

eBusiness in the United States Forest Products Industry in the Year 2000

Richard P. Vlosky¹

Working Paper #52
Louisiana Forest Products Laboratory
Louisiana State University Agricultural Center
Baton Rouge, LA

August 22, 2001

¹ Associate Professor, Forest Products Marketing Program, Louisiana State University Agricultural Center, School of Forestry, Wildlife and Fisheries, Louisiana State University Baton Rouge, LA 70803; Phone: (225) 578-4527; FAX: (225) 578-4251; email: vlosky@lsu.edu

Abstract

The study discussed in this paper, conducted in 2000, indicates that overall growth of Internet use in the wood forest products industry in the United States is expected to increase in 2001. Larger firms, typically lead technology adopters, are predominant users of the Internet for eBusiness and are more likely to continue to be predominant eBusiness technology implementers in the future. Respondents are using the Internet primarily for “lower order” business applications such as email, web site publishing and promotion. Nineteen percent of respondents conducted eCommerce in 2000 with an additional 20 percent planning to do so in 2001.

KEYWORDS: INTERNET, EBUSINESS, FOREST PRODUCTS, SOLID WOOD, PULP AND PAPER, UNITED STATES

Introduction

In order to keep up with the competition, most companies are continually looking for new and better ways to speed communications between trading partners, establish better relationships with customers, suppliers and partners and reduce expenditures (Franklin 1997). The Internet is an emerging market space that has been shown to accomplish all of these business objectives.

Overall, the Internet offers a revolutionary tool for business development and management. As is the case with other corporate sectors in general, the global forest products industry is rapidly expanding its use of the Internet to conduct business. Through the Internet, many barriers to new markets, resources and competitive positioning can be reduced or eliminated. The Internet levels the playing field as it allows small and large firms alike to be visible and accessible.

The Internet offers several communication tools, each with certain characteristics. They differ in the level of interaction offered, ease of use, number of users and their potential to help building on-line communities and foster business development. Two of these Internet tools, e-mail and the World Wide Web (also known as the Web), have become entrenched in the business environment, facilitating either marketing campaigns, communication with partners and suppliers or process applications inside and outside of the enterprise (Pitis and Vlosky 2000).

The Study

As is the case with other industry sectors around the world, forest-based industries are also beginning to develop eBusiness capabilities. Every few years, the author conducts a study of eBusiness implementation in the forest products industry in the United States (Vlosky 1999). This paper discusses key findings from the most recent study conducted in 2000. Results are presented without editorial conjecture. In other words, the author has not attempted to second-guess rationales for responses.

Research context

eBusiness was studied in the context of the forest products industry in the United States. One thousand solid wood products and 300 pulp and paper companies were surveyed. The sample frames included the top 100 companies (by production volume) in each sector (solid wood products, pulp and paper). The remaining companies sampled were randomly selected from the population. Overall, respondents were asked to discuss their current or

planned eBusiness strategies and the impacts they have on dealings with customers and suppliers. Specifically, the study objectives were to examine the current and future uses of eBusiness in the industry and identify how the forest products industry is investing in and leveraging eBusiness.

Mail questionnaires were used to conduct the study. A list of questions was generated for the survey instrument drawing from constructs and measures developed by the researcher in previous studies or adapted from other sources. The survey was reviewed and revised by the researcher, a pre-testing sample of five companies and the research client. An iterative process resulted in the final instrument.

Response Rates

For the two populations surveyed (solid wood products, pulp and paper), the adjusted weighted response rate after accounting for non-deliverable surveys (due to company closures, change of address or deceased) was 16 percent. Given that typical response rates for industrial studies range from 15-35 percent (Adams 1986, Donald 1960), a response rate of 16 percent in this study is considered low but adequate.

Respondent profile

Over 70 percent of respondents had 2000 sales of \$49 million or less while 10 percent had sales of a half billion dollars or more (Figure 1). Sixty-one percent of respondent companies had 100 employees or less while 16 percent had over 500 employees.

The products produced by respondents are shown in Figure 2. In the pulp and paper sector, specialty paper, market pulp, packaging products and printing paper were the products most cited. With regard to solid wood product respondents, lumber, by far, was the most frequently manufactured product.

Forty-five percent of respondents said that large companies were their primary customer bases (Figure 3). This included wholesalers, distributors and retailers. This has implications for eBusiness as the majority of early adopters are typically larger companies that often do business with larger, technology-capable customers.

Figure 1.

