

EMPLOYMENT STRUCTURE AND TRAINING NEEDS IN THE LOUISIANA VALUE-ADDED WOOD PRODUCTS INDUSTRY

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ABSTRACT

Research has shown that there is significant employment demand in the wood products industry in Louisiana. The need to develop and sustain training programs for the forest products industry is immediate and critical. Just over a third of respondents had plans to increase employment in 1999 while 43 percent said they will add employees in the subsequent 3-year period. However, the most prevalent reason why respondents are not adding employees is the lack of adequately trained labor. This paper indicates that in order for Louisiana value-added wood products manufacturers to be able to be competitive in the marketplace, appropriate training of the workforce must become a priority.

Based on forest products industry hiring intention surveys conducted by the Louisiana Forest Products Laboratory (LFPL), the number of desired new employees forecasted over the next 2 to 4 years totals nearly 4,000 positions (14). Given this employment demand, the need to develop and sustain training programs for the forest products industry is immediate and critical.

The current educational system in Louisiana provides little in the way of workforce training and development for the state's value-added forest products industries. While there are programs under development in select locations for the pulp and paper industry, largely developed by the industry for implementation in the technical college system, there remains a major gap in the skills needed by today's value-added forest products industry sectors (13). For example, Louisiana Furnishings Industry Association furniture manufacturer members were questioned regarding

training they had received to prepare them for operating their small businesses. With few exceptions, the members indicated that they had not taken high school or trade school classes specific to the woodworking industry. Their typical source of education was an introductory level job at a woodworking shop followed by self teaching through reading woodworking magazines and trade journals (13).

Although there has been no program development specific to woodworking, attempts have been made to develop

programs in Louisiana specific to the construction industry. To date, these efforts have failed, largely because the construction industry is not a high profile industry with political support. In fact, much of the equipment and staff associated with these construction-training programs are no longer available. With the decline of the construction industry in the mid-1980s, much of the equipment was sold off and staff was reassigned (13).

Although the two are often thought of as similar industries, the construction and woodworking industries are very different. Accordingly, value-added wood processing and manufacturing training needs are also unique. Furthermore, with competition for scarce educational resources from other higher profile industry segments such as petro-chemical and gaming, value-added wood industry educational programs have been overlooked (13).

Regardless of the reasons for the current state of value-added wood industry

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training programs in Louisiana, in order for Louisiana companies to be able to be competitive in the marketplace, appropriate training of the workforce must become a priority.

RESEARCH OBJECTIVES

This study was undertaken to generate information that can be used by policymakers in Louisiana to develop value-added wood processing training initiatives. The opportunity to add value, create jobs, and support rural economic development are significant. Specifically, the objectives of the study were:

1. To determine the current employment structure by activity and skill level in the typically rural Louisiana wood products industry;
2. To identify unfulfilled training requirements;
3. To identify impediments to increasing employment in the value-added wood products industry;
4. To develop recommendations that will lead to increased employment in the value-added wood products sector in rural areas of Louisiana.

LABOR TRAINING ISSUES

Regardless of the industry, the need for qualified and trainable employees is recognized as a crucial factor in the ability to become competitive and remain competitive in the global marketplace. Attitudes vary as to where the responsibility for developing and maintaining this workforce lies. Is this task the responsibility of government or the private sector? The answer seems to lie somewhere in-between: cooperative efforts between federal, state, and local government and the private sector.

The root cause of systemic unemployment is the inability of industry and the workforce to keep pace with rapidly advancing technologies. These and many other changes in emerging high-performance workplaces have pushed the levels of knowledge, skills, and abilities needed for individuals and businesses to successfully compete far beyond the traditional definition of literacy.

