APPROACHES TO, AND PERCEIVED BENEFITS OF, TRAINING IN THE SECONDARY WOOD INDUSTRY

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ABSTRACT

Practitioners and researchers alike have noted that a well-trained workforce is an important component of the competitiveness of U.S. manufacturers in the global economy. This study compares four secondary wood industry sectors on their approaches to, and perceived benefits of, training production employees. The study was based on an Internet survey in the autumn of 2003 of subscribers to a major wood industry publication. A sample of 197 firms was split into four type categories (cabinets, household furniture, contract furniture, and millwork) and two size categories (fewer than 50 employees and 50 or more employees) and compared on several questions related to training of production employees. Some differences were found among the firm types and between the firm sizes. However, the firms were similar in a number of respects. The majority indicated that the return on training was positive, and firms agreed on average that training was critical to their future competitiveness. Implications for domestic competitiveness are noted based on the findings.

Keywords: Training, competitiveness, secondary wood industry, furniture, cabinets, millwork.

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INTRODUCTION

Much has been written regarding training and education in the forest products industry. Most of this literature deals with the training and educational needs faced by either the primary industry (Michael and Leschinsky 2003; Bowe et al. 1999; Brown and Niemiec 1997; Bratkovich and Miller 1993) or a mix of primary and secondary industries (Vlosky and Chance 2001; Hansen and Smith 1997; Barrett and Cohen 1996; Cohen and Maness 1995). A common finding among many studies is the need for training in traditional wood science and processing areas, as well as in "soft" areas such as motivation, communication and writing skills, problem-solving, and organizational skills (e.g., Baldwin 2003; Smith et al. 1998; Cohen and Maness 1995). Researchers, educators, and extension professionals obviously have a vested interest in the educational needs of the industry. But employee training also is an important component of the overall competitiveness of U.S. companies in the face of global competition (Schuler and Buehlmann 2003). Michael and Leschinsky (2003) conclude from the literature and their own work that virtually all wood producers would benefit from a better-trained workforce.

The relationships among training and other factors important to competitiveness are many. Hansen and Smith (1997) point out that the installation of optimization equipment and other value-added processes in efforts to remain globally competitive lead to evolving training needs for forest products companies. Others have noted that use of higher levels of technology intensifies employee training requirements (Vlosky and Chance 2001). Federal Reserve Chairman Alan Greenspan (2004) recently noted, "We need to discover the means to enhance the skills of our workforce and to further open markets here and abroad to allow our workers to compete more effectively in the global marketplace."

Examples of the relationships between training and competitiveness can be found in the cabinet industry. It is generally recognized that cabinet manufacturers have not been affected to the extent that have household and contract furniture manufacturers by imported products (Buehlmann et al. 2003); A variety of reasons are suggested as to why. Cabinet companies have responded to changing marketplace conditions and distribution channels (e.g., the emergence of big box home centers) through greater product modularity and customization. Furthermore, they have placed more reliance on supply chain support and capital investment (Raymond 2004). These actions likely result in new training needs. In one study, when asked what actions can be taken to enhance competitiveness, cabinet manufacturers rated *production of customized products* and *workforce training* higher than did furniture manufacturers (Bumgardner et al. 2004).

This study sought to explore workforce training in detail by comparing major secondary industry sectors on their approaches to, and perceived benefits of, training. While training is only one part of overall competitiveness, it is related to others and may help explain differences among sectors' competitive positions. Few studies have made comparisons between different types of firms or industry sectors regarding their approaches to training. Cohen and Maness (1995) found that the primary and secondary industries of Canada were in general agreement concerning the topics that should be covered in a wood products educational curriculum. Bowe et al. (1999) found some differences among hardwood lumber, furniture, and pallet manufacturers regarding their perceived training needs.

Furthermore, little has been written about the perceived benefits that companies hope to realize by having their employees participate in training activities. Brown and Niemiec (1997) found that Oregon sawmills were nearly unanimous in their agreement that training and employee development is a continuous process, and that training was necessary for a skilled and productive workforce. The objectives of this paper were to determine the perceived benefits of, and approaches to, production employee training among several secondary wood products sectors.

