process that entails substantial financial and resource commitment, something that is very scarce in smaller firms (Han *et al.* 1998). Londhe and Vlosky (2003) found that small value-added wood producers in South Carolina ranked a lack of marketing expertise as an important impediment to competitiveness. In a study of wood products manufactures in Tennessee, Jensen and Pompeli (2000) found that locating and identifying potential buyers for products, help with promoting products, and market research were perceived to be the most needed forms of assistance. Information can also flow both ways with a market based strategy. In a focus group study that looked at consumer attitudes towards certified value-added wood products (CVAWPs), Kozak *et al.* (2004) discovered that participants at the start of the process (a two hour session) were either unfamiliar with or suspicious of the concept of CVAWPs. By the end of the process, many stated a preference for CVAWPs and even a willingness to pay a price premium.

#### **2.1.4.1 Specialization and Niche Markets**

Focusing on specialization and developing products for niche markets can also contribute to the success of a business. In a study of firms producing mature industrial products, Vasconellos e Sa (1988) determined that different factors are critical for performance in different types of businesses. The same set of attributes may be may be common across a wide range of businesses, but critical success factors vary in different types of businesses. If a firm extends its product line in a related area, the key success factors will be similar. Therefore, a firm can rely on the same strengths to match the new key success factors. On the other hand, if a firm enters a different product or market area, performance could suffer because it will face different key success factors which require new types of strengths that the firm may not possess (Vasconellos e Sa 1988). In summarizing, Vasconellos e Sa (1988) outlines four specific recommendations for increasing firm success:

- preoccupation with detail should be avoided and efforts should be focused on critical tasks;
- efforts should be focused on performing a few tasks exceedingly well;

- a knowledge of strengths and weaknesses is essential prior to diversification; and
- the tasks which are critical for success in the new product/market must be matched with the firm's existing strengths.

The concept underlying these recommendations is specialization. Vasconellos e Sa (1988) stresses that a successful company is better off focusing on being strong in a few areas rather than being weak in many. Gunter *et al.* (1995) also found that the secret of success for medium-sized German companies was the emphasis on simplicity in their operations. These leading firms produce a narrower range of products, sell to few customers, and have fewer suppliers. Taylor and Assoc. (1998) concluded that, in secondary wood manufacturing in the US, access to markets, customers, and specialized products tend to be more important than the inputs (access to or cost of lumber).

### **2.1.5 Knowledge-Based Orientation**

In order to ensure future success, Cohen and Kozak (2001) believe that forest product companies must move from a simple market orientation to a more "knowledge-based orientation". This requires more interdisciplinary research that incorporates market-based social sciences approach along with physical and engineering sciences. This means creating true supply chain management without having a single orientation driving its values and objectives and it should result only in products that are valued by customers (Cohen and Kozak 2001).

In a study to determine what best contributes to the long-term competitive advantage of leading North American and European primary wood manufactures, Korhonen and Niemela (2004) concluded that a company striving for sustainable growth in the wood industry shifts its focus from tangible asset accumulating growth to value creation through the accumulation of knowledge. By defining a clear market, the company could gain a deeper knowledge about their customers (Korhonen and Niemlea 2004).

Knowledge has now emerged as the most strategically significant resource of the firm (Dawson 2000).

Korhonen and Niemlea (2004) put forward the idea that any industry can be thought of as consisting of two layers. The first layer comprises efficient production processes, up-to-date technologies, and firm cost controls. A second layer, and the key to remaining competitive, incorporates innovation or the creative use of new knowledge. However, if the industry is not solid and cost effective, innovations cannot root and become profitable and, if an efficient company is all that exists, the result is a never-ending circulation and optimization of old assets and a declining industry. Both layers are essential for success.

## **2.2 THE SECONDARY WOOD PRODUCTS SECTOR IN CANADA - AN OVERVIEW**

Recent studies that have examined the Canadian secondary wood-products sector are summarized by region and presented from west to east. Settlement history, geographic location, resource availability, taxation and environmental policies have all influenced the nature and type of development across the country over time.

### **2.2.1 British Columbia**

British Columbia is the most important forestry region in Canada, supplying 40% of Canada's total harvest. Over the 1990's, markets have become less diversified, with 80% of wood exports going to the US by 1999 (Stennes and Wilson 2002). There is a strong interest in encouraging expansion of the value-added sector as increasing costs, substitute products driving down demand, and public demands for sustainability continue to make it more difficult to compete in the commodity market (Wilson *et al.* 2001). The value-added sectors in BC are responding and sales increased by over 70% from 1991 to 1999, outperforming the primary products sector (Stennes and Wilson 2002). To some extent, the significant currency advantage between Canada and the US has helped this growth (Woodbridge Assoc. 2003a).

Total sector sales in 1999 were estimated at \$4.68 billion or about 26% of total BC forest product sales (Wilson *et al.* 2001). This included the remanufacturing sector which made up about 34% of those sales. However, the proportion of sales that remanufacturing contributes to is declining; in 1996, it was as high as 60%(Wilson 1996).

Remanufacturing is closely related to, and dependent upon the primary wood products industry and it has the lowest job coefficient of all business types included in the value-added sector at 0.41 jobs per 1000 m<sup>3</sup>. Cabinets and furniture have the highest job coefficients at 23.29 and 6.19 jobs per 1000 m<sup>3</sup>, respectively (Wilson *et al.* 2001). That said, the remanufacturing sector performs a vital function in adding value to the output of primary producers and acts as the supply of firms further up the value chain (Woodbridge Assoc. 2003a).

In a survey of value-added firms in 1999, Wilson *et al.* (2001) found that the industry is concentrated in southern BC, most notably around the lower mainland. Most firms were small, employing an average of 34 people. Approximately 40% of the respondents relied on BC for over half of their sales and 27% of the respondents had at least one-half of their sales going to the US (Wilson *et al.* 2001).

In a report prepared for the BC Interior Value Added Wood Association, Woodbridge Assoc. (2003a) concluded that the largest opportunities in BC are likely in structural value-added wood products. Underlying Woodbridge Assoc.'s (2003a) recommendations is that there could be significant savings in residential construction by moving toward more pre-built structural components, Ready-to-Assemble (RTA), and factory built whole-home systems. In addition to the US housing market, there are also growing demand for cost-effective housing around the world (Ernst & Young Consulting 2000). These products more closely tie into BC's traditional strengths in serving the global housing, commercial, and industrial building markets.

According to Woodbridge (2003a), BC's comparatively low labour costs, wood costs (as compared to US producers), and Canada's exchange rate advantage (at the time of the report writing) are positive competitive factors for BC manufacturers of structural value-added wood products. Disadvantages include BC's remote location (from major consuming markets), poor investment climate, low new product R&D expenditures, low commitments to training, and the small scale and low productivity of many of the facilities. Woodbridge Assoc. (2003a) proposed a new 'value-proposition' that could be

built around consolidating wood producers and partnering with American finished product manufacturers and distributors and allowing for significant gains in value-added product supply chain productivity. This will require significant new investment in state-of-the-art facilities, innovativeness in new product development, and a greater use of the province's extensive knowledge-based skills<sup>5</sup> (Woodbridge Assoc 2003a).

Taylor and Assoc. (1998) reported that, in the specialty value-added sector (doors, windows, kitchen cabinets, architectural millwork, flooring, engineered post-and-beam structures), a number of companies have expanded operations and upgraded technologies as a result of making strong inroads into the Japanese market. However, many BC companies are also attempting to move up the value chain by producing finished products and selling them to markets that are closer in proximity (Taylor and Assoc. 1998).

### **2.2.2 Alberta**

In 2003, Alberta trailed behind Quebec, Ontario, British Columbia, Manitoba, and New Brunswick in total exports (Canadian Industry Statistics 2004). However, the economic contribution of the value-added wood products sector in Alberta has been increasing steadily (Canadian Industry Statistics 2004). As in other regions in Canada, the major source of raw materials for the value-added industries does not necessarily come from the Alberta forest resource (Hallmark Eng. Ltd. 1983).

Jaakko Poyry (2001) reported that Alberta, along with British Columbia, is competitive with respect to underlying costs, such as labour, energy and raw materials, compared to other regions in Canada and Europe. However, neither has yet to effectively make an effort to improve the qualitative benchmark factors, such as managerial capabilities, skill levels, and clustering, that would enhance the development and performance of value-added wood industries (Jaakko Poyry 2001).

### **2.2.3. Prairie Provinces**

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<sup>5</sup> BC producers are leaders in technical and end product knowledge and have expertise in engineered construction methods, home design, earthquake resistant products, and CAD/CAM and architectural software systems (Ernst & Young Consulting 2000).

The total value of exports of value-added wood products in 2003 was \$133 million from Manitoba and \$5.4 million from Saskatchewan (Canadian Industry Statistics 2004). Even though the relative size of their forest industries is similar in both provinces, the value-added sector in Manitoba is much more significant. Manitoba is home to the largest kitchen cabinet manufacturer, Kitchen Craft Cabinetry, and the two largest Canadian window and door manufacturers, Loewen Windows and Wilmar Windows. Palliser Furniture, Canada's largest furniture manufacturer, is also located in Winnipeg (Manitoba Industry, Economic Development and Mines 2004).

These companies were established and have grown from strong cultural roots. Each has been in business for more than 30 years, with Loewen Windows having its start at the turn of the century (Loewen Windows 2004). Their competitive strengths include superior product design, a strong customer orientation, and engineering expertise for cold-climate construction technology. As with other higher value-added sectors across Canada, raw material supply is largely disconnected from the primary forest products sectors in Saskatchewan and Manitoba.

#### **2.2.4 Ontario**

Ontario's value-added wood products sector is one of the most important and substantial contributors to its provincial economy. In 1997, total sales of value-added products amounted to \$4.1 billion, almost one third of the total value of shipments of the forest products industry (Jaakko Poyry 2001). Kitchen cabinets, windows and doors, and other millwork were the three top contributors to the total shipments of value-added products in 1997 (Jaakko Poyry 2001). Approximately 75% of Ontario's value-added products are exported, and about 90% of that goes to the Great Lakes region of the US. The Great Lakes region has a population of about 83 million and includes Michigan, Ohio, Wisconsin, New York, Minnesota, Indiana, Illinois, and Pennsylvania. Primary wood producers in Ontario are also facing more competition from off-shore producers such as Chile, Brazil, and New Zealand (Woodbridge and Assoc. 2003b).

In a study that looked at the potential for expanding Ontario's value-added wood products market in the US Great Lakes region, Woodbridge and Assoc. (2003b) concluded that there are good opportunities for sustainable growth, possibly increasing by 40% by the year 2010. The Great Lakes region is the traditional manufacturing heartland of the United States, but it suffers from construction labour shortages. The pressure to reduce costs of site-built construction will create an increased demand for off-site factory-built housing systems. In 2001, site-built single family housing averaged US\$72 per square foot in contrast to US\$55 for factory-built single family homes (Woodbridge Assoc. 2003b). Structural building components, millwork (windows, doors, mouldings, and flooring<sup>6</sup>) and factory-built housing systems have the highest potential for growth. However, this will require significant new investment in technology, continued R&D, education, and skills training. Significant synergies and supply chain savings can also be realized if factory-built manufacturing technologies and market growth potential can be linked with structural building components manufacturing firms, some of which have strengths in distribution and mill efficiencies (Woodbridge and Assoc. 2003b).

The millwork sector does not depend on the province's primary producers for wood supply (Woodbridge and Assoc 2003b). This disconnect is also evident in the US and elsewhere in Canada, where millwork plant locations are no longer tied to traditional wood sources. Many manufacturers do not even view themselves as part of the forest industry. Denmark has developed a successful value-added wood sector without having a timber resource of its own (Jaakko Poyry 2001). Many of the smaller millwork firms in Ontario are family owned and have been very successful by serving customized and niche markets (Woodbridge and Assoc. 2003b).

Although Ontario has a relatively well developed value-added sector, the segments within the sector are not well clustered. Jaakko Poyry (2001) indicates that a furniture sector cluster is developing in Ontario, but it did not examine the factors that are contributing to this growth. However, Ontario does rank highest among Canadian provinces in its

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<sup>6</sup> Furniture was excluded from this study.

development of more qualitative benchmark factors such as managerial capabilities, labour skill levels, and clustering.

### **2.2.5 Quebec<sup>7</sup>**

In 2003, Quebec led all other Canadian provinces in the total value of exports for “other wood products<sup>8</sup>” or value-added wood products. Exports totaled almost \$750 million (Canadian Industry Statistics 2004).

### **2.2.6 Atlantic Region**

Wood products industries are important to the economic health of Atlantic Canada. By 1999, annual sales were over \$70 million, being sold mostly to the American market (Atlantic Canada Opportunities Agency 2001). The most significant markets in the US are in the tri-state area of New York, New Jersey, and Connecticut (Team Canada Atlantic 2004). The value-added sector in Atlantic Canada is mainly comprised of small-to-medium companies and about 50% of these companies manufacture products that are completely finished, such as flooring, molding and millwork, furniture, cabinetry, kitchenware, and fencing/garden items. The remaining 50% produce items which are later processed into a finished product such as components for furniture, doors, windows, fencing, and plywood and veneer (Atlantic Canada Opportunities Agency 2001).

About 25% of the companies buy at least 75% of their raw material from outside of Atlantic Canada. About 75% of the companies use hardwoods and/or pine, with the remaining companies using other softwoods such as cedar, spruce, fir, and larch. Even though hardwoods are most commonly used in the majority of value-added manufacturing, this usage does not correspond to the availability of raw materials. While the overall percentage of hardwoods in Atlantic Canada is higher than the national average, the majority of forest cover types are softwoods. Pines only account for 4-5% of the forest cover in New Brunswick and Nova Scotia and are almost non-existent in PEI and Newfoundland, yet they comprise a significant portion of the raw material used. This

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<sup>7</sup> Much more information exists about the secondary wood manufacturing sector in Quebec. However, the studies are in French. This is a limitation in this study and should be addressed in further research.

<sup>8</sup> “Other wood products” includes all wood products except lumber, preserved lumber, veneer, plywood, pulp and paper products, and engineered wood products (Canadian Industry Statistics 2004).

catalyzed the need to investigate the use of other softwood such as spruce and fir that are available in much larger quantities and are currently processed into lower value commodity products such as dimension lumber. Substitutes for hardwood and pine could lead to a greater return for the local wood resource; however, this may require a change in processing techniques and marketing strategies (Atlantic Canada Opportunities Agency 2001)

It was identified that, although exports of value-added products had increased from 1995 to 1999, the rate of growth was lower than other regions in Canada (Atlantic Canada Opportunities Agency 2001). Atlantic Canada produces 10% of the National Annual Allowable Cut, yet value-added industries only account for 4% of all the value-added wood products in Canada. A lack of intensive marketing, inaccessible financing, and an inability to meet customer specifications for new products were cited as the main barriers to expansion for the Atlantic region.

