

CERTIFICATION INVOLVEMENT BY SELECTED UNITED STATES VALUE-ADDED SOLID WOOD PRODUCTS SECTORS

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ABSTRACT

A study was conducted in the spring of 2002 to determine attitudes of a selection of value-added wood products manufacturers with regard to current and potential participation in forest certification. A convenience sample of 1,482 members from four national associations that actually sold wood products was surveyed. Results indicate that respondents do not have a very clear understanding of certification or of chain-of-custody requirements. On average, 2% of respondents from the four associations combined completely understand certifiers' services and objectives and a third of respondents have no familiarity with major U.S. certifiers. Further, respondents seem to be ambivalent about the issue of both temperate and tropical forest certification. Nearly half would not be willing to pay a premium for certified raw materials with an additional 20% of respondents stating that they would be willing to pay a premium of 3% or less.

Keywords: Certification, value-added, wood products.

INTRODUCTION

Achieving forest certification—voluntary, independent third-party verification of sustainable forest management—has become an important tool for demonstrating sustainable forest management and creating socioeconomic benefits. Certification provides independent, third-party verification that a forest company or landowner is operating according to a set

of principles and criteria determined by a particular certification program (Anonymous 2002a). Performance-based certification systems typically require applicants to show a long-term commitment to a geographically defined forest area and to sustainable forest management planning (Anonymous 2002—Certification—Implementation Issues and Options Research Study 2002).

As of mid-2002, there were over 300 million acres (124 million hectares) of certified

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forests worldwide, an increase of 25% from 1993 (Forsyth 2002). Ninety percent of certified forests are in the Northern Hemisphere, with 50% in Europe and 40% in the United States. Developing countries currently account for less than 10% of the world's certified forests, whereas this figure was 70% in 1996 (Forsyth 2002).

Three certification schemes account for 81% of the world's certified forests, Pan European Forest Certification (PEFC) (Anonymous 2002e), the Forest Stewardship Council (FSC) (Anonymous 2002b, d), and the Sustainable Forestry Initiative (SFI) (Anonymous 2002c).

Although the penetration rate of certified wood products into consumer markets has been slow, Ozanne and Vlosky (2003) suggest that market potential for certified products might increase due to a number of factors impacting consumer demand. For example, certified products buyers' groups have been established in many nations around the world. Buyers' groups are independent associations of businesses, primarily retailers, who have committed to purchasing and/or stocking certified forest products. In the United States, the Certified Forest Products Council is a leading buying group. In addition, commitments by large retailers such as the Home Depot to purchase wood products that have come from sustainably managed forests may mean that consumers will begin to see more certified wood products in stores. A number of protests by environmental organizations have been staged outside of several Do-It-Yourself retailers with the intent of generating negative publicity for the retailers, but these efforts may also have raised consumer awareness of the origin of the forest products they purchase.

Previous value chain research on certification attitudes, awareness, and perceptions includes primary solid wood manufacturers (Ireland 2002; Kärnä *et al.* 2002; Stevens *et al.* 1998; Vlosky and Ozanne 1998), home builders and architects (Vlosky and Ozanne 1997), private timberland owners, both industrial (Vlosky and Ozanne 1999) and nonindustrial

private (Rickenbach 2002; Hayward and Vertinsky 1999; Vlosky and Granskog 2001), U.S. Federal agencies involved in public forest management (Vlosky 2000) home center retailers (Forsyth *et al.* 1997; Vlosky and Ozanne 1997), and consumers (Jensen *et al.* 2002; Teisl *et al.* 2002; Ozanne and Smith 1998; Ozanne and Vlosky 1998; Vlosky *et al.* 1999).

However, to date, little research has been done to ascertain the value-added solid wood manufacturers' perceptions about certification. Solid wood (as opposed to pulp and paper products) forest products can be broadly characterized as primary or value-added products. This classification is not always clear, but most industry observers agree on general definitions of the groups. Primary products are those that are produced directly from raw timber input. Examples include chips, lumber, veneer, plywood, and their by-products. Secondary products use primary products as inputs for re-manufacturing into semifinished and finished products. Examples include various types of panels, engineered composites, millwork, and hardwood components. Secondary products can also include final consumer products such as furniture and cabinets (Vlosky *et al.* 1998). This group is of paramount importance because it is a value chain member that sells through a number of possible channels including showrooms, mail order, interior designers, furniture outlets, warehouse retailers, and directly to consumers (Sinclair 1992).