The focus was on comparisons between four different sectors (cabinets, household furniture, contract furniture, and dimension/millwork), separated by small firms and large firms.

METHODS

Data collection

An opportunity for a survey of the secondary industry was provided by *Modern Woodworking* magazine in the autumn of 2003. The nationwide survey was internet-based and sent via e-mail by *Modern Woodworking* magazine to a random sample of over 14,000 of its 45,000 subscribers. The e-mail survey consisted of a cover letter briefly explaining the study and a link directing respondents to a questionnaire on the Internet. The questionnaire was pretested with a small group of firms (sent to 20 firms with 3 responses). As an incentive for participation, respondents were entered in a sweepstakes to win cash prizes. There was opportunity for only one e-mailing; no follow-up e-mailings to nonrespondents were conducted. Two hundred and fifteen questionnaires were returned after approximately two weeks, but 18 were unusable (e.g., distributors, consultants, tool manufacturers) because they were not in the population of interest. The adjusted sample contained 197 firms. This was typical of the response to e-mail surveys conducted by the magazine in the past.

Sample description

The sample included 64 cabinet firms, 36 household furniture firms, 43 contract furniture firms, and 54 millwork firms (the millwork category included dimension and component firms). One hundred and twelve were classified as small firms (1–49 employees) and 85 were classified as large firms with 50 or more employees (Table 1). There was a tendency for larger firms to respond in a disproportionate manner compared to the *Modern Woodworking* population (large firms were 43% of the sample and 28% of the population). Others also have found that larger firms were more likely to respond to web-based surveys (Michael and Leschinsky 2003). In addition, household furniture firms were under-represented (18% of the sample and 26% of the population) and millwork firms were over-represented (27% of the sample and 21% of the population) among respondents.

TABLE 1. *Number of responding firms by type and size category.*

	Cab.	H. furn.	C. furn.	Mill.	Total
Firm size			n (%)		
1–49	42	23	16	31	112
	(65.6)	(63.9)	(37.2)	(57.4)	(56.9)
50+	22	13	27	23	85
	(34.4)	(36.1)	(62.8)	(42.6)	(43.1)
Total	64	36	43	54	197
	(100.0)	(100.0)	(100.0)	(100.0)	(100.0)

Nearly 65% of the responding firms had sales of $10 million or less in 2002 and over 75% were single facility operations. Over 76% of respondents indicated their company's price-point was either medium or medium-to-high. Nearly 69% indicated that they had not increased use of wood imports in their product lines over the last five years.

Fifty-one percent of respondents held corporate or operating management positions, 17% held production management positions, 12% held engineering positions, and the remaining 20% were classified in other positions (e.g., training coordinator, safety manager, design, marketing, etc.). There was no significant difference among the firm types with regard to the four respondent title categories ($\chi^2 = 8.9$, $p = 0.45$). Not surprisingly, there was a significant difference in respondent titles between small and large firms ($\chi^2 = 25.6$, $p < 0.01$) with large firms having proportionally more respondents in the engineering category (22% vs. 4%) and production management category (22% vs. 13%) and fewer respondents in the corporate/operating management category (34% vs. 63%) than small firms, respectively.

The sample was, by definition, comprised of subscribers to *Modern Woodworking* magazine. It is possible that subscribers are different from non-subscribers, so caution is warranted in gen-

eralizing beyond *Modern Woodworking* subscribers.

Data analysis

Data were analyzed using Chi-Square tests for independence, Analysis of Variance (ANOVA), and Multivariate Analysis of Variance (MANOVA). An alpha level of 0.10 was chosen for all tests. Since the study employed an unbalanced design, all means in the ANOVA and MANOVA analyses were adjusted (least squares means) and Type III sums of squares were used. When a factor was found significant within ANOVA, group means were compared using Tukey-Kramer tests. In addition, the data in the MANOVA analyses were transformed by row centering by subtracting the individual's average score from each item's score and adding a constant (constant = 4 in this study) so that all transformed data had a positive value (Malhotra 1996; Sinclair et al. 1993). This was done because of a tendency among small firms and large firms to rate the items in some of the MANOVA analyses consistently higher or lower than did their counterparts, respectively. Since the interest was in potential relative differences between groups and not absolute differences, no data information was lost in this transformation (Moriarty and Reibstein 1986; Green and Carmone 1978).