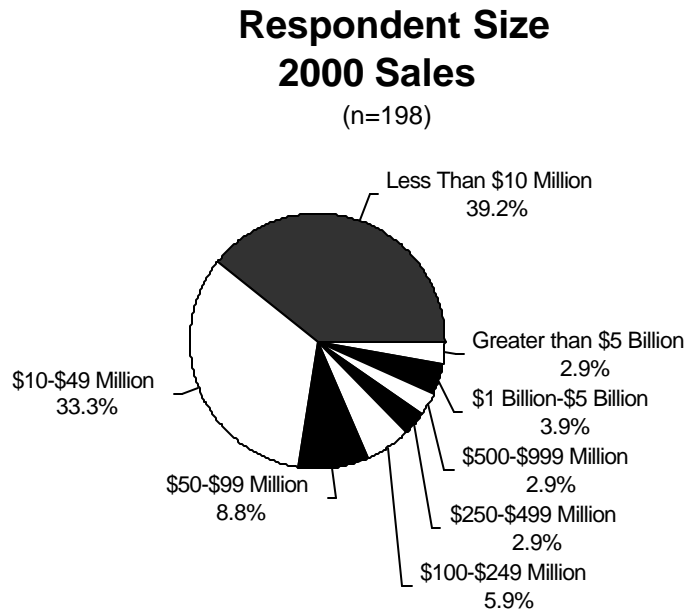
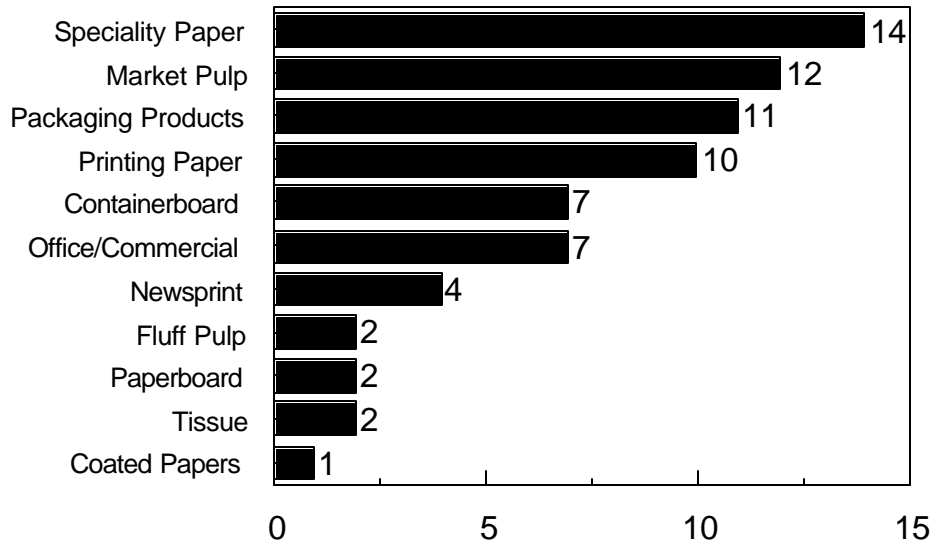


Figure 2.

Respondent Major Product Categories-Pulp & Paper Number of Respondents

(Multiple responses possible)



Respondent Major Product Categories-Solid Wood Number of Respondents

(Multiple responses possible)