#### **2.2.7. Summary**

Across Canada, the secondary wood manufacturing sector is expanding and the outlook is optimistic. However, the sector is faced with many of the challenges and problems that often face small-to-medium sized enterprises (SMEs). Although there are common problems across the regions, there are also problems that are unique to each region. In order to standardize the information collected and recommend effective strategies for encouraging the secondary wood manufacturing sector, sector by sector and region by region, updated information on the entire sector is required.

### **2.3 PROBLEM STATEMENT AND OBJECTIVES**

Today's business environment is punctuated by global pressures and rapid change. Information about the nature of the secondary wood manufacturing industry in Canada has become dated and, in order for the industry to better position itself globally, more current information is essential. The main objectives of this research are:

- to summarize the factors considered to contribute to the success of a manufacturing firm from recent literature; and

- to examine the Canadian secondary wood manufacturing sector's current business environment and their emphasis on the factors that contribute to success.

### **3.0 METHODOLOGY**

#### **3.1 THE POPULATION**

The population of interest was all companies in Canada that manufacture secondary wood products. This included, but was not limited to, manufacturers of engineered wood products, mouldings and millwork, cabinets, furniture, remanufactures, and pallets and containers. In order to get the most complete address list of companies, lists from several industry associations, research institutes, provincial and federal government were amalgamated. The main sources of this information were the Quebec Wood Exporting Bureau (QWEB), BC Wood Specialties group, Wood Manufacturing Council, and Forintek Canada Corp. and resulted in a data base with 4,700 company names and addresses.

#### **3.2 SURVEY DESIGN**

A mail survey is an effective and efficient way to update information on the Canadian secondary wood manufacturing sector. A mail questionnaire was designed to survey the sector in terms of its competitiveness. The questionnaire was divided into four sections; company profile, business environment, success factors and company statistics (Appendix I). The company profile section asked questions about what the companies produced, where their markets and suppliers were located, what their major investments have been, and whether they will be making any further investments. The business environment section asked questions on what was limiting their growth, overall business strategies, and familiarity with certain business terminology. The success factors section asked respondents what types of cost, innovation, market orientation, and supply chain strategies were emphasized by their companies. The final section collected information on company size, gross revenues, and future outlooks.

#### **3.3 IMPLEMENTATION**

The survey was implemented in three separate mail outs, spaced approximately two weeks apart. Multiple contacts have been shown to be more effective than any other technique for increasing response rates to surveys (Dillman 2000). The first mail out, sent out October 2, 2004, consisted of a cover letter introducing the survey and its objectives and a copy of the questionnaire. A reminder letter, which also thanked those who had already responded, was sent out on October 22, 2004. The final mail out was sent November 12, 2004. This included a letter reminding respondents in a more urgent tone and another copy of the questionnaire. The final cover letter also served to thank those who had already responded (See Appendix II for mail out letters).

### **3.4 DATA ANALYSIS**

Descriptive and inferential statistics were used to analyze the data collected in the mail questionnaire. SPSS 13.0 and Microsoft Excel 2003 were the software packages used. Descriptive summaries, such as frequencies, were calculated on the company profile information and statistics. Data from Likert-scale questions, such as in the business environment and success factors sections, were used to compute means and 95% confidence limits. One-way ANOVA and t-tests were performed to test for significant differences between means where appropriate. If data was determined to not be normally distributed, non-parametric tests were used. When significant differences between means were uncovered, post-hoc tests, such as the Scheffé test for normally distributed data and the Mann-Whitney test for nonparametric data, were used.

In addition to all responses being analyzed as one data set regardless of firm size, the data was also analyzed in two groups; larger firms (more than three full time employees (FTEs)) and smaller firms (three or less FTEs<sup>9</sup>). The purpose of this was to note any relevant differences that might affect policy for small firms as opposed to larger firms.

Multivariate techniques, such as cluster analysis and logistic regression, were also used in this analysis. Cluster analysis can be a useful technique for identifying meaningful

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<sup>9</sup> Three or less FTEs was chosen as a cutoff because they represent the very small companies that may have no intention of expanding.

subgroups of individuals. However, cluster analysis is characterized as descriptive and non-inferential (Hair *et al.* 1998). K-means cluster analysis was completed on Question 12 of the survey, which asked respondents about their firm's level of emphasis on various strategies that are thought to increase business success. It is a non-hierarchical method and requires the number of final clusters to be known and specified in advance. Three clusters; LOW, MEDIUM and HIGH emphasis on business strategies were specified from Question 12.

Binary logistic regression was performed to develop a predictive model of whether a firm is profitable or not. Logistic regression is useful in situations where the goal of the analysis is to predict the category of the outcome for individual cases, i.e. profitable or not profitable (Tabachnick and Fidell 2001). Stepwise methods were used to find the best model using 49 variables (48 continuous and 1 categorical). Table 2 shows all the variable names, including the descriptions and measurement scale, used in the regression analysis. Backward (as opposed to forward) selection of variables was used to reduce the likelihood of a type II error (the probability of rejecting an effect that exists) (Field 2000). Backward stepwise selection begins with all the predictors or variables and removes those that do not have a substantial effect on how well the model fits the observed data. The first predictor to be removed will be the one with the least impact or smallest change in  $-2\log$  likelihood. The logistic regression was run twice, with all firms and with small firms (3 or less FTEs) excluded.

Table 1. Independent variables used in the logistic regression.

Continuous Variables	Description	Measurement Scale
FIN	Level of significance of financing in ability for firm to grow	1=not at all significant; 5=extremely sig
LIMMARKDEM	Level of significance of limited market & demand in ability for firm to grow	1=not at all significant; 5=extremely sig
INCCOMP	Level of significance of increased competition in ability for firm to grow	1=not at all significant; 5=extremely sig
SUPPLY	Level of significance of raw material supply in ability for firm to grow	1=not at all significant; 5=extremely sig
WAREHSE	Level of significance of warehouse space in ability for firm to grow	1=not at all significant; 5=extremely sig
ENERGY	Level of significance of energy costs in ability for firm to grow	1=not at all significant; 5=extremely sig
TAX	Level of significance of taxation policy in ability for firm to grow	1=not at all significant; 5=extremely sig
FORPOL	Level of significance of forest policy in ability for firm to grow	1=not at all significant; 5=extremely sig
FORIND	Level of agreement that firm is part of the forest industry	1=strongly agree; 5=strongly disagree
MANIND	Level of agreement that firm in part of the manufacturing industry	1=strongly agree; 5=strongly disagree
LOWCOST	Level of agreement that firm has a strategy of low cost	1=strongly agree; 5=strongly disagree
DIFF	Level of agreement that firm has a strategy of differentiation	1=strongly agree; 5=strongly disagree
CLSSUP	Level of agreement that firm is located close to suppliers	1=strongly agree; 5=strongly disagree
CLSCUS	Level of agreement that firm is located close to customers	1=strongly agree; 5=strongly disagree
CLSCOMP	Level of agreement that firm is located close to competition	1=strongly agree; 5=strongly disagree
PARTDIST	Level of agreement that it is important to have partnerships with distributors	1=strongly agree; 5=strongly disagree
PARTSUP	Level of agreement that it is important to have partnerships with suppliers	1=strongly agree; 5=strongly disagree
PARTCUS	Level of agreement that it is important to have partnerships with customer	1=strongly agree; 5=strongly disagree
LEADER	Level of agreement that firm has strong and effective leadership	1=strongly agree; 5=strongly disagree
STRATEGY	Level of agreement that firm has no long term strategy	1=strongly agree; 5=strongly disagree
ECOM	Level of familiarity with e-commerce	1=not at all familiar;5=very familiar
CLUSTER	Level of familiarity with industry clusters	1=not at all familiar;5=very familiar
SUPCHAIN	Level of familiarity with supply chain management	1=not at all familiar;5=very familiar
SUPCHNMAP	Level of familiarity with supply chain mapping	1=not at all familiar;5=very familiar
VMI	Level of familiarity with Vendor Managed Inventories	1=not at all familiar;5=very familiar
EFFOP	Level of emphasis on efficient operations as part of a competitive strategy	1=not at all emphasized;5=emphasized
COMPPRC	Level of emphasis on competitive pricing as part of a competitive strategy	1=not at all emphasized;5=emphasized
CSTRAWMAT	Level of emphasis on cost of raw materials as part of a competitive strategy	1=not at all emphasized;5=emphasized
NP	Level of emphasis on new product development as part of a comp. strategy	1=not at all emphasized;5=emphasized
RD	Level of emphasis on research and development as pat of a comp strategy	1=not at all emphasized;5=emphasized
INNPRODPROC	Level of emphasis on innovative production processes	1=not at all emphasized;5=emphasized
HIPRCMRKTS	Level of emphasis on products for high priced markets	1=not at all emphasized;5=emphasized
SPECPROD	Level of emphasis on manufacturing specialty products	1=not at all emphasized;5=emphasized
SKILL	Level of emphasis on employing highly skilled personnel	1=not at all emphasized;5=emphasized
BRANDID	Level of emphasis on developing brand id	1=not at all emphasized;5=emphasized
PROMADVRT	Level of emphasis on promotion and marketing	1=not at all emphasized;5=emphasized
MARKRES	Level of emphasis on market research	1=not at all emphasized;5=emphasized
GEOGMARK	Level of emphasis on serving special geographic markets	1=not at all emphasized;5=emphasized
CUSTSERV	Level of emphasis on customer service (including after sales support)	1=not at all emphasized;5=emphasized
CUSPROD	Level of emphasis on designing and producing for individual customers	1=not at all emphasized;5=emphasized
INNOVMARK	Level of emphasis on innovative marketing techniques	1=not at all emphasized;5=emphasized
LOWINV	Level of emphasis on maintaining low inventory	1=not at all emphasized;5=emphasized
CNTRLDIST	Level of emphasis on controlling channels of distribution	1=not at all emphasized;5=emphasized
QUICKDEL	Level of emphasis on quick delivery/immediate response to customer orders	1=not at all emphasized;5=emphasized
FTES	Number of Full Time Employees (FTEs)	Na
GROSSREVS	Level of gross revenues	Na
BACKLOGDAYS	Number of backlog days	Na
YEARSINBUSIN	Number of years in business	Na
ESS		
<b>Categorical Variables</b>		
INDUSTRYASSOCIATION	Whether or not a firm belongs to an Industry Association	na

## 4.0 RESULTS

### 4.1 RESPONSE RATES

The survey was mailed out to all 4,700 addresses on October 2, 2004. A total of 656 of these were either not secondary wood manufacturers, closed facilities, or wrong addresses, resulting in a survey population of 4,044 firms. As of January 11, 2005, 15% (618) surveys were returned. For industrial surveys, an overall response rate of 15% is considered acceptable (Kanuk and Berenson 1975). Figure 1 shows the response rate (%) by region. Figure 2 shows the relative response rate (the percentage of surveys returned as compared to the proportion originally sent to each region). For example, 35% of the total number of surveys mailed, were mailed to Quebec, however, only 4.5% of these were returned. Quebec<sup>10</sup> was the lowest with 4.5% and BC was the highest with 24% (Figure 2).

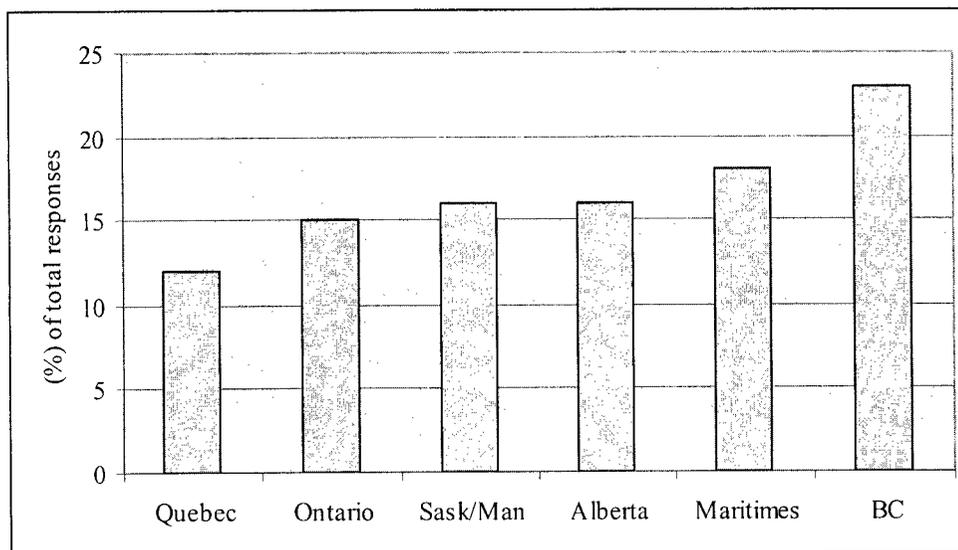


Figure 1. Response rate (%) by region.

<sup>10</sup> The response rate from Quebec was low because the survey was sent out in English only. Several respondents sent the survey back indicating they would not answer the survey if it was not in French.

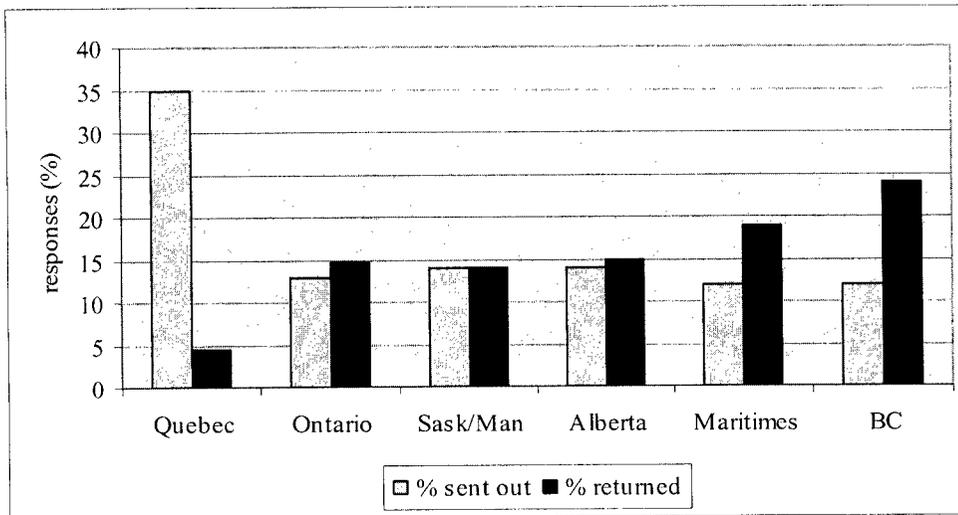


Figure 2. Percent of responses compared to percent surveys originally sent out by region.

The cabinet segment represented the highest proportion of respondents, while the remanufacturing and musical instrument segments had the lowest. When smaller firms (3 FTEs or less) were removed, the relative proportions of respondents by segment remained similar, with the exception of musical instrument and crafts, which decreased (Figure 3). In some cases, such as the pallet segment, the relative proportion went up when just the greater than 3 FTEs were shown, because this segment had no small firms.