THE STUDY

We partnered with four associations that represent value-added wood product manufacturers. They are: Architectural Woodwork Institute (AWI), which promotes and disseminates information on the architectural woodwork industry (Anonymous 2002f); Business and Institutional Furniture Manufacturers' Association International (BIFMA), a trade association of furniture manufacturers and suppliers serving the North American wood and non-wood office, business and commercial furniture mar-

kets (Anonymous 2002g); Kitchen Cabinet Manufacturers Association (KCMA), which has members located in the United States and Canada, who manufacture kitchen cabinets and bath vanities, countertops or supply goods, and services to the industry (Anonymous 2002i); and the National Association of Store Fixture Manufacturers (NASFM), which represents over 450 store fixture manufacturers and over 800 plants worldwide (Anonymous 2002h). This study is confined to these associations, and results should not be generalized to the entire value-added industry. These associations provided us with member mailing lists, wrote supporting cover letters that accompanied the questionnaires mailed to members, and in one case, mailed the questionnaire.

METHODS

A mail questionnaire was sent to manufacturing members of participating associations. As mentioned previously, the associations provided membership lists. Survey development followed modified methods and procedures recommended by Dillman (1978). However, because of cost constraints and the desire of the participating associations not to have their members receive multiple mailings, there was one questionnaire mailing in addition to a pre-mailing notification. We did not send reminders or a second mailing. We could not test for non-response bias because of using only one mailing and not having any demographic information on the non-respondents.

The cover letter that accompanied the survey and the survey itself contained a brief definition of certification. This helped to minimize respondent error due to disparate perspectives or levels of understanding of certification. The definition we used was: "Generally, certification means that the forests from which wood products come are managed in a sustainable manner and that the trees are harvested in an environmentally sound manner. Forest management and harvesting are monitored by an entity that 'certifies' the company producing the wood. Companies who

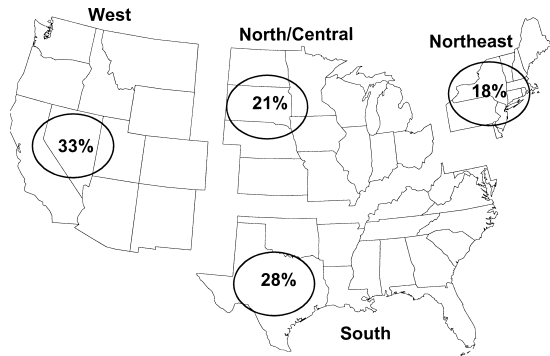


FIG. 1. Respondents by geographic region (n = 294).

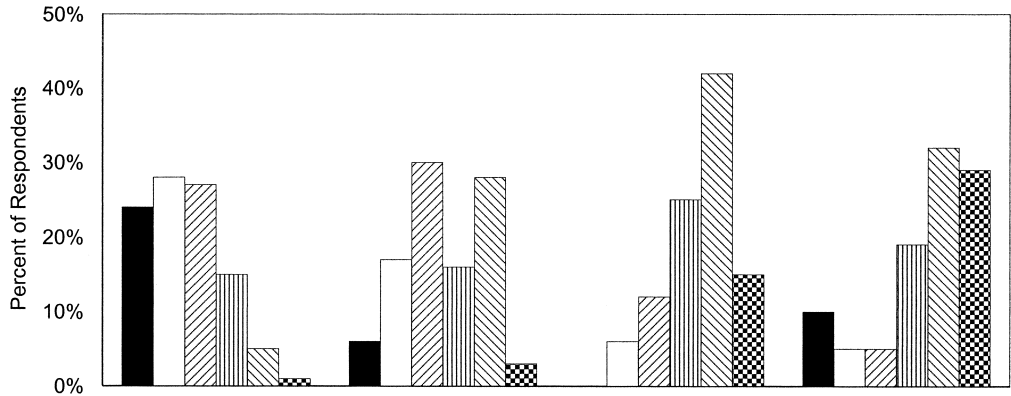
purchase certified wood, manufacture it into a product and sell a certified finished product, obtain a chain of custody certification. The chain of custody certification helps insure that certified wood was used in the product."