Preparing for the jobs of today and tomorrow requires investment in people by governments, businesses, and individuals. A report on human development in Canada identifies issues that have broad-based implications (2). The report states that everyone, including existing workers, the unemployed, stu-

dents, etc., will have to upgrade their knowledge and skills on an ongoing basis to get and keep a job. The Canadian government is asking its citizens to help decide how to invest more effectively and cost efficiently in their collective future. Some ideas include:

- greater investment in training and skills development by individuals, businesses, communities, and governments;
- improved partnerships between educators and industry so that people learn skills today that will be needed by employers;
- building better programs and services to assist in understanding the demands of the job market and helping them to prepare themselves for it;
- encouraging lifelong learning: building supports for literacy training, encouraging learning in pre-school years, supporting young people to stay in school, providing incentives for individuals and employers to invest in continuous skills upgrading.

Manufacturers often suffer from a mismatch between the skills their workers have, and the ones they must acquire for the company to survive and grow. Many companies will not open new facilities or expand existing ones if they find the local labor force incapable of staffing and servicing facilities or operating production lines (1).

Plant owners and managers must respond to new, often unexpected, and substantially different demands for job skills. Training, therefore, assumes an increasingly important role in manufacturing modernization strategies. Community colleges and vocational schools are often leaders in the delivery of training programs. Many have built the necessary expertise to respond quickly and adeptly to the needs of local companies.

In many areas, training programs have not approached their potential usefulness because public development agencies simply are not aware of their effectiveness, their appeal to private business operators, or their potential contribution to an overall economic development incentive package. Therefore, business development advocates, technology service providers, and technical information specialists need to be more aggressive in learning about and promoting training initiatives.

EMPLOYEE TRAINING IN THE WOOD PRODUCTS INDUSTRY

In the secondary or value-added wood products industry, numerous strategies are being undertaken to cope with skill shortages. Companies with the ability to transfer operations to less costly labor markets are doing so. Other companies are investing heavily in new, more productive technologies. Still other companies are targeting specific niche markets to reduce the impact of competitive forces on operations. However, most industries remain faced with the fact that in the current market, the labor force is aging and appears to be getting smaller.

These issues have implications for industries that are not as high profile and socially attractive as the industries generally considered to be related to high technology. One such low-profile industry is the wood products industry. Although not typically mentioned as a high-tech industry, wood products design and manufacturing processes are increasingly incorporating high technology.

A recent study conveys comments from major wood industry association executives on issues that face the industry (5). Almost to the point of exclusion of other issues, these executives point to the impact of technology and the skill levels of the current workforce as the most pressing issues facing the wood products industry. A survey of 1,250 U.S. and Canadian wood products companies found that a clear majority of the manufacturer respondents said employee issues accounted for their biggest challenge. A full 38 percent ranked employee training as their number one concern. Concerning the adoption of high technology between 1994 and 1998, the number of respondents who indicated the use of computer numerically controlled machinery increased from 20 percent in 1994 to 68 percent in 1998. The use of this higher level of technology, in turn, intensifies employee training requirements.

In a study of forest products industry educational needs in Oregon and Virginia, Hansen and Smith (8) found that identifying new markets, sales ability, plant management/finance, and product pricing were the top educational needs in both states.

Furthermore, in a 1997 survey where wood industry executives were asked to look into the future and expound on the

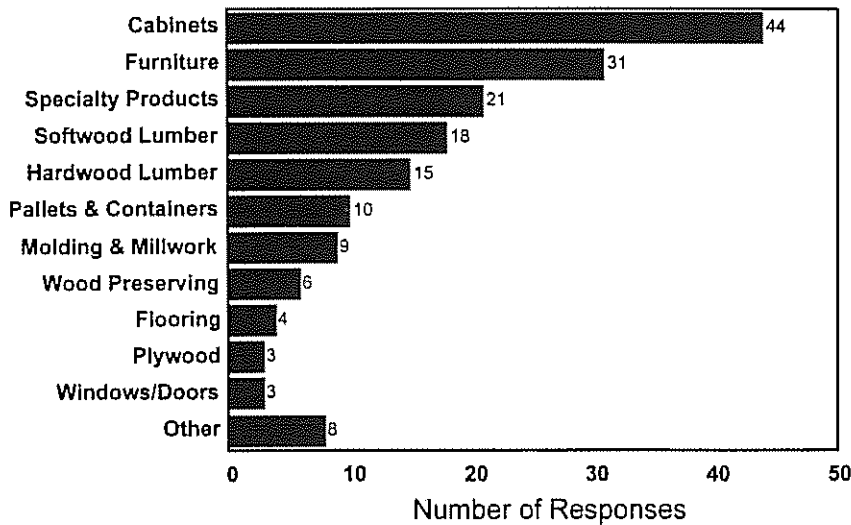


Figure 1. — Products produced by respondents (multiple responses possible).