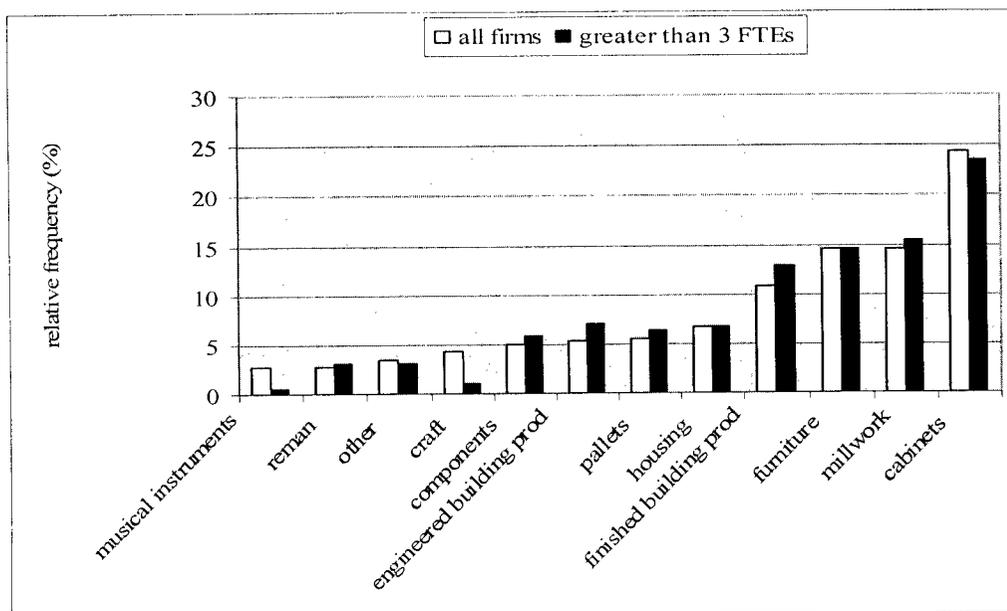


Figure 3. Relative frequencies of respondents by segment (all firms and firms with greater than 3 FTEs) (“Other” segment consists of boat builders, casket makers, and sign makers).

#### 4.2 NON-RESPONSE BIAS

Non-response error is the result of individuals who respond to a survey being different from sampled individuals who did not respond, in a way relevant to the study (Dillman 2000). In order to test for non-response bias, an accepted practice is to divide the respondents into two groups based on the date the completed surveys are received (Kanuk and Berenson 1975). The data set was divided into early respondents (surveys received before Nov. 22, 2004) and late respondents (received Nov. 22 and later). November 22 represents the split between respondents who responded to the first and second mailout as opposed to the final mailout. The non-parametric Mann-Whitney test was used for testing differences between early responders and late respondents as all 3 variables used were not normally distributed. The mean number of employees, years in business and gross revenues were used to compare the early and late respondents. These variables were used as they represent meaningful ways in which respondents and non-respondents might differ. No significant differences at an alpha level of 0.05 were found (Table 3).

Table 2. Variables tested for non-response bias.

	Early Respondents	Late Respondents
Average gross revenues (class)	2.83 (n=223)	2.72 (n=367)
Average # of employees	46.0 (n=225)	63.6 (n=371)
Average # of years in business	23.25 (n=223)	22.89 (n=361)

Histograms of segment and regional profiles also showed similar proportions of the early and late respondents (graphs not presented). As no significant differences were detected between the two groups, there is no evidence of non-response bias and, therefore, statistical inferences onto the population of Canadian<sup>11</sup> secondary wood manufacturers can be made with this data set.

<sup>11</sup> With the exception of Quebec, as the proportion of surveys returned was low (4.5%).

### 4.3 RESPONDENT PROFILE

A total of 30% (185) of the respondents reported revenues of less than \$500,000 and 65% (400) of the respondents were firms of 25 employees (Class 1 and 2) or less (Figures 4 and 5).

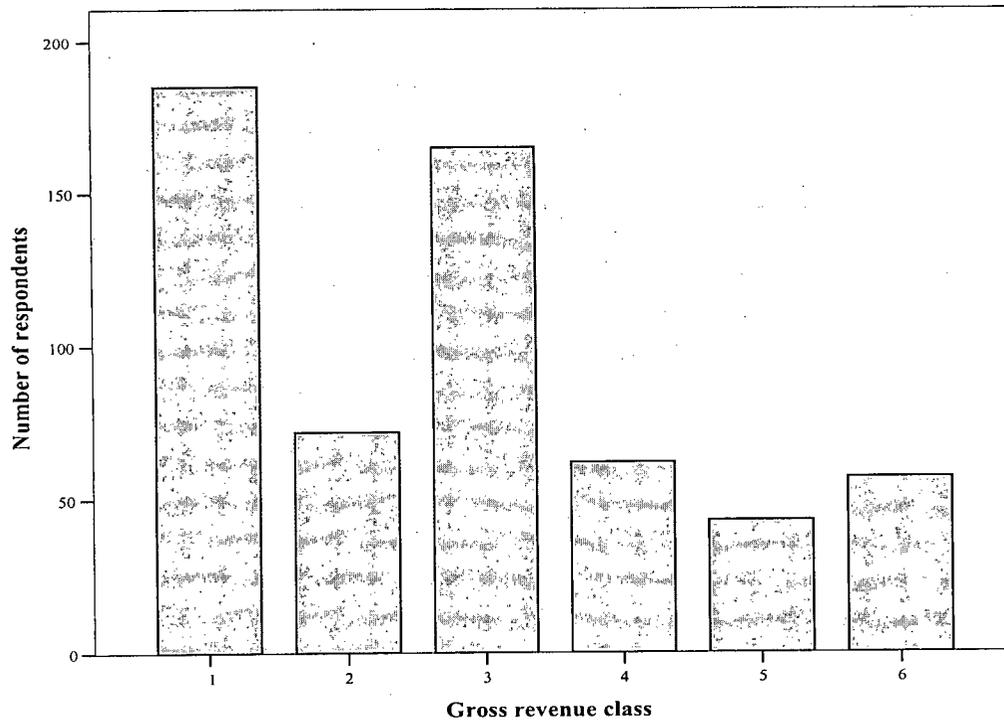


Figure 4. Number of respondents by gross revenue class. (Class 1= $\leq$ \$500,000; Class 2=\$500,000-\$1million; Class 3=\$1million-\$5million; Class 4=\$5million-\$10million; Class 5=\$10million-\$20million; Class 6= $\geq$ \$20million)

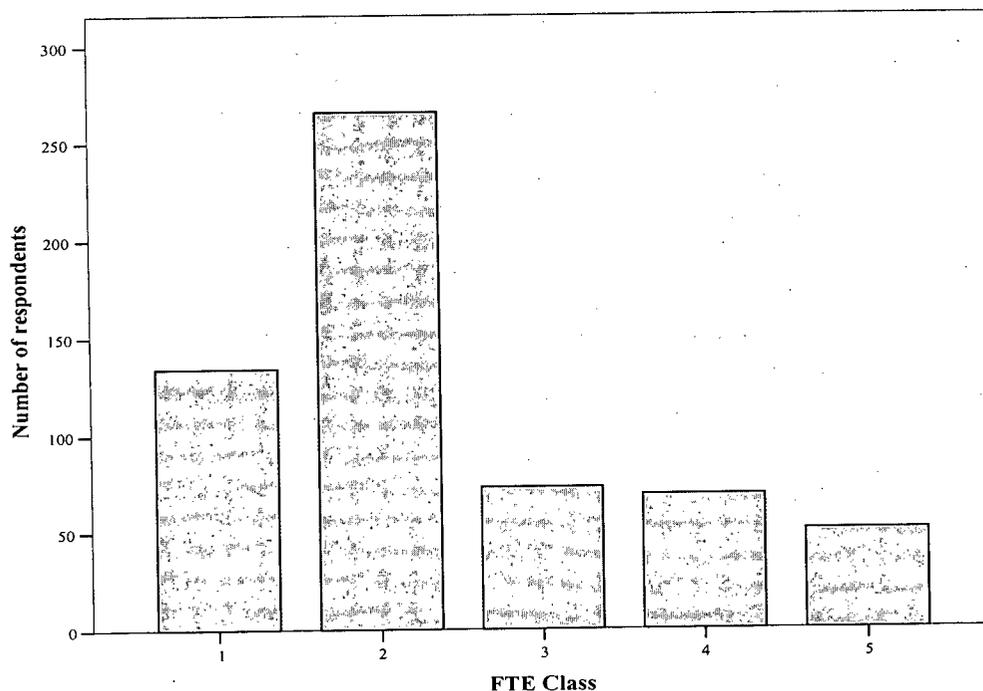


Figure 5. Number of respondents by Full Time Employees (FTE) class. (Class 1= 1-3, Class 2=4-25, Class 3=26-50, Class 4=51-100, Class 5=>100)

In terms of numbers of employees and gross revenues, respondents in the musical instrument and craft segments were significantly smaller than respondents in the other segments (Figure 6). Finished building products (FBP) and furniture were the largest in terms of employees, whereas engineered building products (EBP) and finished building products (FBP) were the largest in terms of gross revenues generated.

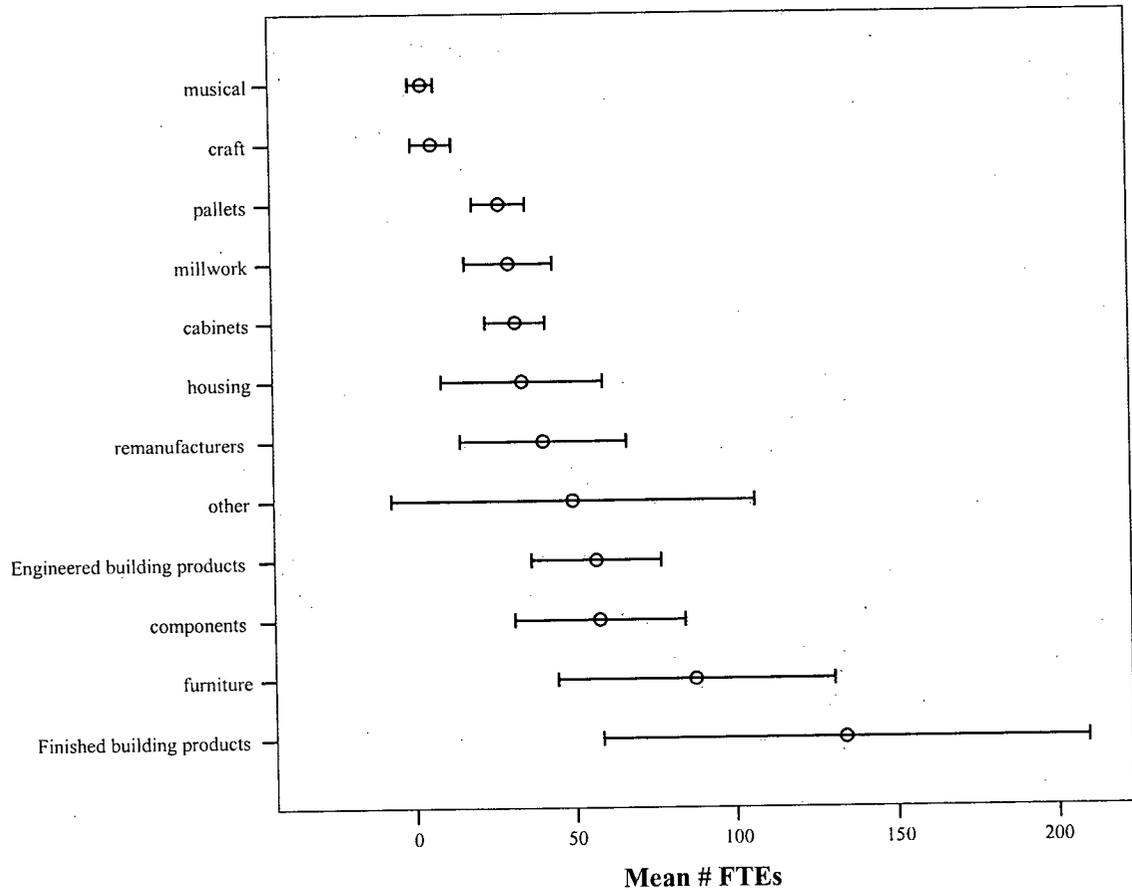


Figure 6. Mean number of FTEs by segment (error bars=95% CI).

In terms of age, firms located in Ontario are significantly older than firms located in the rest of Canada (Figure 7). The musical instrument segment was the youngest with an average of 13.7 years and the pallet segment was the oldest, with an average of 27.8 years in business.

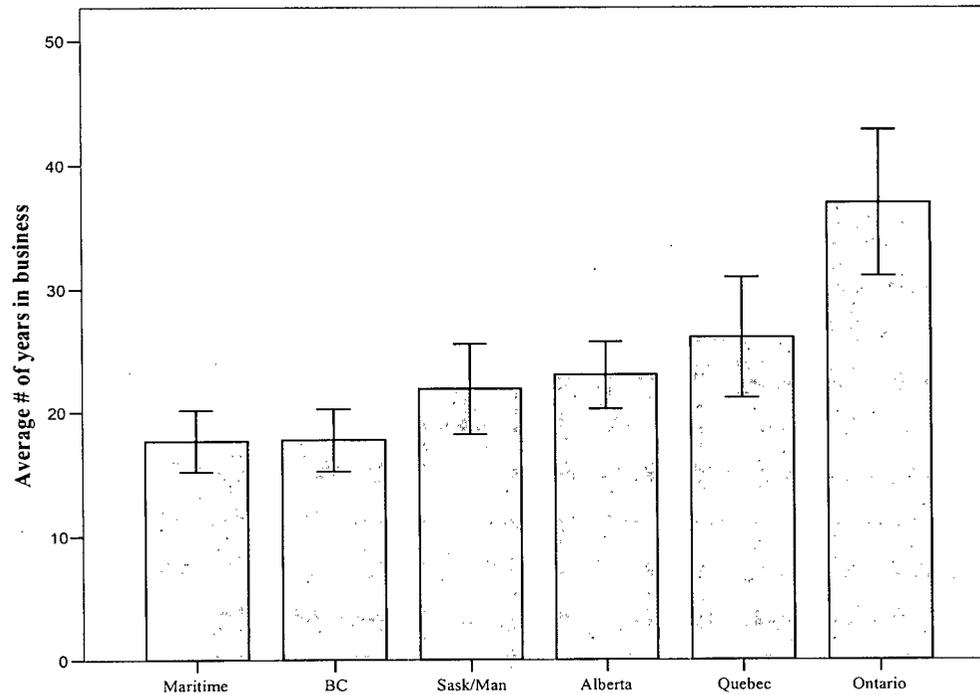


Figure 7. Average number of years in business by region (error bars=95% CI)

The majority of companies (85%) indicated that they have made significant investments in the last five years. The main investments have been in upgrading equipment, tools, and machinery. Most firms (72%) are also planning to make significant investments within the next five years. Their future investments tend to be upgrades to equipment and machinery, although some firms indicated that they will invest more in research and development, software, and human resources.