RESULTS

Perceived benefits of training

One set of questions dealt with the perceived benefits of training to the sectors investigated. There was no statistical difference among firm types ($p = 0.22$) on whether they believed the return on production employee training was positive (Table 2). Nearly 65% of all firms indicated that there was a positive return.[1] Of the combined 69 firms that indicated either *no* or that *it is impossible to know for certain*, only four indicated *no*. In addition, firms were, on average, in agreement that providing continuous training to production employees was critical to their future competitiveness (mean of 4.1 on a scale ranging from 1 = strongly disagree to 5 = strongly agree). There was no firm type effect ($p = 0.73$) or firm size effect ($p = 0.17$) found with regard to this question based on a 2-way ANOVA. The interaction was also not significant ($p = 0.28$).

TABLE 2. *Responses to question asking if, in the company's experience, the return on production employee training is positive (i.e., do the benefits exceed the costs)?*[1]

	Cabinets	House. furn.	Contract furn.	Mill-work	Total
	n (%)				
No or uncertain[2]	23 (35.9)	15 (41.7)	18 (41.9)	13 (24.1)	69
Yes	41 (64.1)	21 (58.3)	25 (58.1)	41 (75.9)	128
Total	64 (100.0)	36 (100.0)	43 (100.0)	54 (100.0)	197

[1] $\chi^2 = 4.45$, $p = 0.22$.
[2] These two categories were combined to facilitate use of the Chi-Square test. Only four firms in total indicated a "no" response.

When presented with several potential benefits that might result from training production employees, there were statistical differences among the firm types ($p = 0.05$) and firm sizes ($p = 0.09$). As shown in Table 3, contract furniture firms rated *long-term productivity increases* higher (4.3) than did cabinet (4.0) and household furniture companies (4.0). In addition, millwork firms rated *improved raw material yield* higher (3.9) than did contract furniture firms (3.5). There was a difference between firm sizes on the training benefit *a more competitive workforce*, with large firms rating this higher (4.0) than did small firms (3.7).

Lastly, respondents were asked to rate their level of agreement that several items were barriers to increased training of production employees. As shown in Table 4, there were no significant firm type effects ($p = 0.27$) or firm size effects ($p = 0.77$). Overall, firms indicated that the most substantial barriers were *it is hard to*

[1] It was interesting to consider what kinds of firms were in the 35% that were uncertain about training. A closer inspection of firms in the "uncertain/no" return category and the "positive" return category suggested no significant differences in terms of firm size ($\chi^2 = 0.29$, $p = 0.59$) or respondent titles ($\chi^2 = 5.4$, $p = 0.14$).

TABLE 3. *Importance of benefits that might result from training production employees. Data were row-centered prior to analysis; means are adjusted.*[1]

MANOVA	*p* value (Wilks' λ)
Interaction	0.46
Firm size	0.09
Firm type	0.05

ANOVA for dependent variables *Firm type*	*p* value	Cabinets	House. furn.	Contract furn.	Millwork
Better product quality	0.95	4.3	4.4	4.4	4.4
Cost reductions	0.92	4.2	4.2	4.2	4.2
Long-term productivity increases[2]	**0.02**	**4.0 a**	**4.0 a**	**4.3 b**	**4.2 ab**
More proficient equipment operation	0.88	4.2	4.2	4.1	4.1
Improvement in employee morale	0.92	4.0	4.0	3.9	3.9
A more competitive workforce	0.20	4.0	3.8	3.8	3.7
Receptiveness to new ideas	0.16	3.7	3.8	3.9	3.6
Improved raw material yield[2]	**0.02**	**3.6 ab**	**3.7 ab**	**3.5 a**	**3.9 b**