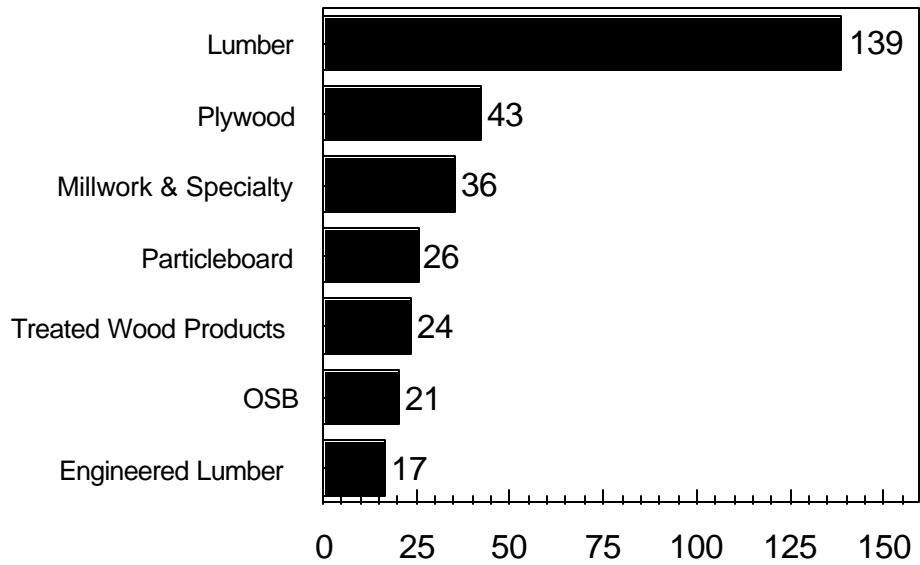
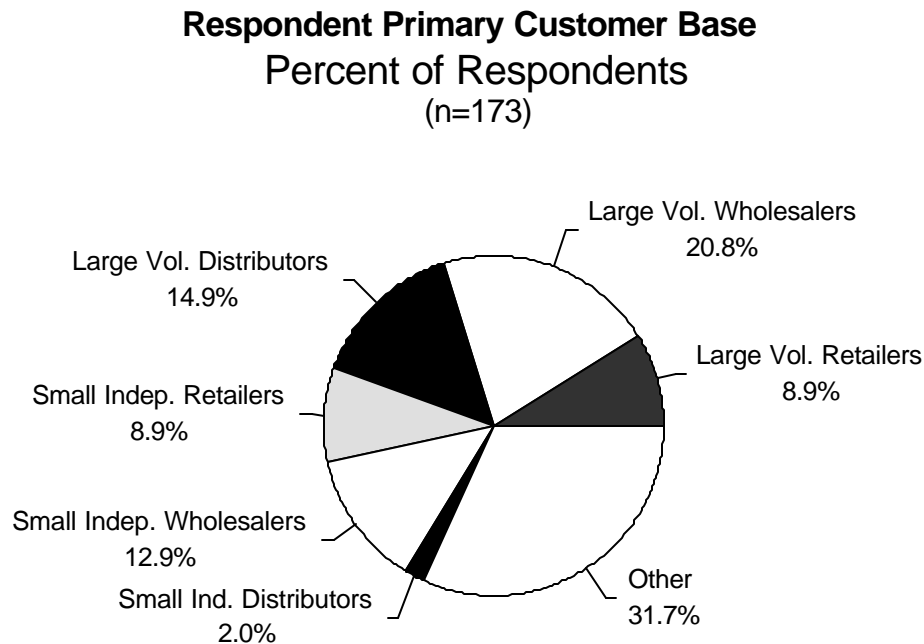


Figure 3.



Benefits of implementing eBusiness

Respondents identified benefits that their companies receive from conducting eBusiness using a 5-point Likert scale of agreement (**Figure 4**). Electronic interactions, if managed correctly, can result in faster communication and increased responsiveness. Accordingly, the highest-ranked benefits are increased access to industry information, timeliness of information exchange, greater exposure to customers, and greater access to customers. Also ranking high on the list are enhancing corporate image, increased access to vendors, increasing sales, and increased customer value. Ranked last is lower prices to customers. This supports other studies that found that eBusiness technologies are viewed as being competitive in nature and have not been found to translate to expectations of lower prices to customers nor expectations that higher prices will be paid to vendors in the forest products industry (Pitis 1999, Vlosky and Fontenot 1997).

A maximum likelihood factor analysis was conducted on benefit items (Hair et al. 1992) (**Table 1**). An iterative process resulted in a reduction from thirteen items to four underlying factors: Information, Cost Reduction/Service Increase, Current Customers and Potential Customers. Factor loadings greater than 0.50 were used as separation criteria to reduce the data to four distinct factors. Each of the four factors identified were interpreted and assigned a scale name. These scales can also be construed as being surrogate variables having analytical and managerial implications. Surrogate variables are particularly useful in exploratory research (Hair et al. 1992). These four factors represent 68 percent of the variance in the thirteen items. In this case, these four factors could potentially become part of an Internet implementation strategy for forest products industry companies.