The majority of respondents (60%) are members of at least one industry association.

#### 4.3.1 Markets

Over 90% of respondents indicated that they sell their products locally (Figure 8), with the exception of musical instrument manufacturers, where the US market is larger than the local or other Canada market. Almost 50% of respondents sold 90% of their products (by % of gross revenues) locally. The US market is the second most common market for housing, engineered building products, finished building products, furniture, and

remanufactures. European and Asian markets are comparatively small, but significant, with the European markets consisting mainly of the UK and the western continent and the Asian market consisting mainly of Japan and Korea. The majority of companies that sell to Asia are located in BC.

When small firms (3 or less FTEs) are removed, the local market is still the most important, with over 90% of firms indicating as much. However, the other Canada and US markets become slightly more important with proportionally more firms (Figure 8).

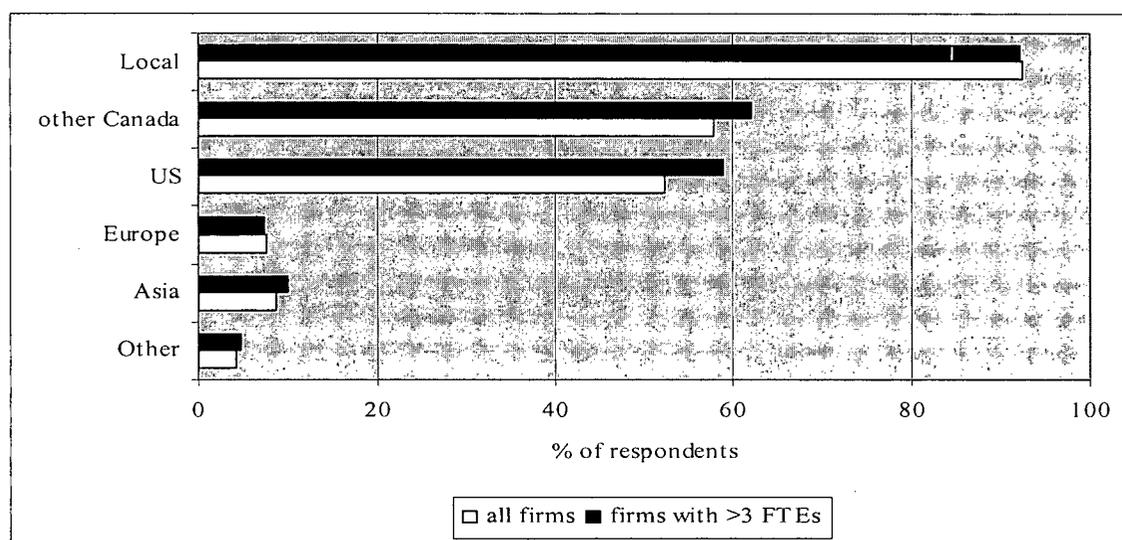


Figure 8. Location of markets for all firms and firms >3 FTEs.

#### 4.3.2 Suppliers

The majority of respondents obtain their wood supplies locally. However, the musical instrument segment had the widest variety of suppliers including the US, Europe, Asia, and South America. The location of suppliers changes slightly when the smaller firms are removed, with fewer local suppliers and more from other parts of Canada and the US. (Figure 9).

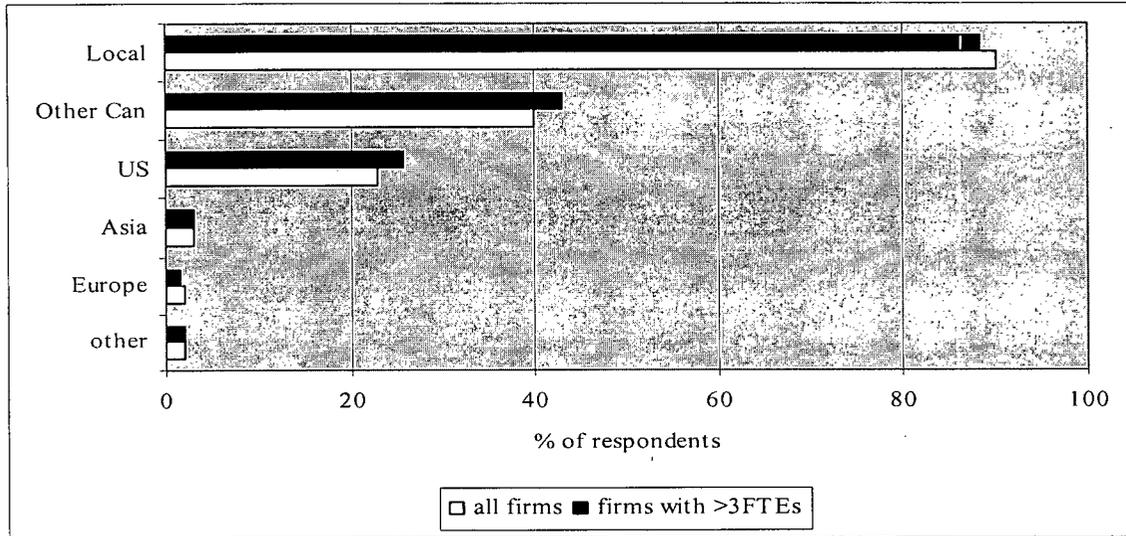


Figure 9. Location of suppliers for all firms and firms > 3 FTEs.

Most respondents believe that their main competitors are local. However, the furniture and the component segments believe China to be a significant competitor. The musical instrument segment is the only segment that believes that their main competition is in the US as opposed to being more local. Of the larger firms, the furniture and FBP segments believe that the US is a significant competitor (Figure 10).

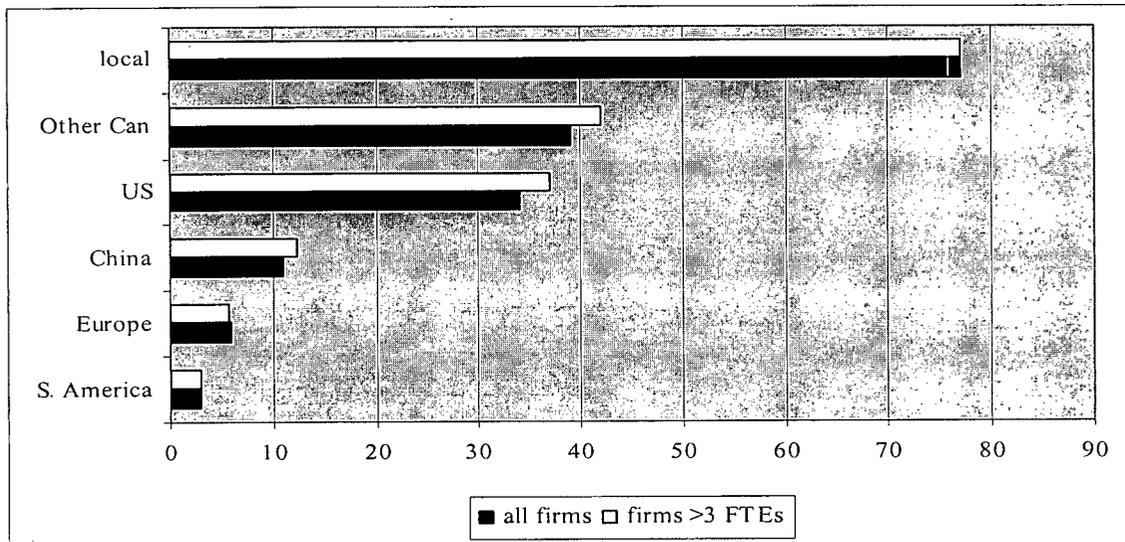


Figure 10. Location of competitors of all firms and firms >3 FTEs.

The musical instrument segment had significantly ( $\alpha=0.05$ ) longer lead times for orders (average of 213 days), while, the pallet segment reported the shortest lead times of

11 days, on average (Table 4). The variation in lead times within a segment is very large as indicated by the large standard deviations (Table 4).

Table 3. Mean lead times by segment.

Segment	Mean lead time (days)	Standard deviation
Pallets	11.37	8.81
Components	19.4	17.14
EBP	23.2	14.1
FBP	27.48	23.9
Remanufactures	29.13	33.35
Crafts	39.91	51.29
Furniture	46.61	50.26
Cabinets	51.53	51.16
Millwork	57.96	103.87
Other	61.08	95.97
Housing	96.06	92.00
Musical instruments	213.29	258.5

#### 4.4 FACTORS LIMITING THE GROWTH OF FIRMS

Overall, respondents rated taxation policy followed by increased competition as the most significant factors limiting their growth (Figure 11). However, the level of significance<sup>12</sup> was not statistically different than neutral (3). All other factors had a mean of less than 3, indicating that these factors are not all that significant in limiting the growth of firms.

Raw material supply, energy costs, warehouse space, and forest policy were significantly less important than neutral. Respondents were also asked if there were other factors that limited their ability to grow as a company. A total of 21% of the respondents indicated other factors, and 97% of those indicated that the shortage of skilled labour was extremely significant (4.6) in limiting their ability to grow as a company.

<sup>12</sup> This refers to the significance of various factors in limiting a firm's ability to grow, rather than statistical significance.

When the factors were looked at by segment, with the exception of the musical instrument sector, raw material supply and forest policy were generally more significant for lesser value-added segments, such as pallets, housing, and remanufacturing segments (Figures 12 and 13).

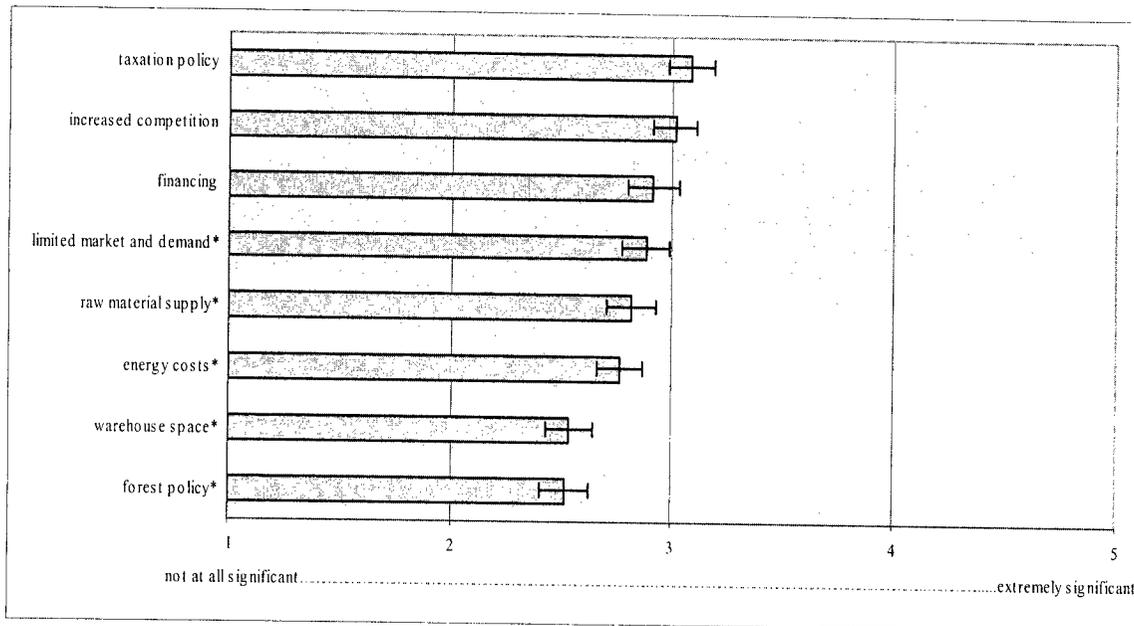


Figure 11. Factors limiting the growth of firms (error bars=95% CI). \* Significantly different from a neutral point of 3 ( $\alpha = 0.05$ )

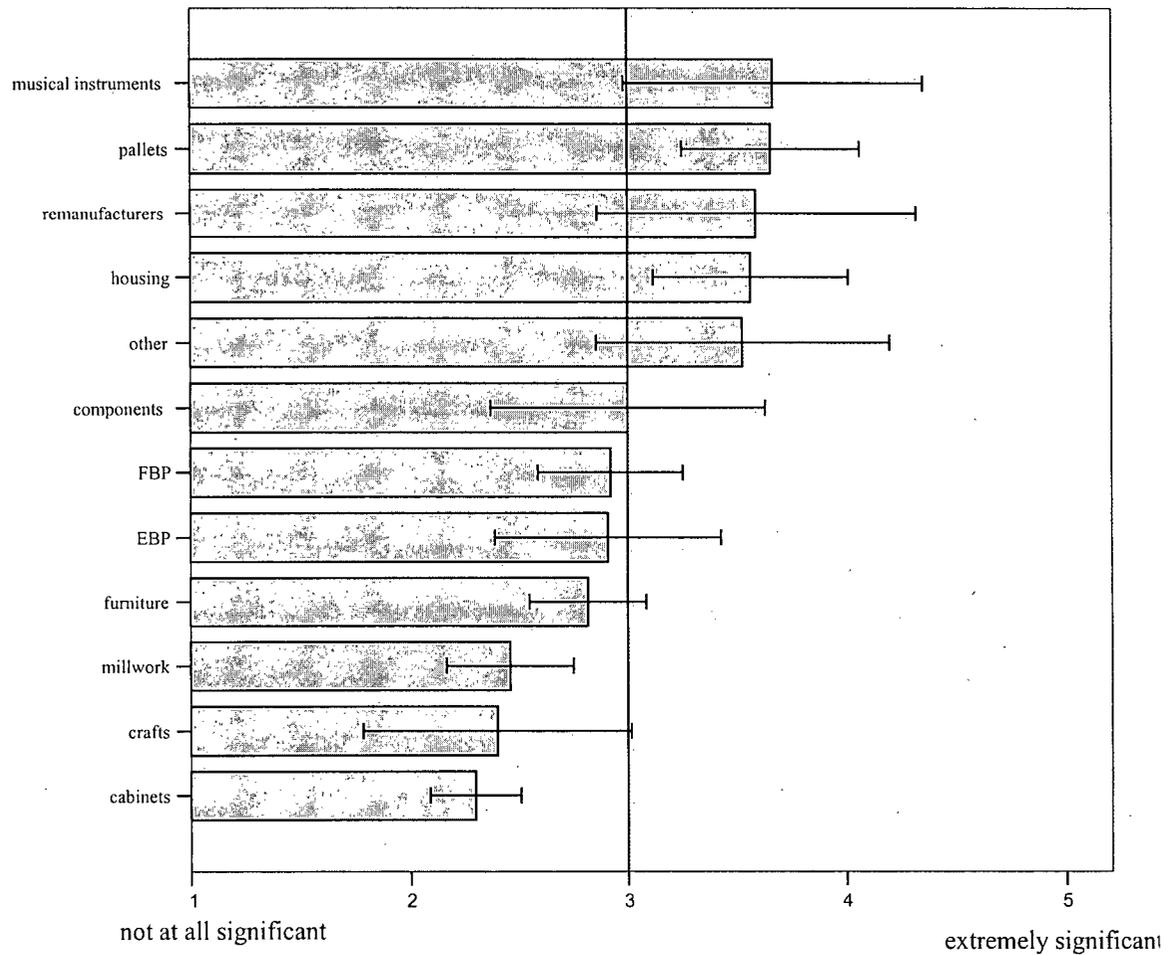


Figure 12. Significance of raw material supply in limiting company growth by segment (error bars=95%CI).