Many of the previously referenced studies in the literature have included a definition of certification as part of the survey. On one hand, researchers feel this is necessary so that respondents do not have a widely divergent perception of the research topic. On the other hand, there is the potential that the inclusion of a definition of forest certification and chain-of-custody certification might contaminate some of the questions asked subsequently, particularly those asking respondents how well they understand these concepts. Although the definitions may create a bias on an issue, the intention is to gauge their understanding of these concepts.

RESULTS AND DISCUSSION

Respondent profile

Of the 1,482 surveys mailed to manufacturer members of participating associations, 36 were returned as undeliverable and 294 were received as useable, for an overall adjusted response rate of 20%. AWI represented 68% of respondents followed by NASFM (13%), KCMA (12%), and BIFMA (7%). All regions of the United States are well represented by respondents, indicating that this is truly a national study (Fig. 1).



	AWI (n=200)	NASFM (n=38)	KCMA (n=35)	BIFMA (n=21)
■ 1-10 Emp.	24%	6%	0%	10%
□ 11-25 Emp.	28%	17%	6%	5%
▨ 26-50 Emp.	27%	30%	12%	5%
▩ 51-100 Emp.	15%	16%	25%	19%
⊞ 101-500 Emp.	5%	28%	42%	32%
⊠ More than 500 Emp.	1%	3%	15%	29%

FIG. 2. Respondent company size by number of employees by association.

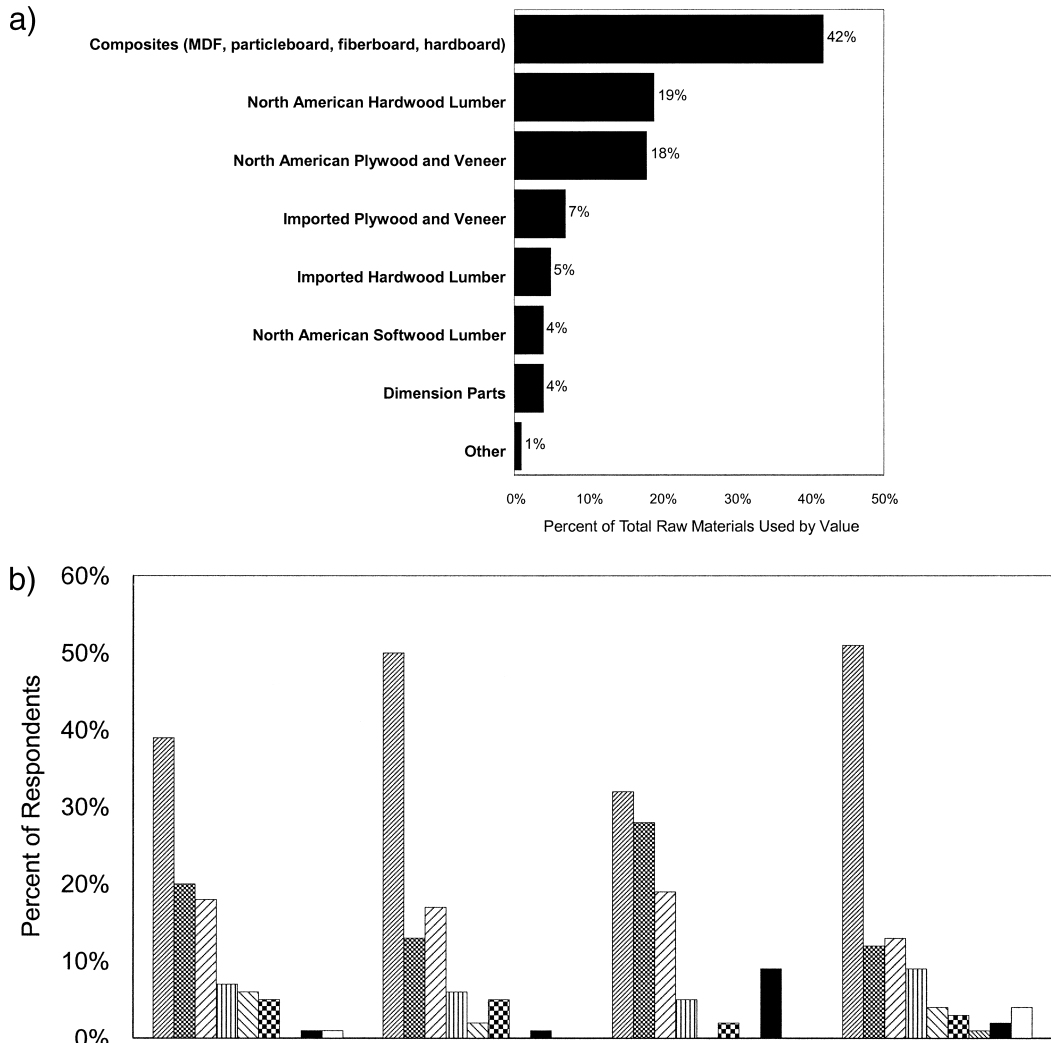
With regard to company size, significant differences were found between association members using one-way analysis of variance (ANOVA) ($P = 0.000$, $F = 39.47$) (Fig. 2). AWI respondents were skewed to smaller companies, while KCMA and BIFMA respondents were more represented by larger companies. NASFM respondents were more evenly distributed. In addition, the average number of employees by association ranged from 35 employees with AWI to 125 employees for both BIFMA and KCMA. NASFM respondents averaged 75 employees.