ANOVA for dependent variables *Firm size*	*p* value	Small firms	Large firms
Better product quality	0.17	4.4	4.3
Cost reductions	0.59	4.2	4.2
Long-term productivity increases	0.59	4.2	4.1
More proficient equipment operation	0.75	4.1	4.1
Improvement in employee morale	0.26	4.0	3.9
A more competitive workforce	**<0.01**	**3.7**	**4.0**
Receptiveness to new ideas	0.24	3.8	3.7
Improved raw material yield	0.43	3.6	3.7

[1] Rating scaled ranged from 1 = not at all important to 5 = very important.
[2] Group means with the same letter are not different based on Tukey-Kramer test.

find courses to fit our needs (3.0) and *it is generally too costly* (3.6). The least substantial barriers were *training is not important to our overall business strategy* (4.7) and *employees are generally resistant to training* (4.4). Note that based on the scaling used in this case, lower scores indicate higher barriers.

Approaches to training

A second set of questions dealt with respondents' approaches to training. There was not a statistically significant difference among firm types on the amount of time production employees spend on training ($\chi^2 = 7.98$, $p = 0.24$). Many firms (45%) indicated that 1 to 2 hours per month was spent on training, while another 31% indicated half-an-hour or less was spent a month.

As shown in Table 5, there was a statistical difference among firm types ($p = 0.07$) with regard to hiring philosophy. Household furniture firms were more likely to prefer hiring inexperienced workers and training them upon hiring

TABLE 4. *Barriers to increased training of production employees. Data were row-centered prior to analysis.*[1]

MANOVA	*p* value (Wilks' λ)
Interaction	0.40
Firm size	0.77
Firm type	0.27

Dependent variables included	Overall mean
It is hard to find courses to fit out needs	3.0
It is generally too costly	3.6
We are afraid employees will get training and then leave	3.9
We can better spend our money on other things	4.1
It is generally not effective	4.3
Employees are generally resistant to training	4.4
Training is not important to our overall business strategy	4.7

[1] Rating scale ranged from 1 = strongly agree to 5 = strongly disagree.

TABLE 5. *Which of the following statements best matches your company's general philosophy on hiring production employees?*[1]

	Cabinets	House. furn.	Contract furn.	Millwork	Total
			n (%)		
We prefer experienced workers for any opening	10 (15.6)	4 (11.1)	11 (25.6)	13 (24.1)	38
We prefer more inexperienced workers, which we train ourselves	13 (20.3)	11 (30.6)	5 (11.6)	8 (14.8)	37
We do not have a preference either way	6 (9.4)	9 (25.0)	4 (9.3)	5 (9.3)	24
It depends on the particular opening	35 (54.7)	12 (33.3)	23 (53.5)	28 (51.8)	98
Total	64 (100.0)	36 (100.0)	43 (100.0)	54 (100.0)	197

[1] $\chi^2 = 15.95$, $p = 0.07$.

TABLE 6. *How important is the perceived "trainability" of potential new hires when considering employment in production positions at your company?*[1]

2-way ANOVA	*p* value
Interaction	0.07
Firm type	0.04
Firm size	<0.01

	Large house. furn.	Large contr. furn.	Large cabinet	Small cabinet	Small house. furn.	Large millwork	Small contr. furn.	Small millwork
Cell means (adjusted)[2]	3.4 a	4.0 ab	4.1 ab	4.3 b	4.4 b	4.4 b	4.4 b	4.5 b

[1] Rating scale ranged from 1 = not at all important to 5 = very important.
[2] Cell means with the same letter are not different based on Tukey-Kramer test.

(31%) than were the other firm types, and the least likely to indicate that preference for experience depended on the particular job opening (33%). The majority of the other firm types indicated that preference for experience depended on the particular job opening. Interestingly, as shown in Table 6, large household furniture firms were the least likely to indicate that perceived trainability was important when considering potential new production hires. In general, small firms rated perceived trainability higher than did large firms, the exception being large millwork firms. This question resulted in a significant firm type effect ($p = 0.04$) and firm size effect ($p < 0.01$), as well as a significant interaction ($p = 0.07$). Further analysis of the interaction indicated that it was orderly (i.e., no crossover). Large household furniture firms were significantly lower (3.4) than all type*size combinations except large cabinet firms (4.1) and large contract furniture firms (4.0).