Figure 4. Perceived Benefits from Using the Internet

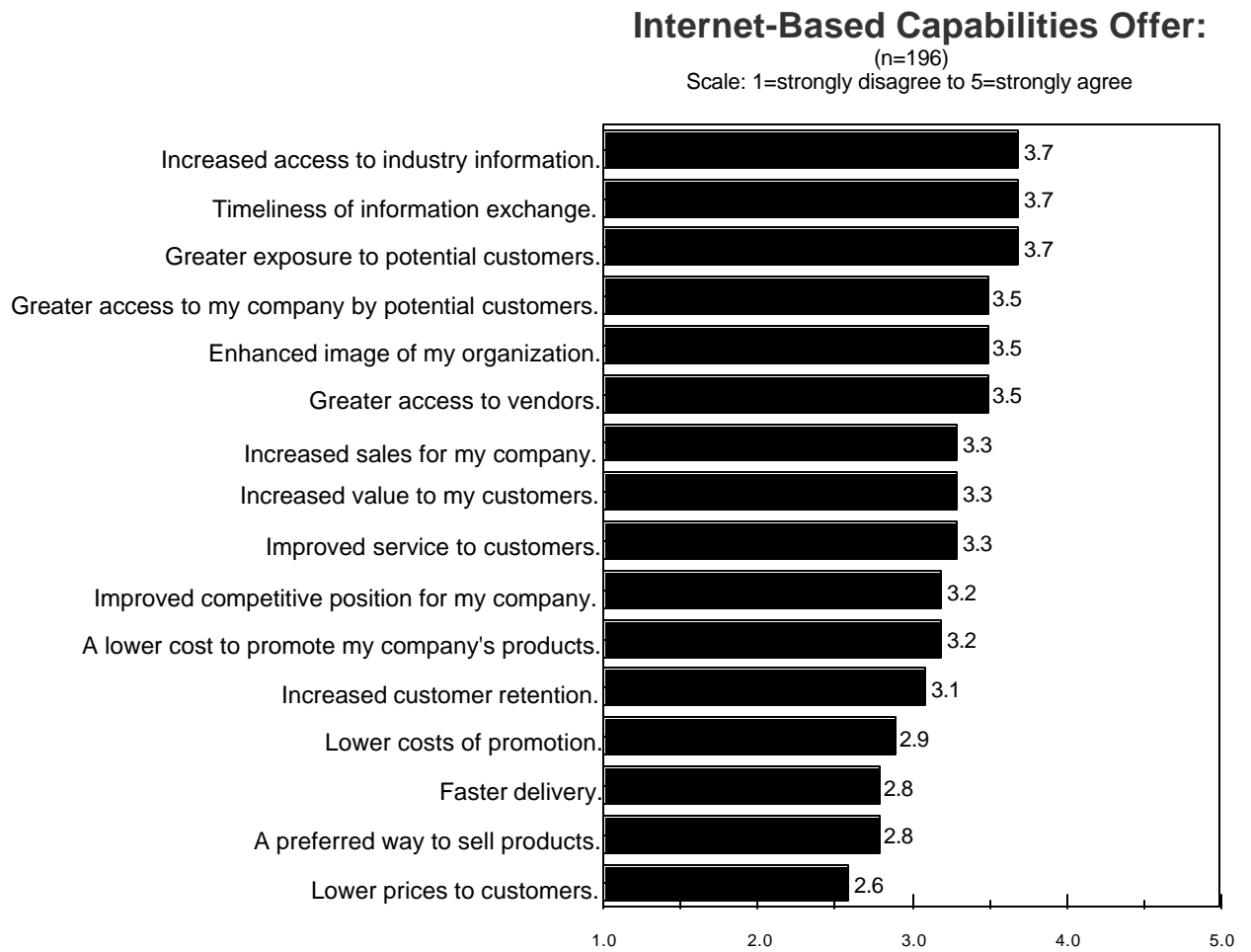


Table 1. Rotated Factor Matrix- Perceived Benefits from Using the Internet
 Extraction Method: Maximum Likelihood. Rotation Method: Varimax Kaiser Normalization