Respondent companies are members of four very different associations, and many of the wood raw materials they use are quite different (Figs. 3a, b). Overall, on a total value basis of wood raw materials purchased in 2001, 42% of total value was for composites such as medium density fiberboard (MDF), particleboard, fiberboard, and hardboard. Using one-way analysis of variance (ANOVA), a significant difference in composite raw material inputs between associations was found at a 0.05 level of significance ($P = 0.008$, $F = 3.97$).

Overall, a distant second at 19% of value was hardwood lumber originating from North America. Once again, ANOVA determined significant differences in this category ($P = 0.001$, $F = 5.87$). This was closely followed by plywood and veneer originating from North America at 18% of value for all respondents combined. Significant differences were also found for imported hardwood lumber ($P = 0.000$, $F = 6.4$), dimension parts ($P = 0.000$, $F = 12.5$), and “other raw materials” ($P = 0.028$, $F = 3.07$).

Awareness, perceptions, and attitudes about certification

The initial bank of questions posed to respondents dealt with basic understanding of the concept of certification and awareness of the certification entities and schemes that are at the forefront in the United States. The first question, using a 5-point Likert-type scale from 1 = do not understand at all to 5 = understand completely, was “How well does your company understand certification of for-



	AWI (n=200)	NASFM (n=38)	KCMA (n=35)	BIFMA (n=21)
Composites*	39%	50%	32%	51%
NA Hardwood Lumber*	20%	13%	28%	12%
NA Plywood/Veneer	18%	17%	19%	13%
Imported Plywood/Veneer	7%	6%	5%	9%
Imported Hardwood Lumber*	6%	2%	0%	4%
NA Softwood Lumber	5%	5%	2%	3%
Imported Softwood Lumber	0%	0%	0%	1%
Dimension Parts*	1%	1%	9%	2%
Other*	1%	0%	0%	4%

* Significant differences between respondent groups found at 0.05 significance level using one-way analysis of variance

FIG. 3. A. Raw materials used by respondent companies in 2001 by percent of value (n = 294). B. Raw materials used by respondent companies by association in 2001 by percent of value (n = 294).

TABLE 1. *Level of understanding of certifier services and objectives (n = 270). Percent of respondents not currently involved in certification.*

	1 Do not understand at all	2	3	4	5 Understand completely	Not familiar with this group
FSC (Forest Stewardship Council)	22%	21%	14%	11%	6%	27%
SFI (Sustainable Forestry Initiative)	31%	16%	16%	7%	2%	29%
SCS (Scientific Certification Systems)	31%	18%	13%	4%	3%	30%
SmartWood (FSC certifier)	32%	17%	10%	3%	2%	35%
Green Tag Forest Program	34%	18%	8%	4%	0%	36%
Average	30%	18%	12%	6%	3%	31%

est lands for sustainability?” Forty percent responded with scores of 4 or 5, indicating a greater level of understanding of certification in this context, while 24% of respondents indicated scores of 1 or 2 (low level of understanding) on the other end of the scale. Using the same scale, we asked, “How well does your company understand chain-of-custody certification for wood products manufacturers?” In this context 29% had scores of 4 or 5 (greater understanding), and 40% scored 1 or 2 (lesser understanding). In order to sell certified product, a manufacturer must undergo a chain-of-custody certification. Curiously, this survey indicates that manufacturers are more familiar with forest certification rather than a chain-of-custody certification, which is more germane to manufacturers.