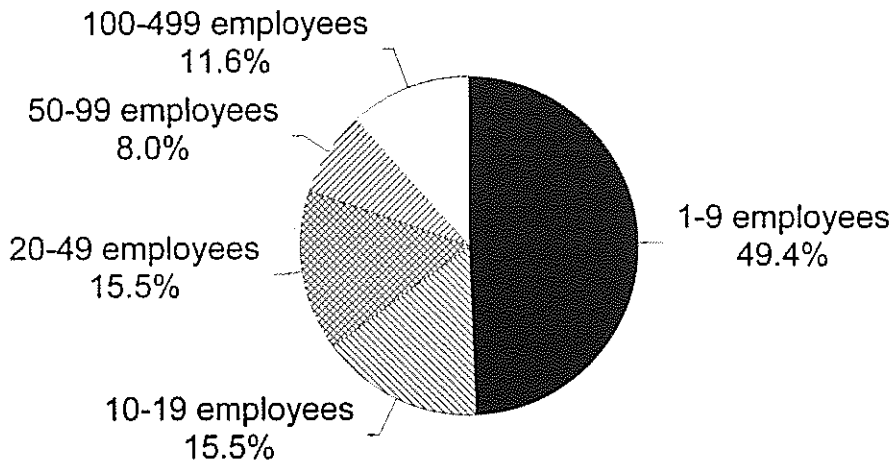


Figure 2. — Full-time employees ($n = 174$).

needs of their respective industry sectors, most indicated that it will be technology and the people qualified to operate that technology that will accelerate productivity gains (9).

Thus, confronted by these issues, what is the wood products industry doing to meet the challenge? Efforts in many states are underway to address the training needs of the value-added wood products industry. Even in 1992, there were over 100 programs that had some component that addressed the woodworking industry (11). These types of programs are often state specific and are typically supported with state funds allocated by legislatures or governors.

THE STUDY

In general, sampling, survey procedures, follow-up efforts, and data analysis in this study were conducted in accordance with well-documented and verified techniques (3,6,7,10). The following sections describe these procedures.

SAMPLING

The sample frame for the study consisted of all secondary solid wood products manufacturers in Louisiana. Examples of industry sectors represented include hardwood dimension and flooring mills, wood kitchen and bath cabinets, wood household furniture, wood office furniture, store fixtures, pallets, partitions, etc. There are estimated to be approximately 650 companies in this

population in Louisiana (12). The primary source of sample frame information was existing industry directory databases and directories compiled by the LFPL (4).

MAIL QUESTIONNAIRES

Data collection was done using a mail survey questionnaire. Mail questionnaires were chosen as the most cost-effective method of data collection. The method affords a high degree of anonymity and is less limited by rigid time constraints that can impede the effectiveness of other survey methods. Mail survey procedures followed the Total Design Method (TDM) recommended by Dillman (3). This included a pre-notification letter, a cover letter accompanying the initial questionnaire, a follow-up postcard, and a second mailing of the questionnaire.

RESULTS

Of the 650 surveys mailed, 23 were undeliverable because the company had moved or had gone out of business. Of the remaining companies, 179 returned usable surveys resulting in an adjusted response rate of 29 percent. Second-mailing respondents, often used as a proxy for non-respondents, were compared to first-mailing respondents across all study questions. By examining differences between the two mailings using two-tailed t-tests, statistically significant differences ($\alpha = .05$) were found for 10 of the 124 questions that could be compared in the study. Specifically, first-mailing respondents had a greater need for training in sanding, gluing, and sawing; second-mailing respondents had a greater need for information on wood finishing and also had a lesser need for remedial training for employees.