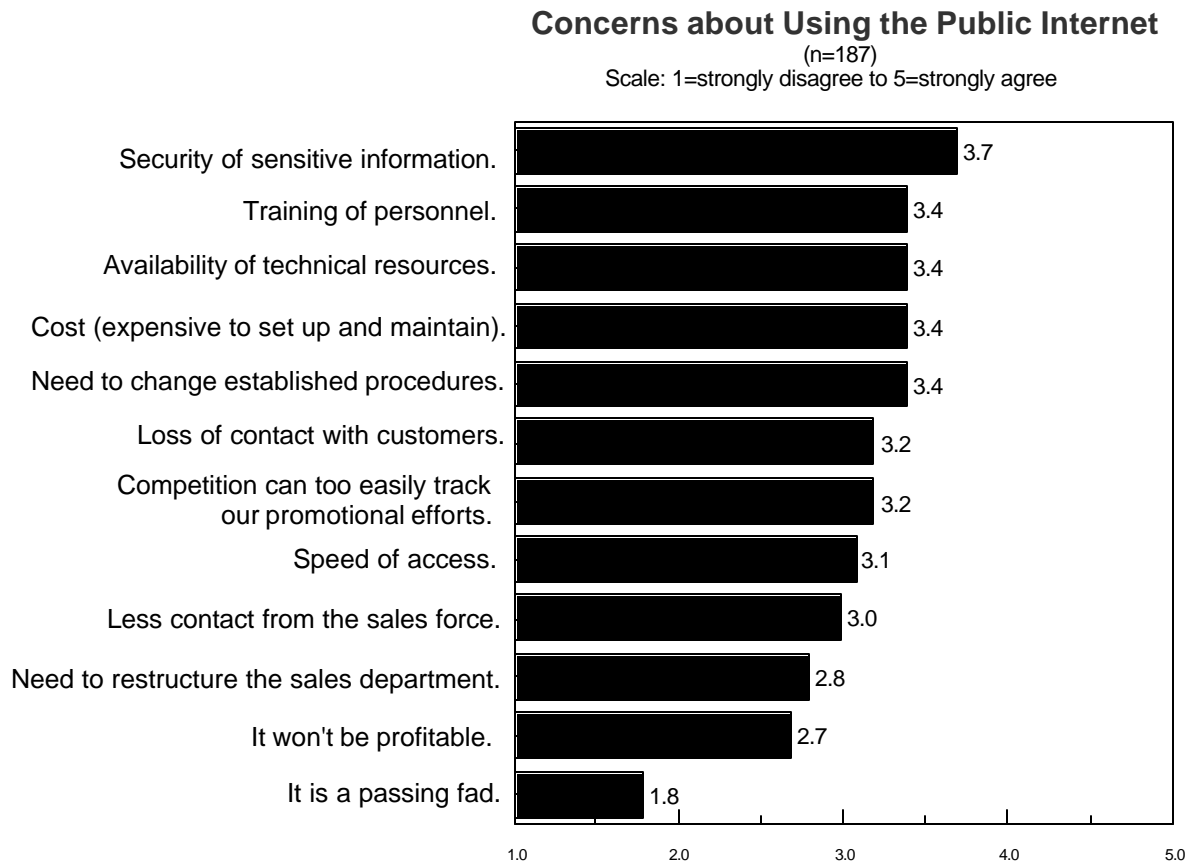
	Information	Cost/Service	Current Customers	Potential Customers
Increased access to industry information	.849	.257	.218	.237
Timeliness of information exchange	.806	.209	.243	.202
Lower costs of doing business	.239	.832	.208	.148
Faster delivery	.141	.745	.257	.202
Lower prices to customers	.323	.590	.082	.202
A preferred way to sell products	.148	.563	.486	.140
A lower cost to promote my company's products	.358	.509	.296	.389
Increased value to my customers	.350	.289	.758	.303
Increased customer retention	.288	.303	.757	.263
Improved service to customers	.318	.489	.529	.322
Greater exposure to potential customers	.529	.168	.324	.674
Greater access to my company by potential customers	.500	.193	.356	.661
Increased sales for my company	.411	.280	.472	.581

Concerns About Using the Internet

Respondents registered a number of general concerns they have about conducting eBusiness (Figure 5). Security ranked highest. Any time computers are physically linked to the Internet, security concerns increase. Simple links to the Internet can be effectively managed using a firewall -- a computer hardware/software gatekeeper between the Internet and intranet that monitors and regulates incoming and outgoing electronic traffic (Stewart 1999). Companies that conduct eBusiness must find ways to protect the confidentiality of information as it travels from sender to intended receiver. This is accomplished with various encryption schemes. Referred to as "tunneling" or the creation of a virtual private network, secure use of the Internet for business communications has not yet been standardized, although a number of proven technologies exist today. Companies considering development of an Internet-based partner linkage should seriously evaluate security measures as they explore options (Vlosky 1999).

Training of personnel and the need to change established procedures ranked second on the list of concerns. Availability of technical resources, implementation costs and concerns about the need to change established procedures to accommodate eBusiness ranked next. Ranked last is the concern that the Internet is a passing fad. Respondents are in almost total agreement that the Internet and its associated business applications are here to stay.

Figure 5. Concerns About Using the Internet



Use of the Internet to Conduct eBusiness

Implementation of eBusiness by respondents has taken place in the recent past with 57 percent of respondents developing these technologies in the 1998-2000 period (**Figure 6**). Earlier implementation (before 1998) was done by larger companies, typically lead adopters of technology.

Only 34 percent of respondents said their companies currently use the Internet to conduct business. Of the 66 percent that do not, again, 66 percent said their company does not have plans to develop such capabilities in the future. Results show that larger companies were most likely to have already adopted Internet technologies and are also more likely to do so in the future.