Overall, respondents were fairly ambivalent with regard to the need for certification in either temperate or tropical forests with scores of 3.1 and 3.7, respectively for these two forest types on a 5-point Likert scale anchored on 1 = strongly disagree, 3 = agree somewhat, and 5 = strongly agree.

There are a number of key certifying bodies operating in the United States. In addition to SFI and FSC described earlier, respondents evaluated Scientific Certification Systems (SCS), a for-profit certifier that certifies under its Forest Conservation Program, SmartWood (an FSC member not-for-profit certifier), and

the National Woodland Owners Association’s Green Tag Forestry Program. For those respondents not currently involved in certification, we asked about their level of understanding of the services and objectives of these certification organizations (Table 1). Results clearly indicate a lack of significant awareness by respondents for any of these entities with an average of a third of respondents having no understanding of the certifier services and objectives. If a score of 2 is included, this figure jumps to nearly 50% of respondents having a low understanding of the listed certifiers. An additional third of respondents never even heard of these certifiers. It appears that no single scheme is positioned in the minds of these value-added manufacturers, indicating an opportunity for certifiers to promote their schemes to this important member of the wood products value chain. Using one-way analysis of variance, no differences in the level of understanding by respondents of these certification schemes were found (at $\alpha = 0.05$) between U.S. regions or company size.

As mentioned earlier, a definition of certification was provided in the cover letter that accompanied the survey and was in the survey itself. Given this disclosure of the concept of certification, respondents not currently involved in certification were asked a number of questions regarding their perceived willingness to pay a premium for certified raw ma-

TABLE 2. *Percent premiums respondents are willing to pay for certified raw materials (n = 270). Percent of respondents not currently involved in certification.*

Product and base (non-certified) price				
KD FAS Red Oak: \$1,600/ MBF	\$1,600	\$1,625	\$1,650	\$1,700 or more
Percent premium	0%	2%	3%	6% or more
Percent of respondents	46%	20%	21%	19%
KD No. 1 Common Red Oak: \$1,000/MBF	\$1,000	\$1,025	\$1,050	\$1,100 or more
Percent premium	0%	2%	5%	10% or more
Percent of respondents	44%	20%	19%	17%
Red Oak Furniture Grade Veneer Unclipped: \$92/ MSF	\$92	\$94	\$96	\$98 or more
Percent premium	0%	2%	4%	7% or more
Percent of respondents	41%	22%	18%	19%
Southern Pine ¾" industrial grade particleboard: \$250/ MSF	\$250	\$255	\$260	\$265 or more
Percent premium	0%	2%	4%	6% or more
Percent of respondents	46%	21%	15%	19%

materials with the tacit understanding that their customers would pay a premium for the certified products conveyed by respondents.

Respondents were presented with four certified price premium scenarios for four products they would typically use as raw materials in their manufacturing processes (Table 2). The products were presented with base prices from which premiums were added. The products and their base prices were: KD FAS Red Oak: \$1,600/MBF; KD No. 1 Com Red Oak: \$1,000/MBF; Red Oak Furniture Grade Veneer Unclipped: \$92/MSF; Southern Pine ¾" Industrial Grade Particleboard: \$250/MSF. Respondents were asked to select the premium they would be willing to pay for each of the four products. Consistently nearly half of respondents said they would not pay a premium for certified raw materials with a range from 41% for Red Oak Furniture Grade Veneer Unclipped to a high of 46% for both KD FAS Red Oak and Southern Pine ¾ in. industrial grade particleboard.

For each product, the upper bound of possible premium was couched in terms of \$X or more. Seventeen percent of respondents indicated that they would be willing to pay a pre-

mium in this upper bound category for KD No. 1 Com Red Oak. For all other products, 19% of respondents fell into this category.

On a 5-point Likert-type scale with a scale of 1 = strongly disagree, 3 = agree somewhat, and 5 = strongly agree, 5% of respondents strongly believed that their customers would pay such a premium while 32% strongly disagreed. With regard to the premiums that they would require from customers in order to participate in certification, the majority of respondents (51% of respondents) said they would need to charge a premium between 1 and 10% (Fig. 4). Thirty percent said they would not attempt to charge a premium from customers.