DEMOGRAPHICS

Solid wood forest products (as opposed to pulp and paper products) can be broadly characterized as primary or secondary 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 input for remanufacturing. Examples include various types of panels, engineered composites, or dimension stock. Secondary products can also

include final consumer products such as furniture.

Although this study focuses on the secondary, or value-added sector of the industry, respondents manufacture primary products as well (Fig. 1). Cabinets and furniture had the highest frequency of responses followed by specialty products. Softwood and hardwood lumber, both primary products, were produced by 18 and 15 respondents, respectively. Many companies are vertically integrated and manufacture primary products often as raw materials for secondary production.

CURRENT STAFFING AND PLANNED EMPLOYEE INCREASES

Confirming results of previous research by Vlosky and Doucet (12), secondary wood products companies in Louisiana are typically small. Respondents indicated that nearly half of their companies have less than 10 full-time employees and over 80 percent have less than 50 employees. (Fig. 2).

With regard to part-time employees, nearly all (95.6%) of the 115 respondents that answered this question had between 1 and 9 employees. The fact that two-thirds of companies employ part-time employees is significant. This has implications for employee longevity, training, and costs.

Just over a third of respondents (35.7%) had plans to increase employment in 1999 while 43 percent said they will add employees in the subsequent 3-year period. For the companies that plan to add employees, on average, six employees per company are planned to be added in 1999 and seven additional employees in 2000 to 2002. Total planned employee additions for these time periods are 354 and 399, respectively.

The most prevalent reason why respondents are not adding employees is the lack of adequate labor (48 responses). This is followed by lack of adequate markets (31 responses), workmen's compensation costs (30 responses), other labor costs (26 responses), and taxes (10 responses).

Respondents were offered the opportunity to list any additional reasons why they did not plan to add new employees (Table 1). One frequently mentioned reason had to do with technology and process improvements that precluded the need for additional employees.

TABLE 1. — Reasons for not adding new employees.

Change in business strategy
Don't want to expand due to being a small company (1 to 3 person shop)
Due to innovation and technology, which reduces the need for more employees
Equipment upgrades
Found comfortable formula and present employee/workload ratio
Going to get more efficient with what we have
Government regulations for larger companies
Have to go behind employees and correct problems, which is too much of a hassle
Market is too competitive to expand at this time
Product demand is low
Process improvements
Productivity gains
Raw material prices are too high

TABLE 2. — Type of employee training required.^a

	n	Mean
Skilled labor	149	4.02
Basic woodworking skills	148	3.25
Management	143	3.11
Unskilled labor	145	2.93
Remedial education	136	2.80
Seasonal or temporary	133	2.17

^a Scale: 1 = least required, 5 = most required.

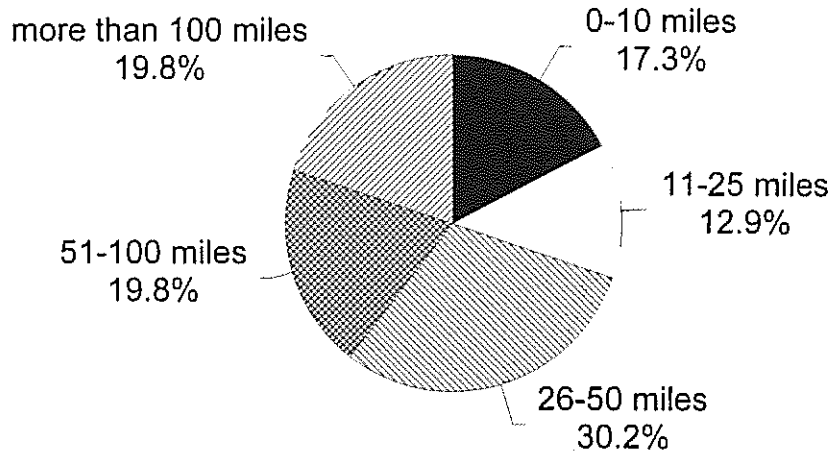


Figure 3. — Distance that employees would be allowed to travel for training (n=153).