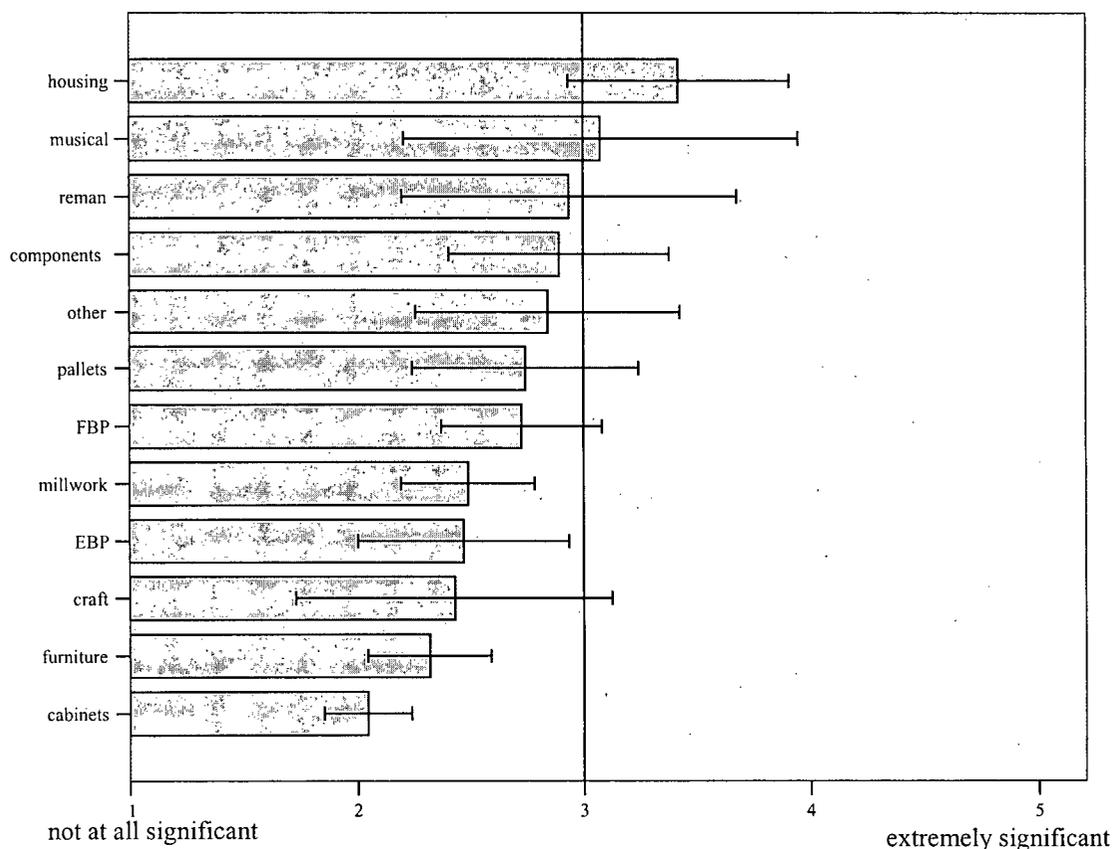


Figure 13. Significance of forest policy in limiting company growth by segment (error bars=95% CI).

Respondents with higher gross revenues tended to be more concerned that increased competition was limiting their ability to grow. The lowest gross revenue generators (class 1) were significantly less concerned about increased competition than the larger revenue generators (classes 4,5,6) (Figure 14). The lower gross revenue generators tended to think that financing was more of a limiting factor in their ability to grow as a company (Figure 15).

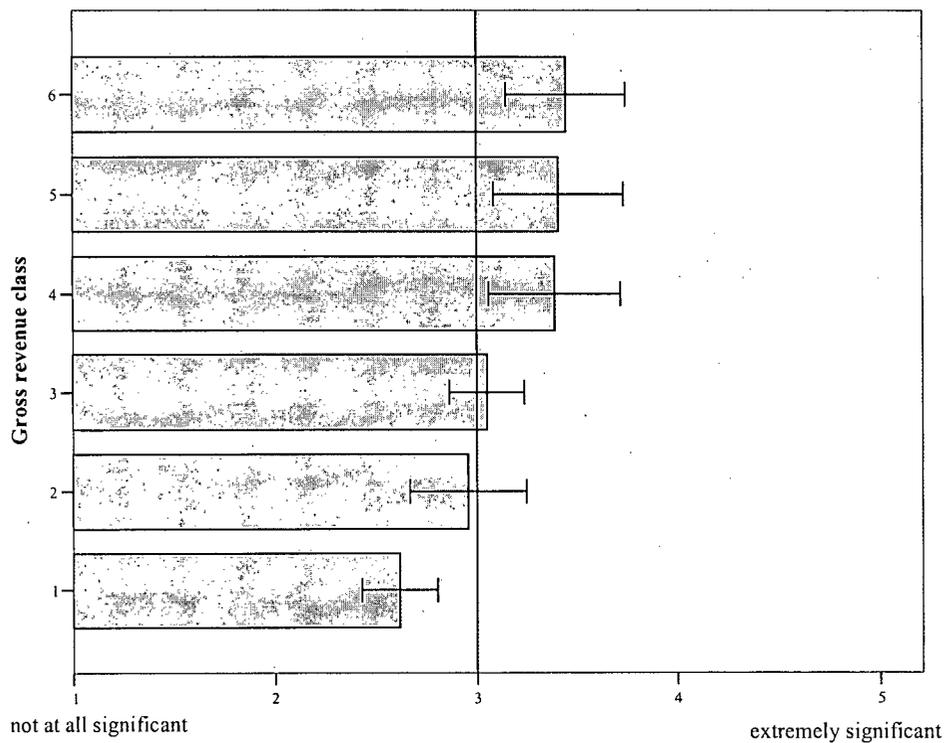


Figure 14. Significance of increasing competition by gross revenue class. (error bars=95%CI).

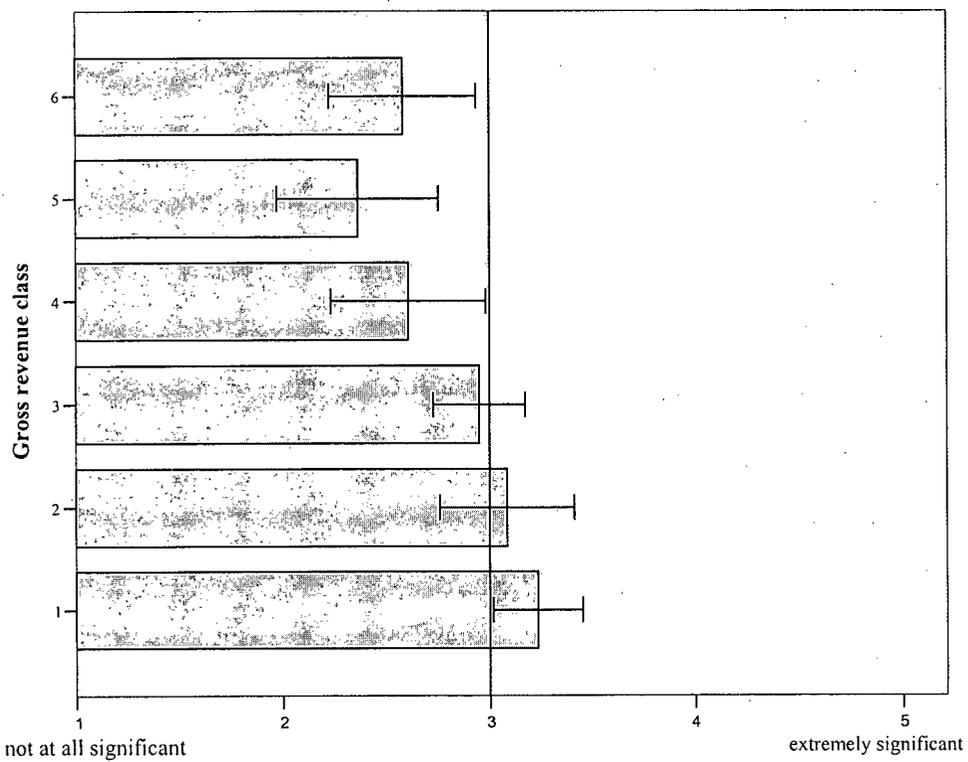


Figure 15. Significance of financing in limiting companies to grow by gross revenue class (error bars=95%CI).

#### 4.5 BUSINESS STRATEGIES

Respondents were asked about their level of agreement on several business strategies, such as strategic partnerships and geographic location. Respondents, regardless of segment, were in strong agreement that they had all of the business strategies listed. They also believe that they have strong and effective leadership and have long term strategies in place. Having strategic partnerships with customers was the most agreed on factor and being close to competition was the least agreed on. Respondents also felt that they are more a part of the manufacturing industry as opposed to the forest industry. All were significantly ( $\alpha=0.05$ ) different than a neutral value of three (Figure 16). With the exception of the craft and musical instrument segments, the segments were at similar levels of agreement that they are part of the manufacturing industry. Partnerships with customers were slightly more important for the component and millwork segments and least important for the remanufacture and musical instrument segments.

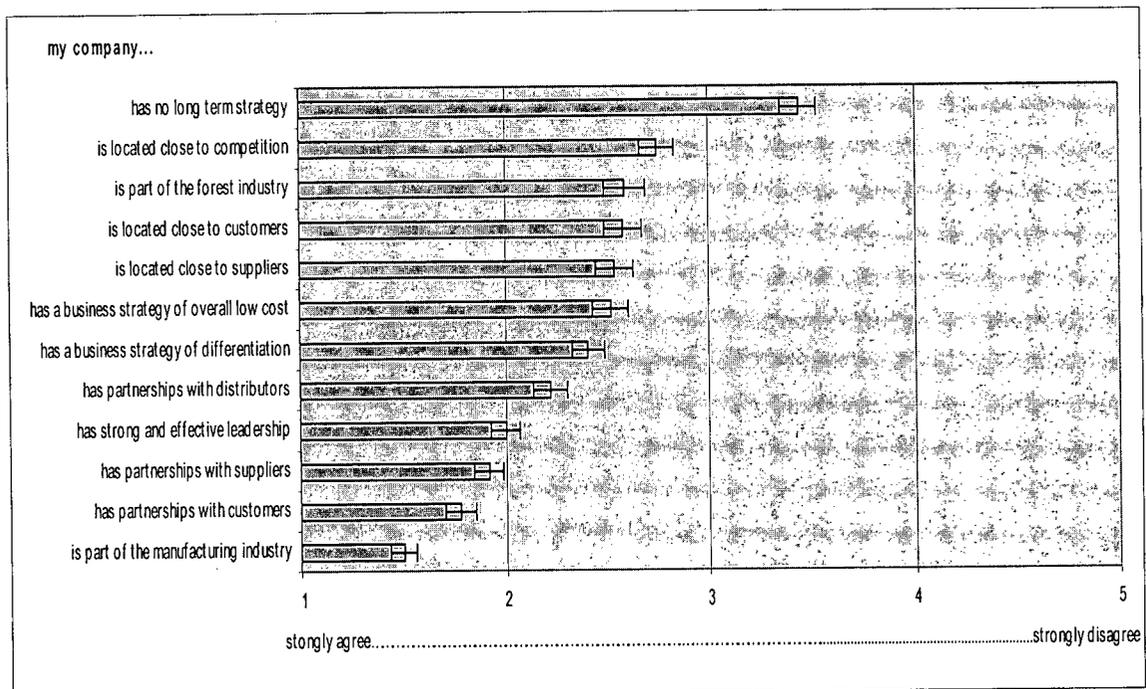


Figure 16. Respondents level of agreement with business strategies.

Respondents in the remanufacturing and housing segments believed that they are part of the forest industry to a greater degree than other segments (Figure 17). However, respondents agree that they are more a part of the manufacturing industry, on average. Although significantly different than neutral (3), the musical instrument and craft segments are not in as strong agreement that they are part of the manufacturing industry as other segments (Figure 18).

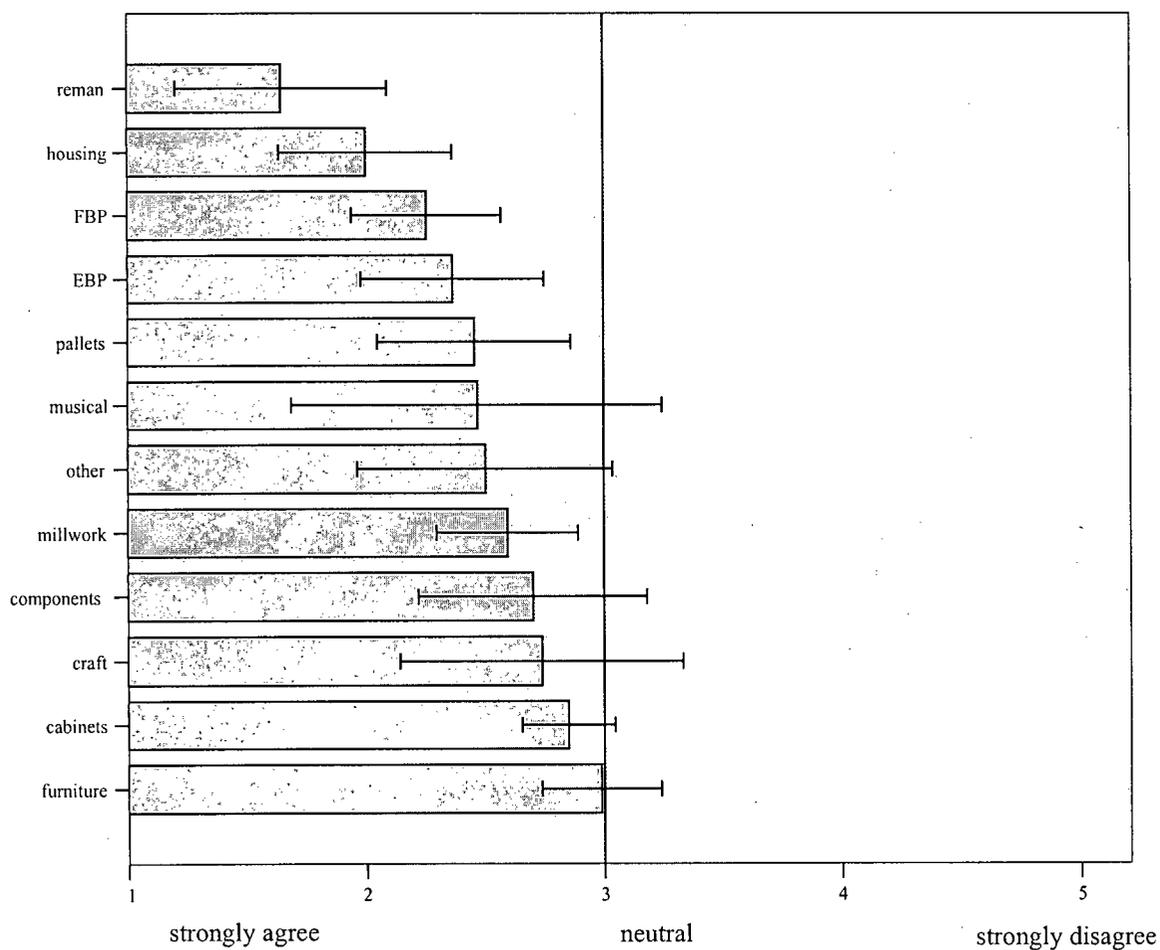


Figure 17. Respondents (by segment) agreement as to whether they are part of the forest industry (error bars=95% CI).

