TECHNICAL NOTE

An assessment of educational needs in the Alaskan forest products industry

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Abstract

Major changes in federal forest policy in Alaska have resulted in a dramatic downsizing of the state's forest industry. These changes have driven efforts for economic restructuring and improved support for Alaskan communities. The University of Alaska Sitka Forest Products program at the University of Alaska Southeast is one example of efforts to better support the Alaskan forest industry. In an effort to best target educational programs, an industry needs assessment was conducted. Despite the fact that the Alaskan forest industry is different in many ways from the industry in the lower 48 states, educational needs are quite similar to those previously identified in Oregon and Virginia. Generally, marketing and business topics were higher educational needs than traditional processing topics.

The forest industry has evolved rapidly in recent years, dealing with issues such as globalization, consolidation, and especially for Alaska, the vagaries of government forest and environmental policies. Rural economic development is a primary objective for many states as they facilitate development of support structures for the existing or potential wood-based industries (e.g., Vlosky and Chance 1996). Alaska is no exception and a number of initiatives have been created at both the state and federal levels to support industry development. For example, the Interior and Related Agencies Appropriations Act, prepared by Congress for the 1998 fiscal year, directed the USDA Forest Service to conduct a study to evaluate the establishment of a harvesting and wood utilization laboratory in Sitka (USDA Forest Service 1998). That study contained the following specific recommendations to assist with the rebuilding of the forest products industry in Southeast Alaska:

- Use existing services with expanded coordination. Use existing facilities, but add staff with forest products expertise.
- Create a Forest Products Development Center in Southeast Alaska to provide technical and marketing assistance through the Forest Products Laboratory.
- Create an Entrepreneurial Incubator and Training Center at one of the University of Alaska colleges, using Forest Service Research and State & Private Forestry staffs to provide training.

This article outlines efforts of the University of Alaska (Sitka Forest Products Program) to identify the specific technical and marketing topics that could satisfy the educational needs of Alaska's forest industry. The project was also designed to identify characteristics of potential personnel for training and the most effective methods of delivering needed programs.

Methods

A number of states have conducted educational needs assessments that have guided the development of industry support programs (Hansen and Smith 1997, Bowe et al. 1999, Vlosky and Chance 2001). A method advocated by Borich (1980), and later used by Bratkovich and Miller (1993) to measure the educational needs of Ohio sawmill operators, was utilized to avoid merely measuring the importance of topics rather than educational need. Respondents were asked to rate

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Forest Prod. J. 55(9):19-23.

the importance and the knowledge of company personnel on a topic (a 5-point scale; the minimum score was 1). From these two component scores, an educational-need score was calculated as follows:

Education Need = (Importance Rating - Knowledge Rating) × Mean Importance

By combining importance and knowledge in this way, high importance but low knowledge topics are identified. Modeling previous efforts, this project collected information about the needs for training and educational programs required by the Alaska forest products industry. Some emphasis was placed on determining the industry's need for specific types of personnel with three levels of training (vocational/technical, undergraduate, and graduate).

Given that the University of Alaska was considering creating training programs, additional questions were added to determine the types of individuals firms prefer to hire and the skills they should possess. Questions were also included to determine the preferred methods for delivering training to existing employees. Questions were designed to address the issues of "Who, What and Where" of possible training efforts.

Sampling

A census of all firms that could be identified in the Alaska forest products industry was conducted. A total of 672 members of the population were identified. The list used in this study originated from various work in Alaska first led by Michael Johnson of the Alaska Division of Community and Business Development and Daniel Parrent, Wood Utilization Specialist for the Juneau Economic Development Council (Parrent 2000). This original list was supplemented by work done in January and February of 2002 by the University of Alaska Southeast Forest Products Program and the USDA Forest Service, Sitka-based Forest Products Utilization Group.