Other reasons included high raw material prices and government regulations.

DESIRED TRAINING REQUIREMENTS

Respondents were asked to evaluate training requirements for different employee types and skill levels. Using a scale of 1 to 5 (1 = least required; 5 = most required), respondents indicated that getting skilled employees is their most pressing need (Table 2). Many companies indicated that they could in-

crease capacity if they had employees to support such expansion. Beyond skilled employees, the second most required employee would have basic woodworking skills. This is followed by management, typically shop foremen. The balance of employee types all had mean scores below 3.0, or neutral, on the 5-point scale.

Mean scores give an indication of what industry needs are in general, but are not extremely useful in developing

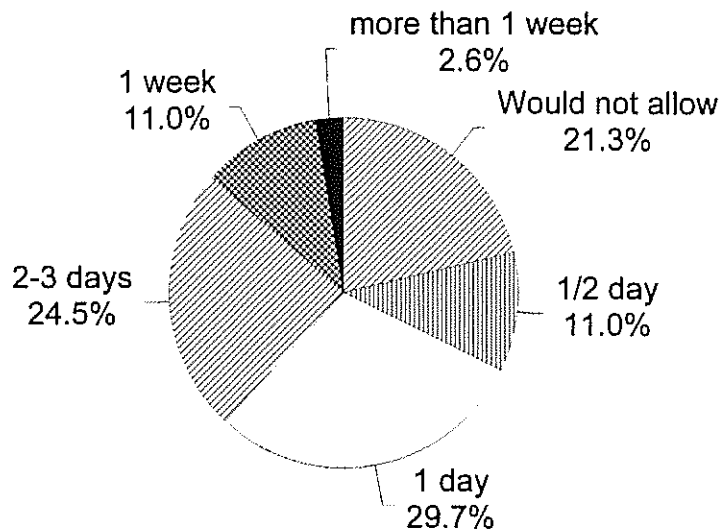


Figure 4. — Time that employees would be allowed to be away for training ($n = 155$).

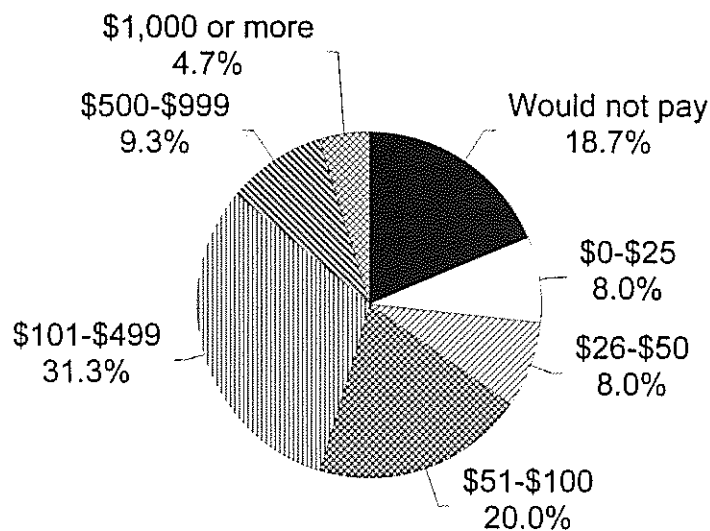


Figure 5. — How much employers are willing to pay for training ($n = 150$).

programs for different company structures and sizes. Accordingly, employee training requirements for each of the options listed in **Table 2** were further broken down by respondent company size class. Skilled labor was the highest-ranked need across all respondents. There is a positive correlation between company size and need for skilled labor. As companies get larger, production processes generally become more complicated and specialized. Larger companies utilize sophisticated computer-controlled equipment more often than small companies, further increasing the requirement for specialized skills.

DISTANCE, TIME AWAY, AND COST FOR TRAINING

Before training programs can be developed, it is important to know the distance employers are willing to let employees travel to be trained. **Figure 3** shows a fairly even distribution of respondents across different distances. Statistical analysis indicates that the distance allowed to be trained is significantly correlated to company size.