Companies not selling certified products

Ninety-two percent of responding companies are not currently selling certified wood products. When asked if they had any intention of doing so, 86% indicated they would monitor certification developments and obtain a chain-of-custody certification only if needed. Another 12% plan to ignore the process. Thus, only 2% of respondents not presently involved in certification plan to proceed with a chain-

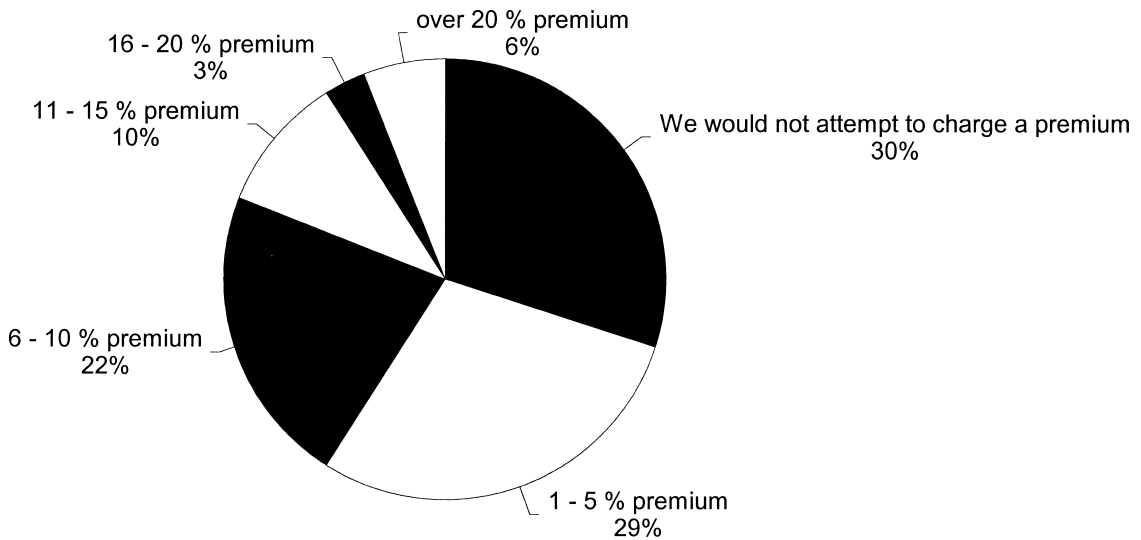


FIG. 4. Premiums respondents not currently participating in certification would require from customers in order to supply certified products (n = 270).

of-custody certification within the next two years. Using one-way analysis of variance, no differences between respondents currently selling certified products and those that are not were found (at $\alpha = 0.05$) between company location, company size, or raw material usage.

Excluding any incremental costs for certified raw materials, these companies were asked to estimate other additional costs they felt they would incur if they got involved in certification (Fig. 5). Nearly half of respondents felt that they would face between 1 and 5% in additional costs with an additional 19% feeling that the upcost would be between 6 and 10%. Twenty-six percent of respondents did not believe that they would incur any additional costs (excluding raw materials) if they participated in certification.

Companies selling certified products

Of the 294 respondents, only 24 (8%) are engaged in manufacturing certified wood products. Because of the small number of manufacturers, a statistical comparative analysis to non-certified participants was not conducted. However, these 24 manufacturers reported selling about \$17.2 million dollars in

certified products from a total sales volume of about \$172 million dollars. Therefore, it is appropriate to look at what general trends can be obtained from the data.

Sixty-five percent of these companies reported that their sales of certified wood products remained the same, while 27% reported increased sales for the year 2001 as compared to 2000. Most of these companies expect their sales volume for certified wood products to remain the same or increase in the future. Ninety-three percent of the companies plan to continue to sell certified wood products, but only 19% have a chain-of-custody certification.