Questionnaire design

A questionnaire was constructed to determine the following for 35 different topics: 1) importance to the company; and 2) current knowledge of existing personnel. The 35 topics were modeled around previous work performed by Hansen and Smith (1997) in Oregon and Virginia. Three items included in that study were excluded because they were determined not to be applicable in the context of the Alaska industry:

- CAD/CAM/CNC
- Machine Vision Technology
- Total Quality Management

Likewise, several items were added to reflect the Alaska context:

- Finding markets for low-grade product
- Identifying transportation options
- Identifying markets for waste (sawdust etc.)
- Basic computer skills

Beyond the items designed to measure educational need, the survey instrument included questions addressing the following issues:

- Method for obtaining skilled personnel
- Preference for education level and background experience for new employees
- Preferred method of training delivery
- Firm characteristics (primary product line, sales, number of employees, years in business, position of respondent.

The questionnaire was pretested with six potential respondents through on-site interviews. The interviewees consisted of primary, secondary, specialty, and native government companies. The interviews provided real-time feedback regarding respondent impressions and understanding of the questions. This pretesting resulted only in minor revisions to the questionnaire.

Survey administration

Survey administration generally followed the recommendations of Dillman (2000). A pre-notification letter was sent to respondents 2 weeks prior to the questionnaire. An initial questionnaire, cover letter, business-reply envelope, and incentive were sent to respondents. A reminder postcard, a second questionnaire, and a second reminder postcard followed, at 2-week intervals.

Respondents included 52 primary, 27 secondary, and 48 specialty firms. After eliminating undeliverable questionnaires and those outside the population of interest, the total population was 507. A total of 127 responses provide a 25 percent valid response rate. We tested for the presence of nonresponse bias by comparing the values for the first 40 responses returned to that of the last 40 responses returned. This method assumes that late respondents are similar to nonrespondents and is a generally accepted procedure (Armstrong and Overton 1977). Only 1 item in the total of 39 tested was found to be significantly different. This is an indication that nonresponse bias was not a significant factor in this study.

Data analysis

Educational needs were calculated according to the previously mentioned equation. Other analysis consisted of basic descriptive statistics calculated using SPSS 11.0 (statistical package for social sciences). Analysis of variance was used to compare educational needs among Oregon, Virginia, and Alaska.

Results

Responding firm characteristics

A number of possible product lines were listed in the questionnaire and respondents were asked to identify their ONE primary product line. However, many respondents indicated multiple products. Although this required some interpretation by the researchers, all respondents were categorized into one of the following three sectors:

Primary firms (n = 52; 41%)

- Dunnage
- Hardwood lumber
- Veneer/panel products
- Softwood lumber
- Primary breakdown

Secondary firms (n = 27; 21%)

- Moulding and millwork
- Furniture
- Cabinets
- Flooring

- Windows/doors
- Shingles/shakes
- Log or panelized buildings

Specialty firms ($n = 48$; 38%)

- Art wood products (carving, picture frames)
- Cultural bark/root products (baskets, clothing, mats)
- Cultural wood products (masks, totems, canoes, house posts, baskets)
- Solid wood products (birdhouses, lawn chairs, boats, etc.)

Within these sectors, softwood lumber was the dominant product type for primary manufacturers; art wood products for specialty, and secondary had no dominant product type.

There was a sharp contrast in firm size among the three sectors, with the primary sector being much larger. Specialty producers are typically one-person shops while primary producers are, on average, nearly nine times larger. Taking seasonal employees and converting them to one-half of a full-time employee, and dividing total sales by total employees, provides sales per employee of $121,500, $61,900, and $27,300 for the primary, secondary, and specialty sectors, respectively.

Primary sector

- Total full-time employees: 465; average is 9.3
- Total seasonal employees: 410; average is 8.7
- Average years in business: 17.4

Secondary sector

- Total full time employees: 70; average is 3.0
- Total seasonal employees: 57; average is 2.4
- Average years in business: 10.1

Specialty sector

- Total full time employees: 58; average is 1.2
- Total seasonal employees: 45: average is 1.0
- Average years in business: 9.4

Personnel skill preferences

Respondents indicated their preferences regarding methods to obtain skilled personnel. They most preferred providing technical training to existing personnel. The next selected method was hiring individuals with technical training. When considering hiring new employees, respondents most preferred to hire high school graduates with technical training. This was consistent across the three sectors of the industry. The second most preferred employee type was high school graduates with business training and this was consistent across all sectors. However, it is important to note that only the ratings for high school graduate with technical training are above the neutral value of three. This suggests that potential employees with college-level training, either technical or business, appear to have few opportunities in the Alaskan forest products industry. However, this comment must be balanced with the apparent challenge that many companies have finding ANY skilled labor and their common concern over the cost of doing business in Alaska.