In addition, it is important to know acceptable training session time allowances within the constraint of allowed time away from the company site. **Figure 4** shows that 21.3 percent of respondents said that they would not allow em-

ployees to spend any time away to be trained. Forty percent said they would allow 1 day or less, while almost a quarter (24.5%) would allow 2 to 3 days to be trained. Eleven percent would allow 1 week away and 2.6 percent would allow more than 1 week. Once again, statistical analysis indicates that the allowed time away for training is significantly correlated to company size.

Finally, it is important to know how much money employers are willing to pay for training employees. Consistent with the nearly 20 percent of respondents that would not allow employees to travel or be away for training, 18.7 percent would not pay anything for training (**Fig. 5**). Over half of respondents (51.3%) would pay between \$51 and \$499, while 16 percent would pay \$50 or less. Statistical analysis indicates that the amount companies are willing to pay for training is significantly correlated to company size.

DESIRED KNOWLEDGE FOR EMPLOYEES

Respondents were asked to evaluate desired employee knowledge for 42 factors. **Table 3** ranks these areas. The only two factors that ranked above 4 on the 5-point scale of desire were safety regulations and dealing with customers. These are followed by the need for employees to know about quality and process control, followed by basic problem-solving skills. The balance of the criteria is varied and does not follow any discernible pattern. This is in contrast to a study of Oregon secondary wood products industry educational needs that indicated that identification of new markets was the top education need in that state (8).

DESIRED KNOWLEDGE FOR EMPLOYEES BY COMPANY SIZE

While an aggregate ranking of factors is interesting, as is the case with other training issues, it is important to further segment these knowledge factors to better tailor programs. Therefore, **Table 4** indicates the relative importance of each for different company size classes. Beyond safety issues, which were deemed important by respondents in every company size class, we can see that the other factors are more important to certain sizes of companies and not so important to others. For example, *dealing with customers* is important to mid-size companies (42.3% of compa-

nies with 20 to 49 employees and 38.5% of companies with 50 to 99 employees). *Lumber grading* knowledge is more important for employees in larger companies (50 employees or greater) while *wood gluing* and *wood finishing* are more important to companies in the smallest size class category (1 to 9 employees). Even *sanding/abrasives*, a factor near the middle of the list, is important to 32.4 percent of companies with 1 to 9 employees.

DESIRED TRAINING METHODS

Employee training can be accomplished through a variety of means. Respondents were asked to evaluate the importance of 11 methods (Table 5). Because it is difficult for many companies to have employees be away for any length of time, it is most preferable, or important, to have in-house training on-site (mean score of 5.98 on a 7-point scale of importance). Training manuals that can be read on-site or at the employees' leisure were ranked next with a score of 4.39. The remaining methods all fall below 4.0, the midpoint or neutral point on the scale. Least desirable are national conferences that require employees to travel and be away from the company for extended periods of time.

APPROPRIATE ENTITY TO CONDUCT TRAINING

There are many different ways to deliver employee training in the secondary wood products industry. In Louisiana, in addition to many traditional training entities, the LFPL and the Louisiana Cooperative Extension Service (LCES) exist to disseminate information to this industry. Both are units under the Louisiana State University Agricultural Center in Baton Rouge. On a scale of 1 to 5 (1 = least appropriate entity to do training; 5 = most appropriate entity to do training), respondents indicated that industry experts were most appropriate (Table 6, Fig. 6). Second ranked is the Louisiana vocational-technical system, third is equipment manufacturers, and fourth is community colleges. The rest of the entities evaluated all received average scores below 3.0 or neutral. Least appropriate is the LCES just after the LFPL. In the case of LCES, this is surprising since workshops and information dissemination are primary LCES activities. It is not so surprising in the case of the LFPL, which is research oriented.