Companies implement Internet capabilities for a variety of reasons. These reasons can range from no reason at all, i.e. "because the competition is doing it and we better do it too", without any clarity of thought to being part of a comprehensive integrated corporate strategy. Companies in this study self-report that weaving their Internet capabilities into corporate strategic integration is highest ranked reason (**Figure 7**). Second ranked is customer retention. Often, it is downstream customers that drive interorganizational technology adoption by suppliers. In the forest products industry in the United States, the home center industry/wood products supplier channel exemplifies this phenomenon.

Impediments to Implementation

Respondents indicate that there are no strong impediments to Internet implementation with only one item with a rank score above the neutral point in a 5-point scale. The impediment that had the highest reported mean (3.1 on a scale of 1=is not an impediment to 5=is a significant impediment) is a lack of skilled IT personnel to help implement corporate Internet strategies. Second ranked (at the neutral point of 3.0) is a lack of understanding of the benefits that the Internet will give to a firm. Overall, availability of application tools (2.9/5.0), expense of development (2.8/5.0), technology and Internet infrastructure issues (2.7/5.0), hardware and software costs (2.6/5.0) and customer resistance (2.2/5.0) are not considered to be serious impediments to implementation.

Figure 6.

When Internet Capabilities Were First Developed

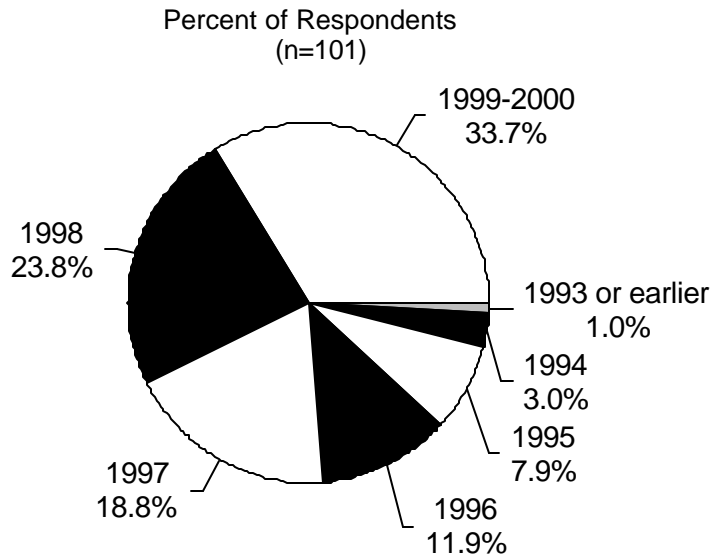
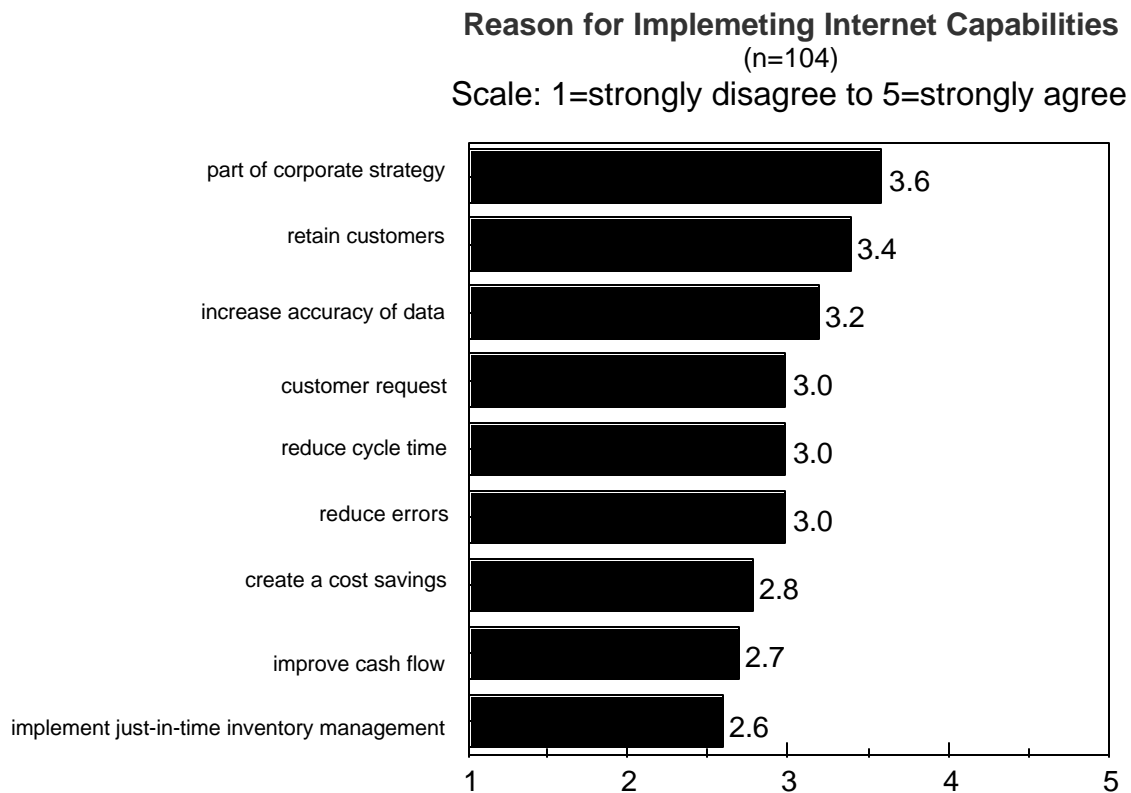