Educational needs in the Alaska forest products industry

As mentioned previously, respondents indicated the importance of 35 separate topics to their company as well as the knowledge of their personnel in those areas. By combining importance and knowledge we were able to identify educational needs. Each of the 6 highest ranked educational topics and 10 of the top 12 educational topics are marketing/business related (**Table 1**).

Table 1. — Mean educational needs by industry sector.

Educational need	All	Primary	Secondary	Specialty
Identifying new markets	3.93	4.42 (1)[a]	3.81 (4)	3.44 (4)
Sales abilities	3.66	3.89 (5)	2.74	3.99 (2)
Finding market information	3.51	4.20 (2)	3.27	2.76
Product pricing	3.48	4.11 (4)	4.03 (2)	2.27
Product promotion	3.25	2.50	3.41	4.22 (1)
Strategic marketing planning	3.11	4.13 (3)	3.39	1.79
Quality and process control	2.91	3.20	1.33	3.74 (3)
Competitive positioning	2.83	3.17	3.01	2.25
New product development	2.61	2.94	1.70	2.83
Motivating personnel	2.58	2.87	3.46	1.65
Developing business plan	2.54	2.27	3.64 (5)	2.15
Public relations	2.33	2.34	2.16	2.42
Plant management and finance	2.31	2.91	3.85 (3)	0.65
Sawing/cutting technology	2.28	2.56	1.24	2.69
Inventory control/production	2.25	1.96	4.35 (1)	1.26
Basic problem-solving skills	2.23	1.68	2.02	3.08 (5)
Product distribution	2.04	1.78	2.51	2.05
Wood-water relationships	1.94	2.46	0.29	2.47
International marketing	1.66	2.37	1.31	1.22
Basic computer skills	1.48	2.13	1.66	0.52
Identifying markets for waste	1.47	2.31	1.67	0.53
Finding markets for low-grade product	1.39	3.61	1.01	−0.11
Identifying transportation options	1.17	2.00	2.14	−0.14
Basic wood properties	1.12	1.00	0.78	1.56
Plant maintenance	0.98	1.14	0.15	1.40
Lumber grading	0.89	2.16	0.77	−0.34
Green marketing/product certification	0.77	1.78	0.44	0.00
Finishing/coating	0.75	0.13	0.37	2.39
Safety regulations	0.63	1.00	1.16	−0.25
Gluing/jointing	0.63	0.13	1.44	0.85
EPA/DEQ regulations	0.63	1.23	−0.65	0.67
Dealing with changing raw materials	0.58	0.27	1.13	0.60
Sanding/abrasives	0.36	0.09	−0.54	1.70
Utilizing composite products	−0.33	−0.12	−0.64	−0.42

[a]Values in parentheses indicate ranks of educational needs within sectors.

The primary sector of the forest products industry is often seen as production oriented and manufacturers of commodity products. However, despite this reputation, respondents from the primary sector saw their largest educational needs to be business/marketing related. This is true despite the fact that the primary sector was also very concerned about the availability and cost of supply. The only educational topic related to raw material supply was "dealing with changing raw materials" and this was found to be a very low educational need. A marketing issue, "finding markets for low grade product" was another high educational need for primary producers. Traditional sawmilling issues such as lumber grading were rated surprisingly low.

Table 2. — Top five educational needs by state.

Oregon	Virginia	Alaska
Identifying new markets	Pricing	Identifying new markets
Sales abilities	Motivating personnel	Sale abilities
Plant management and finance	Identifying new markets	Finding market information
Pricing	Quality/process control	Pricing
Motivating personnel	Plant management and finance	Promotion

Table 3. — Preferences for meeting training needs and differences among all respondents.[a]

Mean responses for each category	All	Primary	Secondary	Specialty
1. Short courses at closest University of Alaska Facility	13.6	13.2	9.0	17.3
2. Personal visits by Extension Specialist	9.6	13.8	8.3	5.1
3. Videos	20.8	18.1	18	26.1+
4. Web-based, educational modules	7.1	6.7	8.7	6.6
5. On-site short courses	25.1	28.5+	28.0+	18.8
6. Audio conferencing	2.0	2.0	3.7	1.1
7. Other	15.6	9.7	20.5	19.7

	1	2	3	4	5	6	7
1							
2							
3	*	*					
4	*		*				
5	*	*		*			
6	*	*	*	*	*		
7					*	*	

[a]+ = most preferred training method for each sector; * = significant difference in means ($p < 0.05$) using Wilcoxon Signed-Rank test based on all respondents.