Closely related to the perceived trainability of new production hires is consideration of the factors important to their trainability. When asked to rank five factors (educational level completed, educational performance (e.g., good grades), relevant experience, positive attitude, and personality characteristics) in order of importance to new hire trainability, there was a difference among firms as to which factor was ranked in the top position ($p = 0.05$)[2]. The combined *positive attitude/personality characteristics* factor was ranked first more often by cabinet firms than by the other firm types (Table 7). Only 18% of cabinet firms ranked *education/experience* first, while this was ranked first approximately 40% of the time by the other firm types.

Differences between small firms and large firms were found when respondents were asked to rate the importance of several attributes in

[2] These five factors were combined into two categories, *education/experience* and *positive attitude/personality characteristics*, to enable use of the Chi-Square test.

TABLE 7. *Factors important to the trainability of new production hires (proportion ranking the factor first) by firm type.*[1]

	Cabinets	House. furn.	Contract furn.	Millwork	Total
			n (%)		
Positive attitude/personality characteristics	39 (81.2)	18 (60.0)	19 (55.9)	27 (58.7)	103
Education/experience	9 (18.8)	12 (40.0)	15 (44.1)	19 (41.3)	55
Total	48 (100.0)	30 (100.0)	34 (100.0)	46 (100.0)	158[2]

[1] $\chi^2 = 7.96$, $p = 0.05$.
[2] Total does not equal 197 due to missing data from invalid responses.

making a good production employee (Table 8). There was a significant firm size effect ($p = 0.02$) as well as a significant interaction ($p = 0.04$). The firm type effect was not significant ($p = 0.48$). Small firms rated *craftsmanship* (4.6) as being more important than did large firms (4.2), while large firms rated *being a team player* (4.7) and *computer knowledge* (2.8) as more important than did small firms (4.5 and 2.4, respectively). A significant interaction occurred for *craftsmanship*, which was orderly. Large cabinet firms (4.0) and large millwork firms (4.1) were significantly lower than small cabinet firms (4.7) and small household furniture firms (4.7), respectively.

TABLE 8. *Importance of attributes to making a good production employee. Data were row-centered prior to analysis; means are adjusted.*[1]

MANOVA	*p* value (Wilks' λ)		
Interaction	0.04		
Firm size	0.02		
Firm type	0.48		
ANOVA for dependent variables *Firm size*	*p* value	Small firms	Large firms
Self-motivation	0.41	4.6	4.7
Willingness to learn new things	0.56	4.6	4.6
Good at following written or verbal directions	0.11	4.6	4.5
Being a team player	**0.06**	**4.5**	**4.7**
Craftsmanship[2]	**<0.01**	**4.6**	**4.2**
Basic problem-solving skills	0.59	4.3	4.3
Communication skills	0.31	4.3	4.2
Versatility of competencies	0.90	4.1	4.1
Reading comprehension skills	0.55	3.9	3.8
Mathematical/analytical proficiency	0.46	3.6	3.5
Wood science knowledge	0.69	2.7	2.7
Computer knowledge	**0.01**	**2.4**	**2.8**

[1] Rating scale ranged from 1 = not at all important to 5 = very important.
[2] There was a significant interaction with *craftsmanship.* Based on the Tukey-Kramer test, large cabinet firms (4.0) and large millwork firms (4.1) were lower than small cabinet firms (4.7) and small household furniture firms (4.7), respectively.

Respondents were asked to rate the importance of several motivational factors as incentives to training participation. As shown in Table 9, no firm type ($p = 0.32$) or firm size ($p = 0.29$) effects were found. Overall, firms indicated that *an opportunity to learn something new* (4.6) and *advancement within the company* (4.6) were the most important motivations and *fear of becoming obsolete and being replaced* (3.5) and *it is mandated by management so they don't have a choice* (3.5) were the least important motivations.