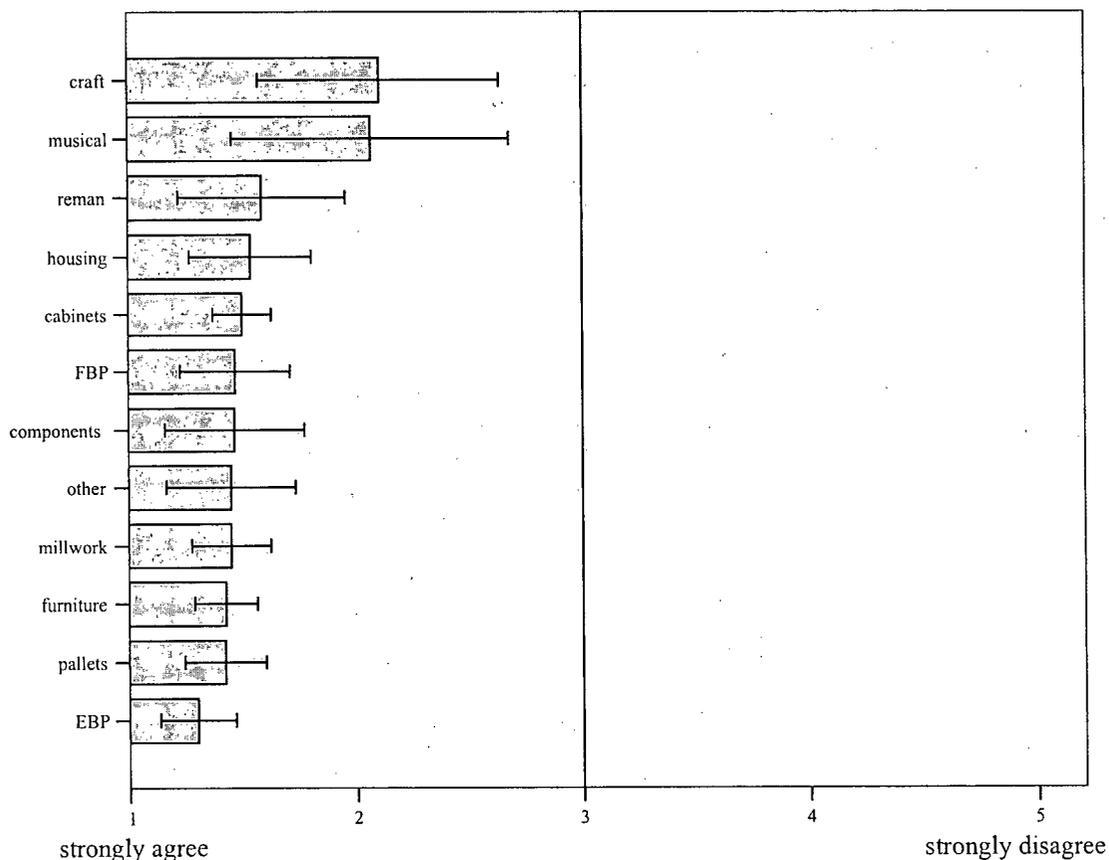


Figure 18. Respondents (by segment) agreement as to whether they are part of the manufacturing industry (error bars=95% CI).

#### 4.6 EMERGENT BUSINESS TERMINOLOGIES

Respondents were asked about their level of familiarity with the emergent business terms; e-commerce, industry clusters, supply chain management, supply chain mapping, and Vendor Managed Inventories (VMI). On the whole, respondents are not very familiar with these business terms (Figure 19). However, as firms get larger in terms of gross revenues, they tend to be significantly more knowledgeable about these business concepts (Table 5). The craft and musical instrument segments tended to be the least familiar with the terms. However, the musical instruments segment was more familiar with e-commerce than all other segments.

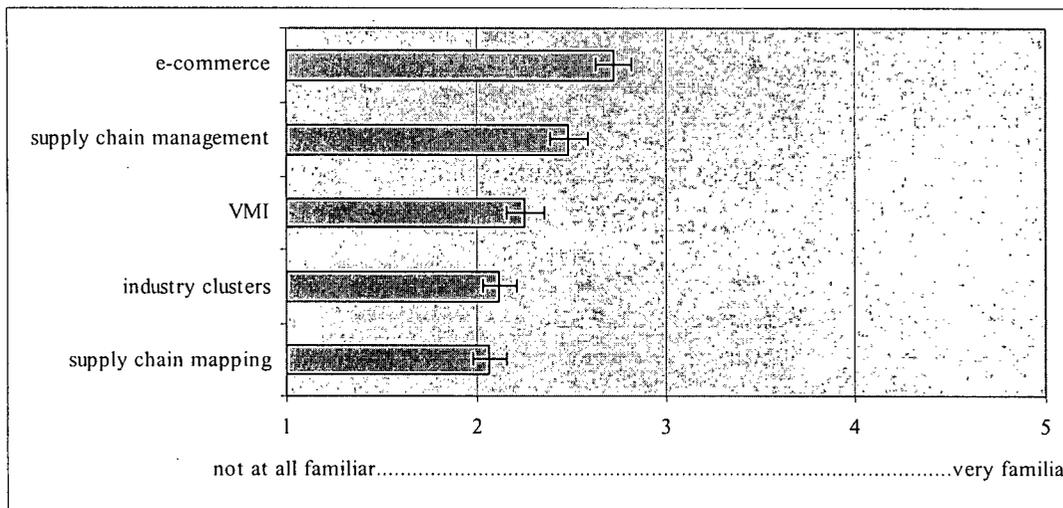


Figure 19. Respondents familiarity with emergent business terms (error bars=95% CI).

Table 4. Level of familiarity with business terminology by gross revenue class.

Gross Revenue Class	E-commerce	Industry clusters	Supply chain management	Supply chain mapping	Vendor Managed Inventories (VMI)
1 <\$500,000	2.47 <sup>a</sup>	1.73 <sup>a</sup>	1.94 <sup>a</sup>	1.63 <sup>a</sup>	1.61 <sup>a</sup>
2 \$500,000-1million	2.46 <sup>a</sup>	1.94 <sup>ab</sup>	2.08 <sup>ab</sup>	1.82 <sup>ab</sup>	1.99 <sup>b</sup>
3 \$1-5million	2.68 <sup>a</sup>	2.11 <sup>ab</sup>	2.43 <sup>bc</sup>	2.01 <sup>bc</sup>	2.4 <sup>b</sup>
4 \$5-10million	2.97 <sup>a</sup>	2.22 <sup>ab</sup>	3.0 <sup>c</sup>	2.38 <sup>bc</sup>	2.52 <sup>b</sup>
5 \$10-20million	3.12 <sup>ab</sup>	2.53 <sup>bc</sup>	2.91 <sup>c</sup>	2.51 <sup>cd</sup>	2.63 <sup>b</sup>
6 >\$20million	3.35 <sup>b</sup>	2.96 <sup>c</sup>	3.81 <sup>d</sup>	3.07 <sup>d</sup>	3.54 <sup>c</sup>

<sup>a,b,c,d</sup> denotes significant differences at alpha=.05 level using Scheffe's test between gross revenue classes. For example, gross revenue class 1 to 4 are significantly less familiar with e-commerce than respondent with gross revenue class 6, whereas gross revenue class 5 is statistically similar to classes 1 to 4 and 6.

#### 4.7 FUTURE OUTLOOK

Respondents were asked how they expected their capacity, revenues, employment levels, market size, and profitability to change in the coming years. The majority of respondents, regardless of segment, were the most optimistic about revenues increasing and the least optimistic about employment increasing. The housing sector, in particular, was optimistic that profitability would increase (Figure 20).



Figure 20. Expected average change in revenues, employment levels, market size, and profitability by segment (0=no change, +1=increase)

#### 4.8 CLUSTER ANALYSIS

K-means cluster analysis was used to group firms by how much emphasis they placed on success factors. K-means cluster analysis is a useful technique when there is an *a priori* idea about how many groups may make sense. For this analysis, three clusters were used; HIGH, MEDUIM, and LOW emphasis on success factors. The success factors or variables used in the analysis are listed in Question 12 of the survey (Appendix 1). Ten iterations were required to minimize variability within clusters and maximize variability between clusters.

Cluster 1 had higher emphasis on innovation, market orientation and supply chain strategies, Cluster 2 had moderate emphasis on these strategies, and Cluster 3 had a low emphasis. Cost strategies were more equally emphasized across all 3 clusters. Three groups, HIGH, MEDIUM and LOW emphasis of the success factors, were used in the presentation of these results (Tables 6,7,8,9 and Figure 19, 20, 21). Smaller companies, in terms of revenue class and number of employees, tend to have higher proportion in the low emphasis cluster (Tables 6 and 7). The Maritimes and Saskatchewan/Manitoba have

the highest proportion in the LOW emphasis cluster and BC has the highest proportion in the HIGH emphasis cluster (Table 8). Higher value-added segments such as furniture and FBP tended to have a higher proportion of firms in the HIGH emphasis cluster (Table 9).

Table 5. Proportion of cluster membership by revenue class.

Revenue Class	HIGH emphasis	MEDIUM emphasis	LOW emphasis
	Cluster 1 n=197	Cluster 2 n=230	Cluster 3 n=76
	------(%)-----		
1. <500,000	26	26	42
2. 500,000- 1million	7	14	21
3. >1 -5 million	29	35	17
4. >5-10 million	11	10	14
5. >10-20 million	8	9	3
6. >20 million	19	6	3

Table 6. Proportion of cluster membership by FTE class.

FTE Class	HIGH emphasis	MEDIUM emphasis	LOW emphasis
	Cluster 1 n=204	Cluster 2 n=231	Cluster 3 n=77
	------(%)-----		
1. 1-3	17	18	29
2. 4-25	38	51	53
3. 26-50	14	13	9
4 51-100	16	13	4
5. >100	15	5	5

Table 7. Proportion of cluster membership by Region.

Region	HIGH emphasis	MEDIUM emphasis	LOW emphasis
	Cluster 1 n=208	Cluster 2 n=239	Cluster 3 n=80
	------(%)-----		
BC	26	27	9
Alberta	12	20	20
Sask/Man	14	15	25
Ontario	15	16	13
Quebec	16	7	11
Maritimes	17	15	23

Table 8. Proportion of cluster membership by segment.

Segment	HIGH emphasis	MEDIUM emphasis	LOW emphasis
	Cluster 1 n=208	Cluster 2 n=239	Cluster 3 n=80
	------(%)-----		
Cabinets	16	31	29
Components	6	4	5
Crafts	3	3	4
EBP	5	5	10
FBP	15	9	5
Furniture	20	11	15
Housing	7	9	1
Millwork	14	14	13
Musical instruments	3	2	2
Pallets	4	5	11
remanufactures	3	4	3
Other	4	3	2

All three clusters have a high emphasis on cost strategies and are all significantly greater than the neutral value of 3 ( $\alpha = 0.05$ ). The MEDIUM and HIGH emphasis clusters are also significantly higher than the LOW emphasis cluster in terms of efficient operations and competitive pricing (Figure 21).

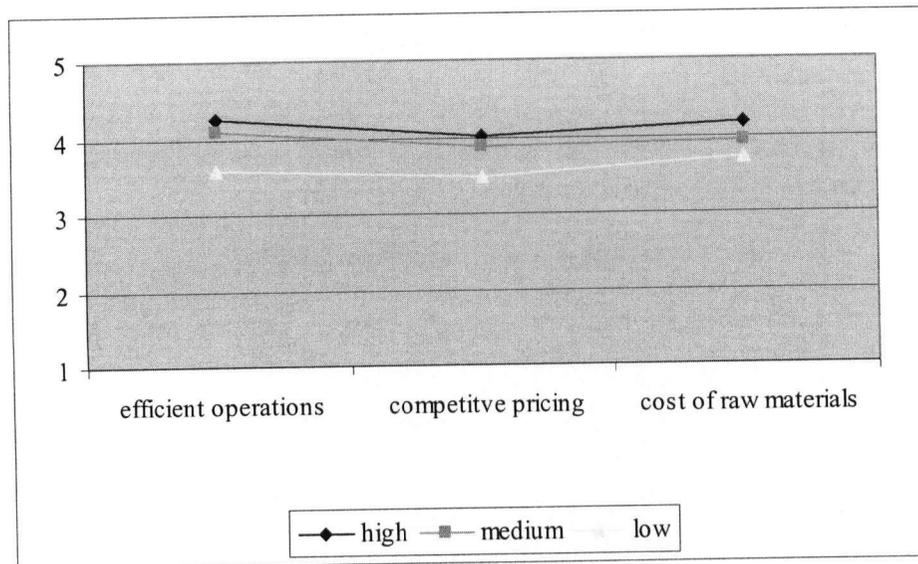


Figure 21. Emphasis of cost strategies by HIGH, MEDIUM, LOW clusters (1= not at all emphasized; 5=emphasized to a great degree).

Of the innovation strategies, the emphasis on research and development is the lowest and specialty products is the highest for all clusters (Figure 22).