Processing-related topics received higher rankings from the secondary sector. Still, three of the top five topics are marketing/business related. Other marketing/business-related topics made up the remainder of the top 10 educational needs for this sector.

Specialty producers are typically very small. Many have considerable hands-on experience producing their product, but often lack marketing and business experience. As with the other two sectors, marketing/business related items were highly rated.

Comparison to Virginia, Oregon, and Louisiana

When considering Alaska, Virginia, Oregon, and Louisiana, there are vast differences in industry scale, sophistication, and accessibility to markets. The studies in Virginia and Oregon were conducted several years previous to the Alaska project and there is a basic difference between the studies in Louisiana and the other states. In the Louisiana study (Vlosky and Chance 2001), information was collected about the importance of the proposed training and need. This difference makes it difficult to compare results. Still, educational needs in Alaska are quite similar to those found in a past study of Oregon and Virginia (Hansen and Smith 1997). For example, the top five educational items in each of the three Alaskan sectors have three items in common with the top five items from Oregon (**Table 2**). These items are "identifying new markets," "product pricing," and "sales abilities." Two items in each of the sectors are in common with the top five educational needs in Virginia.

Analysis of variance was used with a Bonferroni *post hoc* test to compare the educational needs among the industries in Alaska, Oregon, and Virginia. Generally, regardless of the vast differences in scale, apparent technical sophistication, access to markets, and dates of data collection, very few differences were found. The only case in which Alaska was different from both Oregon and Virginia was with respect to "safety regulations" and "EPA/environmental regulations," with Alaska being significantly lower ($p < .05$). This reinforces past findings and suggests that forest industry educational needs are rather consistent regardless of geographic location and that marketing/business items are typically the highest educational needs.

Meeting training needs

Respondents were asked to indicate their preferred mechanisms for receiving educational programs. They did this by allocating 100 points among 6 different delivery methods as outlined in **Table 3**. Overall the most preferred methods are through on-site short courses and videos. Short courses at a University of Alaska facility also received some support. The "other" category consisted of a range of activities but was dominated by on-the-job training.

Discussion and conclusions

One of the primary reasons for conducting this study was to determine subjects that were of interest to the workforce in the Alaska forest products industry. Findings from this study reinforce the fact that issues related to marketing and business management are perceived to be the biggest needs of the forest products industry regardless of geographic location. Alaska's industry and the context within which it operates are quite different than for Oregon or Virginia, yet educational needs are largely the same.

Because of the remote location of many respondents, on-site educational programs were often preferred. This is, of course, associated with high delivery costs and may not be feasible in many cases.

The results of the study indicated there was little demand for courses in specific technical areas such as saw filing, planer set-up, gluing or any other maintenance or process area. As a result, the University of Alaska Southeast has undertaken two important actions. First, the Juneau campus is in the process of hiring a person to implement a Masters in Business Administration program. It was agreed that an attempt would be made to fill this position with a person having some background in resource marketing. It was reasoned that a qualified person could function in forest products related research projects and assist in training programs. Second, the expressed interest and concern relative to marketing Alaska

products has generated considerable discussion among professionals employed to rebuild the forest products industry in Alaska. A major topic of discussion concerned the relationship between marketing and product promotion. It should be noted that there has never been an active program to promote and market forest products. Questions that developed as the combination of promotion and marketing were discussed included:

- How does the average consumer view forest products produced in Alaska?
- Should Alaska producers advertise the fact that their products are produced from old-growth timber that is harvested from the Tongass National Forest?
- What new markets are available to Alaska producers?

To address these questions, the Sitka Forest Products Program has initiated a marketing project to gain a better understanding of the opportunities and problems associated with promoting and marketing forest products from Alaska.

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