A final group of questions dealt with the relationship between training and product customization and equipment investment. One

TABLE 9. *Motivational factors as incentives to training participation. Data were row-centered prior to analysis.*[1]

MANOVA	*p* value (Wilks' λ)
Interaction	0.15
Firm size	0.29
Firm type	0.32
Dependent variables included	Overall mean
They see an opportunity to learn something new	4.6
They feel it helps them advance within the company	4.6
They know it helps keep the company in business	4.2
They see a chance to escape their regular routine for awhile	4.0
They receive monetary incentives such as bonuses	3.6
They fear becoming obsolete and being replaced	3.5
It is mandated by management so they don't have a choice	3.5

[1] Rating scale ranged from 1 = not at all important to 5 = very important.

question asked, "In your opinion, is there a relationship between the degree of customization in a company's products and need for specialized training for production employees?" As shown in Table 10, no differences were found among firm types ($p = 0.22$). A large majority of firms (88%) indicated there was at least a moderate relationship; 43% indicated a moderate relationship and 45% indicated a strong relationship. Respondents were also asked to rate their level of agreement with two statements regarding the relationship between training and equipment investment. As shown in Table 11, with regard to the statement, "The more we spend on new equipment and equipment upgrades, the more we have to spend on training," only a firm size effect was found ($p = 0.08$), with large firms exhibiting a higher level of agreement than small firms. With regard to the statement "One reason we do not spend more on new equipment is the cost required to train our employees to use it," there were no firm type ($p = 0.75$) or firm size effects ($p = 0.18$). On average, respondents disagreed with this statement.

TABLE 10. *Is there a relationship between the degree of customization in a company's products and need for specialized training for production employees?*[1]

	Cabinets	House. furn.	Contract furn.	Millwork	Total
	n (%)				
No or small relationship[2]	7 (10.9)	8 (22.2)	7 (16.3)	3 (5.6)	25
Moderate relationship	30 (46.9)	11 (30.6)	20 (46.5)	23 (42.6)	84
Strong relationship	27 (42.2)	17 (47.2)	16 (37.2)	28 (51.8)	88
Total	64 (100.0)	36 (100.0)	43 (100.0)	54 (100.0)	197

[1] $\chi^2 = 8.29$, $p = 0.22$.
[2] These two categories were combined to facilitate use of the Chi-Square test.

TABLE 11. *Relationship between training and equipment investment.*[1]

Statement: The more we spend on new equipment and equipment upgrades, the more we have to spend on training.		
2-way ANOVA	*p* value	
Interaction	0.95	
Firm type	0.12	
Firm size	0.08	
	Small firms	Large firms
Means (adjusted)	3.4	3.7
Statement: One reason we do not spend more on new equipment is the cost required to train our new employees to use it.		
2-way ANOVA	*p* value	
Interaction	0.42	
Firm type	0.75	
Firm size	0.18	
Overall mean	1.9	

[1] Rating scales ranged from 1 = strongly disagree to 5 = strongly agree.

CONCLUSIONS AND DISCUSSION

Firm type differences

Widespread firm type effects were not found, suggesting that perceived benefits of, and approaches to, production employee training are generally similar across sectors. This is similar to findings from related studies by Bowe et al. (1999) and Hansen and Smith (1997) that *educational needs* were similar across different wood producing *regions* of the U.S., and to Cohen and Maness (1995) who found similarity in relative importance of *educational topics* between the *primary and secondary industries* of Canada. Exceptions in the current study involved the benefits that can result from training, where contract furniture firms rated long-term productivity increases significantly higher than did cabinet and household furniture firms. Millwork firms also saw more training benefit in the area of raw material yield than did contract furniture firms. Given the larger amount of raw material processed per employee by millwork firms as compared to the other sectors, this is not surprising.