Thirty-nine percent of the buyers of certified wood products are located within 100 miles of the manufacturers and only 1% of the buyers are outside the United States. The cost and availability of raw material and the increased business costs for producing a certified product are important considerations. Fifty-seven percent of the responding companies indicated they paid 1 to 10% more for certified wood as a raw material. Fourteen percent did not pay more, while the balance of 25% paid over 10%. A similar response was received

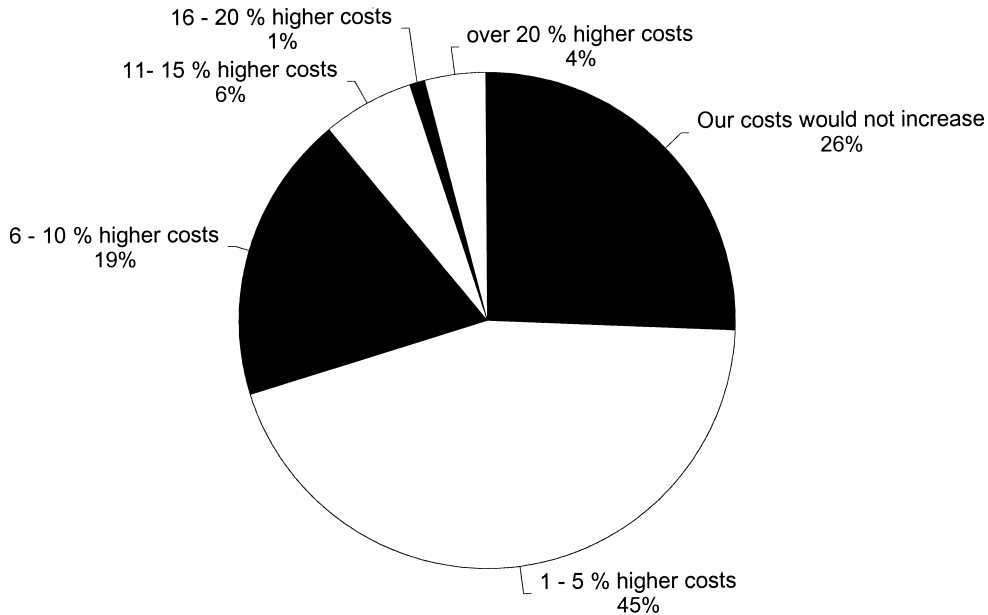


FIG. 5. Incremental costs respondents not currently participating in certification would incur from supplying certified products—excluding additional raw material costs (n = 270).

when companies were asked how much all other costs increased in order to produce a certified wood product. Eleven percent indicated no increase in costs, while 63% indicated a 1 to 10% increase, with the balance indicating more than a 10% cost increase.

Seventy-three percent of the companies reported receiving no premiums for their certified wood products, with the balance of 27% reporting a 1 to 10% premium. When asked why their company is selling certified wood products, only one company indicated profit as a motive. Seeking to increase sales volume and market share as well as external company image were important reasons cited. The business owner's commitment to environmental issues was also one of the most important reasons cited.

CONCLUSIONS

Although this study generated some interesting results that contribute to the base of forest certification knowledge, there are some limitations that need to be discussed. First, a convenience sample of members from partic-

ipating associations was used. Typically random samples of industrial sectors would be taken for a study of this nature. The question is whether association members represent their respective industries. The second limitation is in procedures used to conduct the study. Ideally, the Total Design Method developed by Dillman (1978) would be employed in its entirety. This would involve, among other things, the mailing of pre- and post-survey notifications and a second survey mailing. Because of the nature of cooperation from the participating associations, and their desire to retain control over the membership lists, this was not possible. Although the study benefited from having the associations notify their members about the study and encourage their participation, we were limited to one survey mailing.

There are a myriad of product groups within the value-added wood products industry. All of these groups produce candidate products for inclusion in the certification process. Future research should segment the value-added sector and identify attitudes and potential for participation in certification for each segment.