Figure 7.



Current and planned use of eBusiness applications

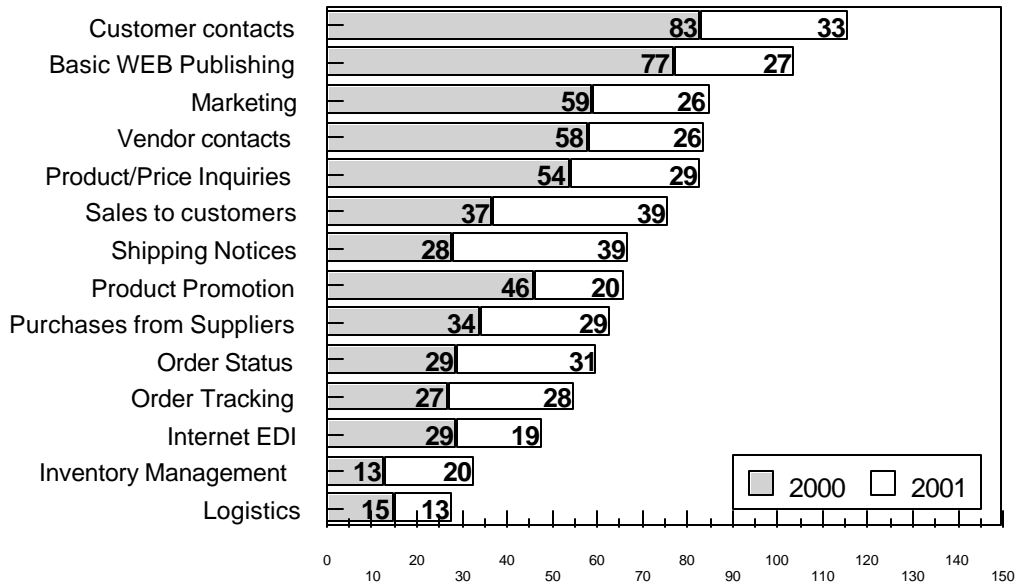
Respondents were asked to identify eBusiness practices that they currently use or plan to use in the next year (**Figure 8**). Customer contact (using email) was the most frequently cited practice closely followed by having a home page and marketing. The findings are in accordance with a study conducted by the marketing research firm Forrester in May 1999 (Anonymous 1999). The study compared the potential of email and the Web to attract and retain online customers, and it indicated that e-mail is the most cost efficient and effective of the two.

The next tier of applications included vendor contacts, products or price inquiries and sales to customers (eCommerce), once again, primarily using email. Although one tends to think of using the Internet for sales to customers, purchases from suppliers is also done. Sixty-three respondents indicated that they currently, or planned, to make purchases from vendors. At the bottom of the list are order administration activities such as shipping notices, order tracking, inventory management and overall logistics.

Figure 8.

Internet Business Applications-Current & In the Next Year Number of Respondents

(n=198)



Respondent willingness to sell wood products online was investigated in order to provide information about the potential of growth for downstream eCommerce in the forest products business segments included in the study. On a scale from 1 (not willing at all) to 2 (somewhat willing) to 3 (very willing), most respondents indicated that their companies were "somewhat willing" to sell their products on the Internet (52 percent of respondents). Just over one fifth of respondents (22.4 percent) were found to be very willing to sell online. Only 4 percent stated that they were strongly against (would never) selling wood products online.