TABLE 3. — *Desired knowledge for employees.*^a

	<i>n</i>	Ranked from most desired to least desired Mean
Safety regulations	154	4.24
Dealing with customers	155	4.01
Quality and process control	156	3.79
Basic problem-solving skills	155	3.72
Inventory control/production scheduling	158	3.57
Plant maintenance	155	3.52
Total quality management	151	3.50
Wood identification	156	3.50
Product improvement	154	3.48
Basic wood properties	156	3.47
Wood-machining process	151	3.45
Sawing/cutting technology	158	3.43
Product pricing	154	3.42
Cost reduction	155	3.40
Motivating personnel	154	3.37
Plant management and finance	154	3.37
Lumber grading	155	3.27
Sales ability	155	3.27
EPA/DEQ regulations	158	3.18
Wood-water regulations	153	3.02
Product promotion	154	3.02
Wood gluing	150	3.02
Wood finishing	152	3.00
Competitive positioning	153	2.99
Product distribution	149	2.98
Gluing/jointing	149	2.95
Plant layout/design	153	2.94
Sanding/abrasives	152	2.90
Developing business plan	153	2.83
Dealing with changing raw materials	150	2.82
Strategic market planning	152	2.78
Plant maintenance	154	2.78
New product development	152	2.76
Computer education	152	2.75
Identifying new markets	152	2.75
Economics	146	2.74
Finishing and coating	150	2.70
Machine vision technology	144	2.53
Utilizing composite products	152	2.19
CAD/CAM/CNC	146	2.17
Green marketing/product certification	146	2.02
International marketing (exporting)	144	1.67

^a Scale: 1 = not important at all, 5 = most important.

SUMMARY

The value-added wood products industries in most states in the South are outpacing Louisiana in productivity and training for their employees. This study identifies the manufacturers' perspective on training needs and issues in Louisiana. This information can help policy-

makers craft programs targeting this industry. The information can also be useful to value-added wood products manufacturers by identifying needs and issues across the industry. Collectively, perhaps the industry can achieve what has not been possible to date, a strong and cohesive voice for training and de-

TABLE 4. — Summary of desired knowledge for employees by company size: percent of companies indicating "most desired."^a

	1 to 9 employees	10 to 19 employees	20 to 49 employees	50 to 99 employees	100 to 499 employees
Safety regulations	50.7	47.6	33.3	38.5	31.6
Dealing with customers	52.7	28.0	42.3	38.5	23.5
Quality and process control	37.0	29.2	23.1	46.2	31.6
Basic problem-solving skills	39.7	8.3	24.0	30.8	5.3
Inventory control/production scheduling	28.4	16.0	34.6	38.5	5.3
Plant maintenance	23.9	12.0	44.4	23.1	5.6
Total quality management	31.9	8.7	30.8	23.1	21.1
Wood identification	41.1	24.0	34.6	30.8	5.6
Product improvement	23.3	13.0	19.2	--	11.1
Basic wood properties	32.9	16.0	23.1	15.4	16.7
Wood machining process	31.0	17.4	28.0	30.8	22.2
Sawing/cutting technology	28.4	16.0	18.5	30.8	27.8
Product pricing	23.0	17.4	44.0	30.8	16.7
Cost reduction	22.2	8.0	15.4	15.4	11.1
Motivating personnel	22.9	16.0	19.2	23.1	21.1
Plant management and finance	23.6	4.2	34.6	15.4	11.1
Lumber grading	26.0	20.8	15.4	38.5	33.3
Sales ability	24.7	23.1	20.0	33.3	11.1
EPA/DEQ regulations	19.2	20.8	22.2	23.1	25.0
Wood-water regulations	16.7	12.5	24.0	23.1	22.2
Product promotion	20.8	12.0	11.5	8.3	11.1
Wood gluing	35.6	13.6	16.7	--	23.5
Wood finishing	34.7	13.0	16.0	15.4	5.6
Competitive positioning	15.5	--	15.4	7.7	16.7
Product distribution	17.1	8.7	20.0	7.7	5.9
Gluing/jointing	34.7	4.3	13.0	--	11.8
Plant layout/design	19.4	4.3	15.4	15.4	5.6
Sanding/abrasives	32.4	17.4	8.7	--	11.1
Developing business plan	15.5	4.2	24.0	7.7	--
Dealing with changing raw materials	9.9	4.5	8.0	7.7	11.1
Strategic market planning	15.5	4.2	16.0	15.4	5.6
New product development	8.3	12.0	--	7.7	6.3
Computer education	15.7	4.2	11.5	30.8	5.6
Identifying new markets	15.7	--	7.7	--	5.6
Economics	14.3	--	4.0	7.7	--
Finishing and coating	27.4	17.4	4.3	7.7	5.9
Machine vision technology	16.7	--	7.7	7.7	5.9
Utilizing composite products	8.3	--	8.0	--	--
CAD/CAM/CNC	10.4	4.2	12.5	7.7	5.9
Green marketing/product certification	5.9	--	12.5	7.7	5.9
International marketing (exporting)	3.0	4.8	--	15.4	5.6