ACKNOWLEDGMENTS

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REFERENCES

- ANONYMOUS. 2002. Certification—Implementation issues and options research study 2002. Canada Ministry of Forests. Forest Management Certification Homepage: <http://www.for.gov.bc.ca/het/certification/>
- . 2002a. Overview of forest certification. Canada Ministry of Forests. Forest Management Certification Homepage: <http://www.for.gov.bc.ca/het/certification/>
- . 2002b. Certified Forest Products Council. 2002. FSC Certified Forests List. <http://www.certifiedwood.org/>
- . 2002c. The sustainable forestry initiative. American Forest and Paper Association. Website: <http://www.afandpa.org/>
- . 2002d. Who are we? Forest Stewardship Council Homepage: <http://www.fscoax.org/principal.htm>
- . 2002e. What is pan European forest certification? PEFC Homepage: <http://www.pefc.org/>
- . 2002f. Architectural Woodwork Institute (AWI) Homepage: <http://www.awinet.org/>
- . 2002g. Business and Institutional Furniture Manufacturer's Association (BIFMA) Homepage: <http://www.bifma.org/>
- . 2002h. National Association of Store Manufacturers (NASFM) Homepage: <http://www.nasfm.org/>
- . 2002i. Kitchen Cabinets Manufacturer's Association (KCMA) Homepage: <http://www.kcma.org/>
- DILLMAN, D. A. 1978. Mail and telephone surveys—The total design method. John Wiley & Sons, New York, NY.
- FORSYTH, K. 2002. Certified forest products markets. Presented to the UNECE Timber Committee Sixtieth Session. September 24, Geneva, Switzerland.
- , D. HALEY, AND R. KOZAK. 1997. Customer attitudes towards environmentally sound wood products in the British Columbian home improvement market. Working Paper, Department of Forest Resources Management, University of British Columbia, Vancouver, Canada.
- HAYWARD, J., AND I. VERTINSKY. 1999. High expectations, unexpected benefits: What managers and owners think of certification. *J. Forestry* 97(2):13–17.
- IRLAND, L. 2002. The Northeastern market for “green certified” wood products. Unpub., presented at Forest Products Society meeting, June 2002, Madison, WI.
- JENSEN, K., P. JAKUS, B. ENGLISH, AND J. MENARD. 2002. Willingness to pay for environmentally certified hardwood products by Tennessee consumers. Department of Agricultural Economics Study Series No. 01-02. University of Tennessee Agricultural Experiment Station.
- KÄRNÄ, J., E. HANSEN, H. JUSLIN, AND J. SEPPÄLÄ. 2002. Green marketing of softwood lumber in western North America and Nordic Europe. *Forest Prod. J.* 52(5):34–40.
- OZANNE, L. K., AND P. M. SMITH. 1998. Segmenting the market for environmentally certified wood products. *Forest Sci.* 44(3):379–389.
- , AND R. VLOSKY. 1998. Environmental certification of wood products: An examination of U.S. consumer gender differences. *Women in Natural Resources* 19(3):4–8.
- , AND ———. 2003. Certification from the U.S. consumer perspective: A comparison of 1995 and 2000. *Forest Prod. J.* 53(3):15–21.
- RICKENBACH, M. G. 2002. Forest certification of small ownerships: Some practical challenges. *J. Forestry* 100(6):43–47.
- SINCLAIR, S. A. 1992. Forest products marketing. McGraw-Hill, New York, NY. 226 pp.
- STEVENS, J., M. AHMAD, AND S. RUDELL. 1998. Forest products certification: A survey of manufacturers. *Forest Prod. J.* 48(6):43–49.
- TEISL, M. F., S. PEAVEY, F. NEWMANN, J. BUONO, AND M. HERRMANN. 2002. Consumer reactions to environmental labels for forest products: A preliminary look. *Forest Prod. J.* 52(1):44–50.
- VLOSKY, R. 2000. U.S. Forest Service, Bureau of Land Management and state forester perspectives on forest certification. *Forest Prod. J.* 50(3):21–27.
- , AND L. K. OZANNE. 1997. Environmental certification: The wood products business customer perspective. *Wood Fiber Sci.* 29(2):195–208.
- , AND ———. 1998. Environmental certification of wood products: The U.S. manufacturer's perspective. *Forest Prod. J.* 48(9):21–26.
- , AND ———. 1999. Certification: Perspectives of industrial forest landowners in Louisiana. Working Paper #34. Louisiana Forest Products Laboratory. LSU Agricultural Center, Baton Rouge, LA.
- , AND J. GRANSKOG. 2001. Certification: A comparison of perceptions of industrial and non-industrial private forestland owners in Louisiana. In L. Teeter, B. Cashore, and D. Zhang, eds. *Forest policy for private forestry: global and regional challenges*. CABI Publishing, United Kingdom.
- , N. P. CHANCE, P. MONROE, D. HUGHES, AND L. BLALOCK. 1998. An integrated market-based model for value-added solid wood products sector economic development. *Forest Products J.* 48(11/12):29–35.
- , L. K. OZANNE, AND R. J. FONTENOT. 1999. A model of U.S. consumer willingness to pay for environmentally certified products. *J. Consumer Marketing.* 16(2):122–140.