An interesting finding that separated household furniture firms from the other firm types was an apparent paradox concerning training. That is, household furniture firms indicated a stronger preference than the other firm types for hiring inexperienced workers and then training them upon hiring. However, large household furniture firms also rated perceived trainability of potential new production hires *lower* than did

most other firm*size combinations. Perhaps this indicates that some furniture firms find it is not difficult to locate production employees capable of working in existing factories, with minimal training.

Interestingly, it seems from the study results that a positive attitude is perceived to be a better indicator of trainability than are education and experience; this was particularly true for cabinet firms. In fact, this was the single finding most separating cabinet firms from the other firm types. The general finding across firm types of the importance of a positive attitude seems to correspond with ratings of self-motivation and a willingness to learn new things as highly important production employee attributes. "Harder" skills such as mathematical/analytical proficiency, wood science knowledge, and computer knowledge were rated as somewhat less important.

Firm size differences

Some differences were found based on firm size. Large firms rated computer knowledge and being a team player as more important employee attributes than did small firms. Large firms also exhibited higher agreement with the notion that more must be spent on training when investments in equipment are made. This could reflect the higher price and complexity of equipment found in larger firms and the concurrent need for specific skills for effective operation. This finding is in line with other studies reporting a positive correlation between company size and need for skilled labor (Vlosky and Chance 2001).

In general, small firms rated perceived trainability of potential new production hires as being more important than did large firms. This may be due to the variety of tasks employees in smaller firms are likely to face. It is interesting that the data presented in Table 8, prior to row centering, showed that small firms rated nearly every attribute of a good production employee higher than did large firms, perhaps suggesting they desire multiple skills in their fewer employees. Consequently, as stated above, being a team player is less important in smaller firms.

Implications for competitiveness

The firms were in general agreement in several important respects. The majority indicated that the return on training investment was positive (although the fact that 35% were uncertain toward training might stir interest among training providers), and on average, agreed that training was critical to future competitiveness. Most also indicated that there was a moderate or strong relationship between customized products and the need for specialized training for production employees. An implication is that if domestic companies look to customized products as a means to compete against cheaper imports, training requirements will increase. There also was agreement, on average, that the cost required to train employees to use new equipment did not pose an obstacle to investment in new equipment.

Better product quality was rated as the most important benefit that can result from training, a finding consistent with other studies (Brown and Niemiec 1997; Hansen and Smith 1997; Vlosky and Chance 2001; Cohen and Maness 1995). This suggests that quality is an enduring product attribute sought by wood products companies. Coupled with the finding that the return on training is generally considered positive, it can be implied that training improves product quality. Product quality has been shown in other studies to be important to domestic competitiveness (Bumgardner et al. 2004), so training would seem to have an important role in helping firms be competitive.

Large firms saw a more competitive workforce as a greater benefit of training than did small firms. This might suggest that larger firms are facing greater competitive pressures from imports than are smaller firms. Perhaps related to this was the finding that small firms rated craftsmanship as a more important employee attribute than did large firms; small firms might be better positioned to take advantage of niche markets where craftsmanship provides a competitive advantage. An implication is that smaller firms are likely interested in training in woodworking-related topics.

Another consideration is motivating employees to receive training. Interestingly, the two highest rated incentives, opportunities to learn something new and potential for advancement within the company, center on the individual employee and not the company itself. Helping the company stay in business and company-mandated training were rated lower. While individual incentives obviously are important, perhaps companies could do a better job of assisting and encouraging their employees to buy into the concept of training for the sake of the long-term survival of the company.

Limitations

This study had two primary limitations. First, the survey relied on a single contact within each company. Perceptions of training might vary to some degree by job title or position within the company. While a majority of the respondents were in management positions, and there was not a significant difference among the firm types in terms of respondent titles, we cannot be certain that every decision-maker in a given company viewed training in the same way as did the respondent from that company. This issue is especially worth noting for the small firm versus large firm comparisons, as there was a difference between these groups in terms of respondent titles. Second, the sample could have been larger if there had been opportunities for follow-up mailings. With a larger sample, perhaps more statistical differences would have been found.

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