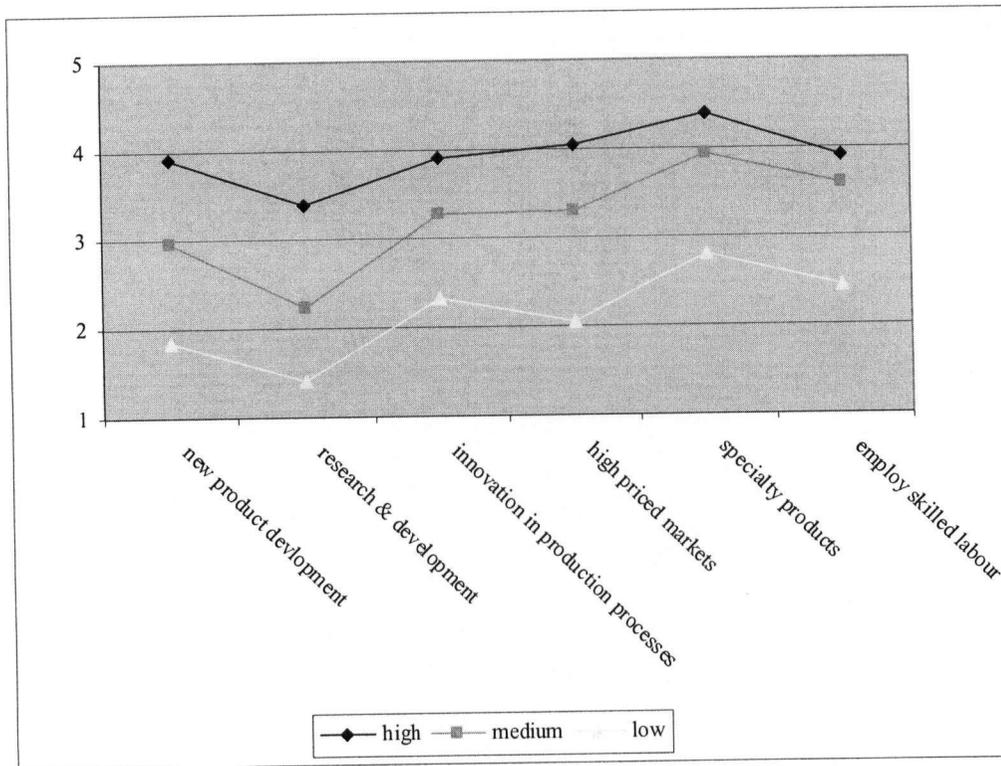


Figure 22. Emphasis on innovation strategies by HIGH, MEDIUM, and LOW cluster (1= not at all emphasized; 5=emphasized to a great degree).

Of the market orientation strategies, all three clusters put the lowest emphasis on market research. However, emphasis on customer service and designing to customer orders had a relatively high emphasis and was significantly higher than the neutral value of 3 (alpha= 0.05) for all three clusters (Figure 23).

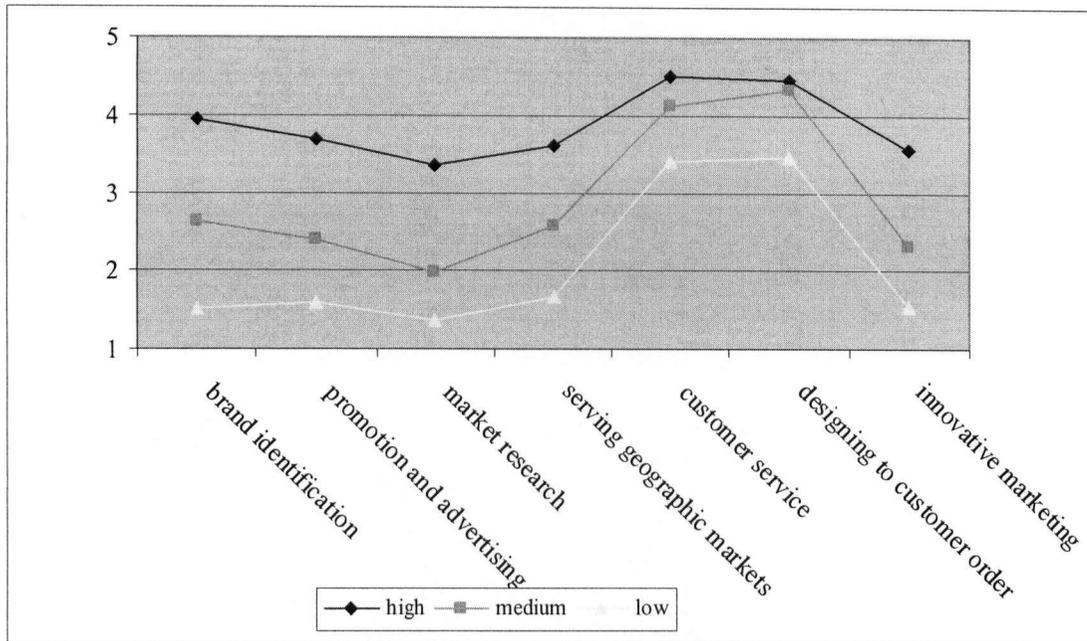


Figure 23. Emphasis on market orientation strategies by HIGH, MEDIUM, and LOW clusters. (1= not at all emphasized; 5=emphasized to a great degree).

All three clusters put a significantly higher emphasis than the neutral value of 3 ( $\alpha = 0.05$ ) on quick delivery (Figure 24).

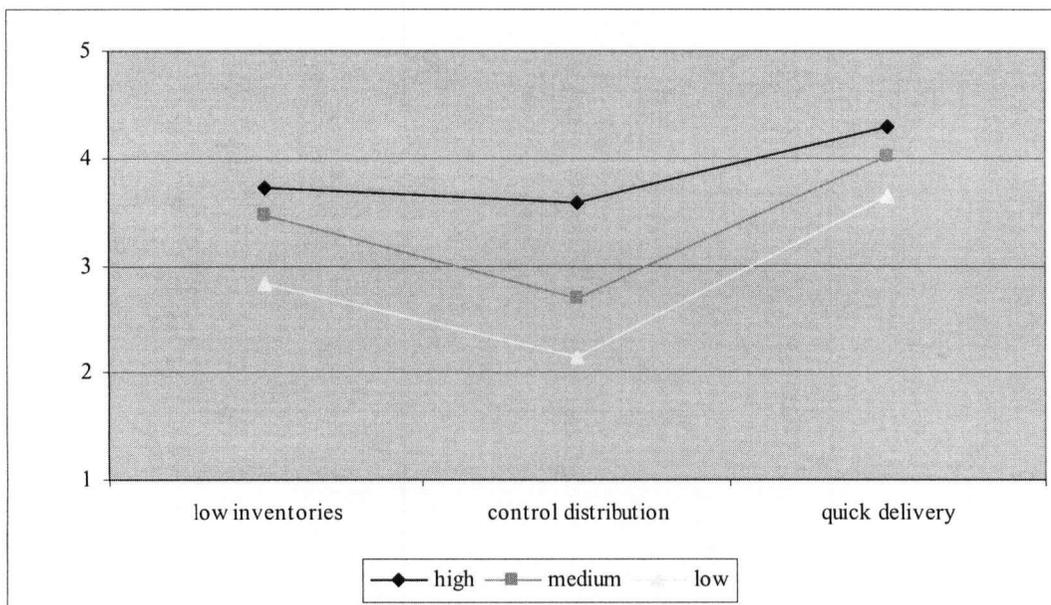


Figure 24. Emphasis on supply chain strategies by HIGH, MEDIUM, and LOW clusters (1= not at all emphasized; 5=emphasized to a great degree).

#### 4.9 LOGISTIC REGRESSION

The goal of logistic regression is to correctly predict the categorical outcomes for individual cases (Tabachnick and Fidell 2001). The first step is to determine if a relationship exists between the outcome (dependent variable) and a set of predictor variables (independent variables). The next step is to simplify the model by eliminating some of the predictor variables, while maintaining strong prediction (Tabachnick and Fidell 2001). In this case, the dependent variable or outcome of interest is whether a firm is profitable or not. All of the variables from the questionnaire that may help predict profitability were used as the independent variables (listed in Table 2).

Backward stepwise methods were used to find the best model using 49 variables (48 continuous and 1 categorical) (Table 2). Table 10 presents the results of a -2Log-likelihood goodness-of-fit test and the Nagelkerke  $R^2$  which is similar to  $R^2$  in simple regression (the amount of variation in the dependent variable that is explained by the predicting variables). For the final model, Nagelkerke  $R^2 = 0.455$ , which is an acceptable value in logistic regression (Tabachnick and Fidell 2001).

Table 9. Results of a -2Log-likelihood goodness of fit test.

Step	-2 Log likelihood	Nagelkerke R Square
44	357.488	0.455

Table 11 shows the Chi-squared significance test for the last step of the backward logistic regression. The difference between the -2Log-Likelihood statistic of the model in the last step and the previous step is -2.132 and is not significant ( $p=0.144$ ). The backward logistic regression procedure was able to remove a total of 43 variables with the model remaining significant ( $p=.000$ ).

Table 10. Chi-square tests for the first and last step.

	Step			Model		
	Chi-square	Df	Sig.	Chi-square	Df	Sig.
Step 44	-2.132	1	.144	154.055	6	.000

The classification table (Table 12) shows that 78.6% of the cases were predicted correctly with the final model after step 44.

Table 11. Classification table of no terms in the model and the final model.

	Observed		Predicted		Percentage correct
			Profitability		
			No	Yes	
Step 44	Profitability	No	14	71	16.5
		Yes	8	276	97.2
Overall percentage					<b>78.6</b>

Table 13 presents the last step (step 44) in the backward logistic regression for predicting whether a firm is profitable or not with all firms included.

Table 12. Variables in the equation for predicting whether a firm is profitable or not (includes all firms; step 44).

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95.0% C.I. for EXP(B)	
							Lower	Upper
FIN	.258	.097	7.106	1	.008	1.294	1.071	1.563
COMPPRC	.220	.118	3.489	1	.062	1.247	.989	1.571
NP	.319	.105	9.202	1	.002	1.376	1.120	1.691
QUICKDEL	-.266	.119	5.042	1	.025	.766	.607	.967
INDUSTRYASSOCIATION	.973	.297	12.148	1	.000	2.646	1.531	4.573
YEARSINBUSINESS	-.014	.006	5.494	1	.019	.986	.975	.998

Six variables significantly predicted whether a firm was profitable or not. The variables were FIN, COMPPRC, NP, QUICKDEL, INDUSTRYASSOCIATION, and YEARSINBUSINESS (refer to Table 2 for full variable descriptions).

INDUSTRYASSOCIATION (whether a firm is a member of an industry association or

not) had the highest Exp(B) or odds (2.646). Odds of greater than 1 indicate that as the value of the predictor goes up, the odds of the predicted event occurring increases. In other words, if a firm is a member of an industry association it is almost three times as likely to be profitable. The millwork segment had the highest proportion (77%) of respondents who are members of an industrial association and the craft segment had the lowest (37%), followed by the furniture segment (45%).

FIN (the significance of financing in limiting a firm to grow), COMPPRC (an emphasis on competitive pricing) and NP (an emphasis on developing new products) also have significant positive effects on profitability. QUICKDEL (an emphasis on quick delivery of customer orders) and YEARSINBUSINESS (number of years a firm has been in business) had significant negative effects on profitability. Variables with an Exp (B) value near one means that the effect is small, as in the case of YEARSINBUSSINESS (Table 10).

When the regression was re-run excluding small firms (1-3 FTEs), the model retained 7 variables (FIN, INCCOMP, PARTCUS, COMPPRC, NP, QUICKDEL, INDUSTRYASSOCIATION) and had a slightly higher Nagelkerke  $R^2$  of 0.491. Being a member of an industry association became even more important in predicting the profitability of a firm, with an Exp(B) of 3.248. YEARSINBUSINESS was replaced by a negative relationship with INCCOMP (how significant increased competition is in limiting firm growth) and a positive relationship with PARTCUS (importance in having strategic partnerships with customers).

## 5.0 DISCUSSION

### 5.1 SECTOR PROFILE

The Canadian secondary manufacturing sector is diverse and has an optimistic outlook on the future. Over 75% of the respondents are planning significant investments in their companies over the next five years. The sector tends to be made up in large part by SMEs, with less than \$1 million in gross revenues and less than 25 full time employees. However, there are also some larger firms. With the exception of small cabinet makers and millwork manufactures, the different segments within the sector are not necessarily distributed evenly across the country. For example, larger and older furniture, FBP and component manufactures tend to be located in Ontario and Quebec, whereas the highest proportion of small custom furniture makers are in BC and the Maritimes. BC also has a high proportion of companies in the housing segment, likely because of the proximity to high quality log supply for timber frames and log homes. The highest proportion of remanufactures are located in Quebec and BC where there is the highest number of large primary sawmills critical for supply partnerships. The highest proportion of pallet and EBP firms are located in the prairie provinces (Alberta, Manitoba and Saskatchewan). These segments may have been established in the prairies, as opposed to other regions, because of tax advantages, cheaper land, and better proximity to markets.

Over 90% of all respondents indicated that they sell their products locally. Local markets are the largest marketplace for the majority of respondents regardless of location and segment. Almost 50% of all respondents sell 90% of their products locally. This suggests that there may be a large opportunity to expand markets. As Porter (1991) points out, success in local markets is excellent training for entry into export markets. Specific market locations would depend on the segment in question and its geographic location. Geographic location is becoming much less of a factor in limiting access to markets, a fact that was reinforced by respondents who believed that being close to competition was the least important business concern.

Suppliers also tend to be local. However, one opposing trend was noted. Higher value-added or more specialized firms (like musical instrument producers) and larger firms seem to be willing to go further a field for raw material supplies. The less resource-based regions such, as the prairie provinces, also had a higher proportion of supplies from other regions in Canada.

The locations of respondents markets tend to match up with the perceived location of their competition. One notable exception is that the furniture and component segments believe China to be a significant threat, and they generally do not sell their products there as yet.

## **5.2 FACTORS LIMITING FIRM GROWTH**

For the sector as a whole, taxation policy and increased competition were ranked as the most significant factors in limiting firm growth, but only moderately so. On the whole, respondents did not tend to feel that their firms' potential for growth is significantly limited by most factors, with one possible exception; a lack of skilled workers. Just over 20% of respondents ranked the lack of skilled workers as extremely significant. This does not come as a surprise since there has also been a history of low commitment to training in Canada (Woodbridge Assoc. 2003a). It is also an opportunity, as Martin and Porter (2000) point out; investment in training and education has some of the highest payoffs of any investment.