^a Bold indicates over 30 percent of companies.

velopment to ensure the viability of the industry.

The current educational system in Louisiana provides little in the way of workforce training and development appropriate for the needs of the state's value-added forest products industries. As a result, there is a major gap in Louisiana between the skills needed by today's value-added forest products indus-

try sectors and the available labor to meet these needs. To help close this gap, manufacturers, potential training entities, and policymakers alike must develop a coordinated plan of action.

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TABLE 5. — Importance of different employee training methods.^a

	n	Ranked from most
		important to least important
		Mean
In-house training	158	5.98
Training manuals	148	4.39
Personal visits	149	3.89
Off-site training facility	150	3.67
Short courses	150	3.63
Newsletter/videos	148	3.60
Magazine articles	148	3.37
Correspondence courses	144	3.04
Electronic transfer	146	2.82
Telephone calls	148	2.61
National conferences	144	2.48

^a Scale: 1 = not important at all, 7 = most important.

TABLE 6. — Appropriate entities to conduct employee training.^a

	n	Ranked from most
		appropriate to least appropriate
		Mean
Industry experts	149	3.51
Vocational-technical system	148	3.50
Equipment manufacturers	148	3.47
Community colleges	149	3.07
Consultants	145	2.86
Louisiana Forest Products Laboratory	145	2.80
Louisiana Cooperative Extension Service	144	2.74

^a Scale: 1 = not appropriate, 5 = most appropriate.

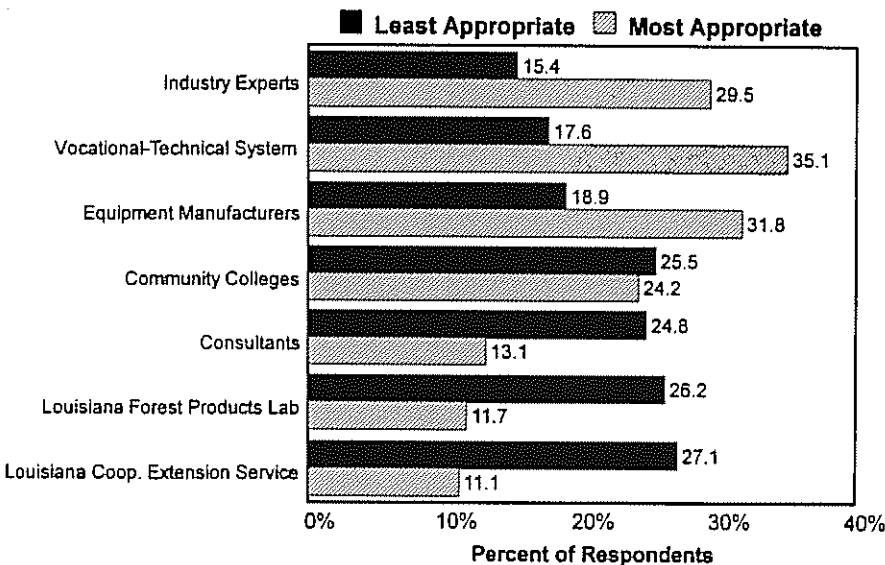


Figure 6. — Entity most appropriate to conduct training - percent of respondents indicating least appropriate and most appropriate (n = 149).

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