With regard to Internet technology investments, 50 percent of respondents spent \$10,000 or less cumulatively to date on Internet applications, primarily for WWW home page development. Over 12 percent spent more than \$250,000 for more sophisticated applications such as Internet-EDI and eCommerce. EDI (Electronic Data Interchange) is the movement of business data electronically between or within firms (including their agents and intermediaries) in a structured, computer processable data format. EDI permits data to be transferred without re-keying from a computer-supported business application in one location to a computer-supported business application in another location (Hill and Ferguson 1991). eCommerce (electronic commerce, or selling products and services online) represents a new way of bringing vendors and customers together. The convenience and flexibility of the Internet, its suitability for micro-marketing, reduced operating costs, and the ability to integrate with Just In Time (JIT) inventory systems achieves significant savings in inventory management, provides cost benefits, enhances customer relationships, and overall is often a more effective way of selling products (Pitis 1999).

Respondents were asked whether their Internet implementation was on schedule and whether they had received the anticipated benefits. Eighty-three percent said they were not where they wanted to be in implementation primarily due to a lack of time, personnel, and

resources. With regard to receiving the desired benefits from eBusiness implementation, over two-thirds have not received the expected benefits. As suggested by Vlosky (1999), this may be due to a lack of realistic expectations, insufficient resources, or a poorly planned or non-existent eBusiness strategy.

Concluding Comments

eBusiness is an exciting new environment in which to do business. eBusiness technologies are extremely flexible in adapting to the diverse needs of companies from the smallest furniture manufacturer to the largest multinational behemoth. E-based opportunities are wide-ranging from promotion to increasing operating effectiveness. The opportunities and benefits from eBusiness are not hypothetical and forest products companies have the ability to take full advantage of these benefits. The significance of how eBusiness can positively change a company's way of doing business cannot be understated. Those companies that get involved now will have an improved chance at competitive success in the future. By taking advantage of the benefits offered by the Internet, firms can increase operating effectiveness and reduce promotional costs. Furthermore, implementing eCommerce strategies can become an area in which firms can achieve an important competitive advantage.

As is the case with corporate America in general, the forest products industry is rapidly expanding its use of the Internet to conduct business. The World Wide Web is the primary vehicle to Internet access, providing forest products firms with a powerful promotional tool. This study and its predecessors, conducted by the author going back to 1995, indicate that using the Internet to facilitate sales and purchases in the forest products industry in the United States is expected to continue to increase significantly in the future.

References

- Adams, J.S. 1986. "An Experiment on Question and Response Bias". *Public Opinion Quarterly*. 20(Fall). pp. 593-598.
- Anonymous. 1999. Nua Internet Surveys. 1999. "Email - A powerful marketing tool", n.d., http://www.nua.ie/surveys/index.cgi?f=VS&art_id=905354935&rel=true (15 June 1999)
- Donald, M.N. 1960. "Implications of Non-Response for the Interpretation of Mail Questionnaire Data". *Public Opinion Quarterly* 24 (Spring). pp. 99-114.
- Franklin Jr., Curtis F. 1997. "Emerging Technology: Enter the Extranet," *CIO Magazine*, www.cio.com/archive/051597_et_content.html. May 15.
- Hair, J.F., R.E. Anderson, R.L. Tatham and W.C. Black. 1992. *Multivariate Data Analysis*. 3rd edition. MacMillan Publishing Co. New York, NY.
- Hill, Ned C. and Daniel M. Ferguson. 1991. *Electronic Data Interchange: A Definition and Perspective*. pp. 12-18. Principles of EDI. EDI Group, Ltd., Oak Park, IL.
- Pitis, Olivian T. and Richard Vlosky. 2000. "Forest Products Exporting and the Internet: Current Usage Figures and Implementation Issues" *Forest Products Journal*. 50(10):23-29.
- Pitis, Olivian T. 1999. "U.S. Forest Products Exporters and the Information Superhighway". Master Thesis. Louisiana State University, Baton Rouge, LA.
- Stewart, Trevor. 1999. Principal with Deloitte & Touche LLP in New York. Se-Com Project - an intelligence briefing on secure electronic commerce. www.se-com.com
- Vlosky, Richard P. 1999. "eBusiness in the Forest Products Industry". *Forest Products Journal*. (Peer-reviewed feature article). 49(10):12-21.
- Vlosky, R.P. and Rene'e Fontenot. 1997. "The Internet and The Forest Products Industry: Current Status and Projected Trends." *Forest Products Journal*. Vol. 47. 11/12. Pp. 33-40.