There were some slight differences in these results depending on segment and size of firm. Companies involved in segments further down the value chain (i.e. closer to the woods) such as housing, remanufacturers, and pallets, tended to be more concerned about wood supply and forest policy, in general. However, respondents in BC were more concerned about forest policy compared to other regions, regardless of the type of firm. This may be a reflection recent forest policy reforms<sup>13</sup> and the concern over the degree of

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<sup>13</sup> In February of 2004, the BC Ministry of Forests announced a new market based timber pricing system for the BC forest sector. Twenty percent of timber held by major licencees is also being re-allocated to help create opportunities for new entrants to the forest sector including value-added entrepreneurs (BC Ministry of Forest News Release January 2004).

control that a few large companies have over wood supply in BC. Firms higher up the value chain did not tend to view themselves as part of the forest industry per se, had fewer concerns about supplies, and have more suppliers to rely on. Larger firms tend to be more concerned about increasing competition, likely because they are simply larger players in their respective markets and more sensitive to competition. Smaller firms seem to have more immediate concerns about obtaining financing as they expand.

### **5.3 BUSINESS STRATEGIES**

The majority (80%) of respondents believe themselves to be more a part of the manufacturing industry as opposed to the forest industry. They tend to place a higher emphasis on having strategic partnerships with customers and distributors rather than suppliers. They also pursue strategies of differentiation as well as of low cost. They are optimistic that they have effective leadership and long term strategies in place. The cluster analysis divided respondents up into three groups; LOW, MEDIUM and HIGH emphasis on cost, innovation, market and supply chain strategies. A greater proportion of the larger companies were in the HIGH emphasis cluster compared to the smaller companies. BC also had proportionally more respondents in the HIGH emphasis cluster, whereas Alberta had the lowest.

Effective cost strategies are a necessary part of having a successful business (Korhonen and Niemela 2004) and this is reflected in the respondents' relatively high emphasis on cost strategies across all three clusters. However, despite placing fairly high emphasis on cost strategies, the lead times are still relatively long and highly variable. The shortest average lead time was for the pallet segment was 11 days, but most respondents' lead times were upwards of 30 or 40 days. This is much longer than what some manufacturers are now capable of. Over the past 10 years, the kitchen cabinetry industry in the US has reduced lead times in all categories of products to as little as 3 or 4 days for stock items (Forbes 2004). They have been able to reduce lead times by having excellent and consistent supply chain performance and by adopting lean manufacturing<sup>14</sup>, as well as the

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<sup>14</sup> Lean manufacturing is the focus on value-added activities as perceived by the customer and the reduction of non-value-added activities. Lean seeks to minimize unnecessary time, materials, efforts, and money

latest in machining, sanding and finishing technologies (Forbes 2004). Other segments such as the US furniture manufacturers did not change their business models to reduce lead times and improve product quality by leveraging supply chains. The consequence has been that more than 50% of US furniture manufacturers have become mere distributors of off shore goods. They can no longer compete on the basis of price (Buehlmann 2004).

As Globerman *et al.* (1999) point out, innovation is playing a larger role in obtaining and preserving competitive advantage across industries. This innovation can take on many forms including innovations to products, processes, business systems, or even finding new markets. The larger companies and companies that are further up the value chain, such as furniture and FBP, tended to put more emphasis on innovation strategies such as new product development and innovation in production processes. Smaller companies are probably more likely to feel that they do not have the extra resources to devote to such efforts as new product development. However, this type of innovation can also be what gives them a competitive edge and may be critical for keeping them in business or expanding in the longer run. Interestingly, the emphasis on research and development was lowest as compared to the other innovation strategies for all 3 clusters.

Again, the larger companies tend to place more emphasis on market orientation and supply chain strategies over smaller companies. Interestingly, all three clusters place high emphasis on customer service, but they place a relatively low emphasis on market research. There may be opportunities to improve customer service by understanding the customer better through market research. Competitive advantages can be realized by understanding consumers' needs and providing the products that meet those needs (Forbes 2004).

It should also be pointed out that smaller companies were significantly less familiar than larger companies with emergent business terms, such as supply chain management.

Larger firms are much more likely to have specific staff that would be familiar with emerging business concepts and terminologies. Although still not all that familiar, e-commerce was the most familiar emergent term to all respondents. The smallest and most specialized musical instrument segment was the most familiar with e-commerce. As Kozak (2002) noted, it is the small businesses, not the larger businesses that dominate the Internet landscape. However, Kozak (2002) also surmised that Canadian secondary wood manufacturers have not yet taken full advantage of what the Internet can offer with respect to improved business efficiencies along the supply chain.

#### **5.4 PREDICTING PROFITABILITY**

Binary logistic regression produced a model to predict whether a company would be profitable<sup>15</sup> or not. By far, the most important variable in predicting profitability was whether or not a firm was a member of an industry association. Being a member of an industry association increased the odds of the company being profitable by almost 3 times. This result indicates that respondents that are members of industry associations are much more optimistic about the future of their businesses and are interested in staying abreast of current trends and challenges in their business. Or it could be that when companies are profitable, they are more likely to be a member of an industry association. Regardless, industry associations can be effective conduits for passing along a variety of relevant information. Over 60% of the respondents indicated that they are members of at least one industry association and that they are generally satisfied with what the membership provides. In fact, some commented that it was essential for remaining competitive in their business.

Emphasizing new product development also had a significant positive effect on profitability. New product development is thought to be essential for firm success (Taylor and Assoc. 1998; Globerman *et al.* 1999; Hovgaard and Hansen 2004). However, as Hovgaard and Hansen (2004) found, small forest products firms sometimes lack the resources to be consistent in innovations and the development of new products. Since the majority of the Canadian secondary wood manufacturers are small and medium-sized

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<sup>15</sup> It should be noted that "profitability" in this case, was the opinion of respondents, not a measured value.

businesses, there are likely opportunities to facilitate developing new products and innovations, in general.

Other variables influencing profitability were whether financing was limiting a firm to grow and whether they had an emphasis on competitive pricing. Emphasis on quick delivery of customer orders had a slight negative effect on profitability and younger companies tended to be more optimistic about being profitable into the future.

### **5.5 LIMITATIONS AND NEXT STEPS**

As with many studies of this nature, there are limitations. One of the most significant is that that profitability or “success” was not measured empirically. This would have been very difficult to do at such a large scale. Also, the survey simply asked where firms got their wood supply from. Some respondents may have indicated their local distributors rather than where the wood was originally sourced from. Next steps could include a more in-depth look at profitability and supply chain management by using a case study approach. One region and one or two segments could be focused on and looked at in much more depth.

### **5.6 RECOMMENDATIONS**

A case study approach can be used to take a more in-depth look at one region (BC for example) or one segment. Also, using interviews, rather than a self administered survey, more certain measures of profitability can be determined, and entire supply chains may be able to be determined and mapped. Interviews can also better determine the degree to which industry associations are useful and gather more specific information on what may be limiting their ability to expand. This more detailed information will help determine why certain firms may be more profitable than others, and facilitate in the directing of policy.

### **6.0 CONCLUSIONS**

What makes a company successful will ultimately be unique to that company. However, there appears to be several opportunities to encourage and foster the secondary wood manufacturing sector in Canada. The majority of businesses in the sector are considered small to medium enterprises (SMEs) and have common concerns that affect SMEs of most manufacturing sectors. Problems obtaining financing for expansion, market research, and upgrading employees' skills are examples.

The sector as a whole is very reliant on local markets. There is likely opportunity to expand markets in the US, as well as into Asia and Europe. Specific tactics and locations would depend on the segment being targeted. The long and highly variable lead times indicate that there may be opportunities to increase efficiencies through a combination of machinery upgrades, lean manufacturing, and optimizing supply chains. Being efficient is also no longer enough, but it is still essential. Specific plans would require a more in-depth look at individual firms' situations. The high value of the Canadian dollar is making investments in new machinery and equipment more feasible. However, given the sectors' relatively low familiarity with supply chain management and other emerging business terminologies, training and education is also required.

This research has provided a good first step for federal and regional governments and industry groups to proceed with more focused programs and research. This base line information indicates that investment in and support of industry associations are prudent strategies at this time. Existing industry associations can be used to facilitate and/or partner on training and education efforts, leverage market research, provide incentives for new product development, and just provide more information in general. A focused case study approach can also be used to look at specific issues within selected segments and/or selected regions of Canada. In summary, the Canadian secondary wood manufacturing sector is expanding rapidly and is poised to provide the economic diversification and strength that governments and communities currently desire.

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**APPENDIX I: MAIL SURVEY**

University of British Columbia  
Survey of Secondary Wood Products Manufacturers

This survey asks about your company's wood products operations. The results of this survey will help benchmark the Canadian secondary wood products industry. Specifically, it will clarify how competitive the industry is on the whole and what sectors are positioned to be more globally competitive in the future. Governments and Industry groups will be able to use this information to help focus their efforts in maintaining and expanding the industry.

**Section I. Company Profile**

1. What products do you manufacture? (please show as % of gross revenues). If you do not produce any of the following, please answer Question 2 and return the survey.

cabinets	_____	%
engineered building products	_____	%
housing	_____	%
furniture	_____	%
millwork	_____	%
finished building products	_____	%
craft items	_____	%
other (please specify)	_____	%
_____	_____	%
_____	_____	%
_____	_____	%
	<b>100</b>	<b>%</b>

2. Please list the (3) major product lines that your company produces. (please be as specific as possible)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

3. Where do you sell your products? (please show as % of gross revenues)

Local – within province	_____	%
Other Canada	_____	%
US	_____	%
Europe (please specify regions) _____	_____	%
Asia (please specify regions) _____	_____	%
Other (please specify) _____	_____	%
	<b>100</b>	<b>%</b>

4. Where are your main suppliers of wood located? (check all that apply)

- Local – within province
- Other Canada
- US

- Europe (please specify regions) \_\_\_\_\_
- Asia (please specify regions) \_\_\_\_\_
- Other (please specify) \_\_\_\_\_

5. Where do you consider your main competitors to be located? (*check all that apply*)

- Local – within province
- Other Canada
- US
- Europe (please specify regions) \_\_\_\_\_
- Asia (please specify regions) \_\_\_\_\_
- Other (please specify) \_\_\_\_\_

6. What have been some of your company's major investments in the last 5 years?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. What does your company plan to invest in over the next 5 years?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8. How long is your ideal "backlog" for orders (A backlog is defined as confirmed customer orders)?

\_\_\_\_\_ days

Section II. Business Environment

9. How significant are the following factors in limiting your ability to grow as a company?

	Not at all significant				Extremely significant
	1	2	3	4	5
financing	1	2	3	4	5
limited market & demand	1	2	3	4	5
increased competition	1	2	3	4	5
raw material supply	1	2	3	4	5
warehouse space	1	2	3	4	5
energy costs	1	2	3	4	5
taxation policy	1	2	3	4	5
forest policy	1	2	3	4	5
other (please specify)	1	2	3	4	5

10. Please state your level of agreement with the following:  
My company...

	strongly agree	agree	neither agree or disagree	disagree	strongly disagree
... is part of the forest industry	1	2	3	4	5
... is part of the manufacturing industry	1	2	3	4	5
... has a business strategy of overall low cost	1	2	3	4	5
... has a business strategy of differentiation	1	2	3	4	5
... is located geographically close to suppliers	1	2	3	4	5
... is located geographically close to customers	1	2	3	4	5
... is located geographically close to competition	1	2	3	4	5
... believes that it is important to have strategic partnerships with	1	2	3	4	5
... believes that it is important to have strategic partnerships with	1	2	3	4	5
... believes that it is important to have strategic partnerships with	1	2	3	4	5
... has strong and effective leadership	1	2	3	4	5
... has no long term strategy	1	2	3	4	5

11. How familiar is your company with the following?

	not at all familiar	not very familiar	somewhat familiar	familiar	very familiar
e-commerce	1	2	3	4	5
industry clusters	1	2	3	4	5
supply chain management	1	2	3	4	5
supply chain mapping	1	2	3	4	5
vendor managed inventories (VMI)	1	2	3	4	5

Section III. Success Factors

12. Please indicate the extent to which your firm emphasizes these activities as part of your CURRENT competitive strategy.

	not at all emphasized				emphasized to a very great extent
<b>COST STRATEGIES:</b>					
1. efficient operation of production facilities	1	2	3	4	5
2. competitive pricing	1	2	3	4	5
3. cost of raw materials	1	2	3	4	5
<b>INNOVATION STRATEGIES:</b>					
4. developing new products	1	2	3	4	5
5. investing in R&D	1	2	3	4	5
6. innovation in production processes	1	2	3	4	5
7. emphasizing products for high-price markets	1	2	3	4	5
8. ability to manufacture specialty products	1	2	3	4	5
9. employing highly skilled personnel	1	2	3	4	5
<b>MARKET ORIENTATION STRATEGIES:</b>					
10. developing brand identification	1	2	3	4	5
11. promotion and advertising	1	2	3	4	5
12. market research	1	2	3	4	5
13. serving special geographic markets	1	2	3	4	5
14. customer service (including after-sales support)	1	2	3	4	5

15. designing or producing to order for individual customers	1	2	3	4	5
16. innovation in marketing techniques	1	2	3	4	5

## SUPPLY CHAIN MANAGEMENT STRATEGIES:

17. maintaining low levels of inventory	1	2	3	4	5
18. controlling channels of distribution	1	2	3	4	5
19. quick delivery and immediate response to customer orders	1	2	3	4	5

13. In your opinion, which of the above listed activities will be the three most important to your company FIVE YEARS from now? (Insert numbers from question 12)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

14. Do you belong to any Industry Associations?

Yes

No

15. If you belong to an Industry Association, which one(s)?

\_\_\_\_\_

\_\_\_\_\_

16. Do you have any comments regarding the usefulness of the Industry Associations that you belong to?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Finally, we would like to ask a few questions about your company. This information is strictly confidential and will only be used for statistical purposes.

17. Position of the person filling out this questionnaire

\_\_\_\_\_

18. Company name

\_\_\_\_\_

19. Company location

\_\_\_\_\_

20. Total number of full-time employees

\_\_\_\_\_

21. What were your approximate gross revenues (CDN\$) in 2003?

<input type="checkbox"/> Less than \$500,000	<input type="checkbox"/> \$5 million-\$10 million
<input type="checkbox"/> \$500,000-\$1 million	<input type="checkbox"/> \$10 million-\$20 million
<input type="checkbox"/> \$1 million-\$5 million	<input type="checkbox"/> >\$20 million

22. How many years has your firm been in business? \_\_\_\_\_

23. How are the following expected to change in the coming years?

	capacity	Revenues	employment	market size	profitability
increase	<input type="checkbox"/>				
decrease	<input type="checkbox"/>				
stay the same	<input type="checkbox"/>				

24. Do you have any additional comments regarding the Secondary Wood Manufacturing sector in Canada?

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25. Would you be willing to participate in a follow-up telephone interview?

No

Yes  name: \_\_\_\_\_  
phone number: \_\_\_\_\_

**Thank you for your time and cooperation in answering this survey!**  
**If you would like a summary of the results of this survey, please include your name and address below and it will be sent to you.**

Company name: \_\_\_\_\_

Contact: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

*Please mail (addressed envelope included) or fax to Deb DeLong at (604) 822-9104*