

MANAGEMENT

THE INTERNET AND THE FOREST PRODUCTS INDUSTRY: CURRENT STATUS AND PROJECTED TRENDS

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ABSTRACT

This study indicates that overall growth of Internet use in the solid wood forest products industry in the United States is expected to increase over the next 2 years. Currently, firms with 1995 sales less than \$1 million are the predominant users of the Internet among study respondents, with small secondary manufacturers being more likely than primary manufacturers to have implemented the Internet into their organization. However, respondents indicated this will change within the next 2 years when the majority of large firms (1995 sales over \$100 million) will be using the Internet for sales to customers, purchases from suppliers, and other business applications.

It seems impossible to remember a day in the recent past when one hasn't overheard or found themselves engaged in a conversation about the Internet. Indeed, it seems impossible for most people, regardless of their occupations, not to have felt the impact of computer telecommunications in their lives. Computer telecommunications take on many forms such as the Internet, e-mail, Intranet, bulletin boards and on-line services, many of which are interrelated, through which individuals may find, share, and solicit information and exchanges. Though much has been written about the Internet and computer telecommunications in trade publications, little has been written about their effects on business activities. Therefore, the purpose of this study was to explore how the Internet modifies the way that forest products companies do business.

THE INTERNET

The Internet came into existence about 20 years ago out of an effort to connect together a U.S. Defense Department network called ARPAnet and various radio and satellite networks (5). Demand for networking applications quickly increased when other government agencies, universities, and others were seeking a means to communicate in an Internet Protocol (IP) environment. As such, networks proliferated and today the Internet has evolved into a mass array of computers and servers all over the world.

Estimates of the size of the Internet are difficult to make due to explosive growth. By 1993, the network reached 75 countries with full service, while computer owners in 77 additional countries were able to send and receive simple Internet e-mail (2). The Internet, which continues to double in size each year, currently has an estimated 50 million users today with a reasonable estimate of 200 million people using the system in 5 years.

Electronic commerce, facilitated by the Internet and the World Wide Web, is also experiencing explosive growth. Hundreds of companies are conducting business solely on the Internet while tens of thousands of additional companies are discovering electronic markets as a means for promoting and selling products and services (7). Marketing on the Internet can afford companies, regardless of size or marketing expertise, the opportunity to promote their products nationally and internationally. From the smallest localized company to the largest multi-national corporation, the Internet creates opportunities for product promotion, sales, and other business activities.

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TABLE 1. — Response rates.

	Initial sample size	Adjusted sample size ^a	No. of total respondent companies	Adjusted response rate
Companies with a known Internet presence (Web Home Page)	257	242	97	40%
Additional companies surveyed	798	757	267	35%
Total	1,055	999	364	36%

^a Less undeliverable or unusable surveys.

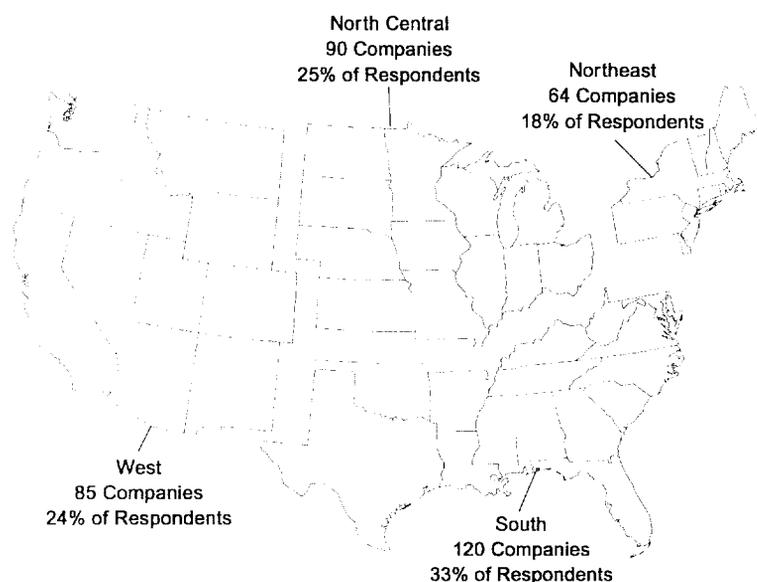


Figure 1. — Geographic distribution of study respondents.

THE WORLD WIDE WEB

The Internet global network is a repository of information and commerce-related activity and the World Wide Web is the means to enter this domain. The World Wide Web, also known as WWW or just "the Web" provides, through a "Home Page," the visual presence on the Internet. It is capable of displaying formatted text, graphics, and links to other Home Pages and information sites. The Web, which has only been in existence since 1992, offers the benefits of the "information superhighway" and takes advantage of the global telecommunications infrastructure that is already in place (1). Web Home Pages can generate substantial customer interest for companies. For example, an average company can receive 1,000 to 2,000 "hits", or visits, a day, while well-known companies

can get more than 100,000 "hits" a day (4). The latest numbers show Web use doubling every couple of months (twice the rate of overall Internet growth) as literally thousands of new businesses, government agencies, and other groups of all sizes and types develop Web Home Pages.

Through the Internet, many barriers to new markets, resources, and competitive positioning can be reduced or eliminated. Although businesses vary greatly, along with their depth of participation on the Internet, their goals are often the same, to find new customers, new sources of profit, and new ways of doing business in a global marketplace (6). The Internet levels the playing field as it allows bantam firms to be as visible and accessible as colossal firms. For small businesses, the Internet is a way to market to key

groups, search for hard-to-find products and services, create a "virtual organization" for projects, and provide product support (3).

BUSINESS APPLICATIONS ON THE INTERNET

The Internet is known as the "open 24-hours a day, find anything-you-can-imagine store." But it is also used every day by businesses to hold international conferences, send flowers to a customer, research current Securities and Exchange Commission filings, hand out electronic sales brochures, send e-mail from one home office to another across the country, and even plan a business dinner.

The Internet has a number of applications that can increase efficiency and productivity: linking employees in remote offices, communicating with foreign customers and suppliers regardless of time zones, distributing sales information more swiftly and efficiently, speeding product development, cutting printing costs, and advertising and marketing of services and products (6). The upsurge of interest among companies to do business on the Internet has been fueled by the declining cost of PCs and modems, the proliferation and aggressiveness of Internet service providers, the influx of Internet-savvy college graduates into businesses, and the emergence of software tools for exploring the Internet.

Marketers are both enthusiastic and uneasy about using the Internet as a marketing tool. In a national study (8) of companies across a number of industry sectors, a survey from Brewer Associates Marketing Communications found that 43 percent of respondents said that they were "apprehensive" about Internet marketing, while 34 percent were "enthusiastic." Approximately one-third of those surveyed said that they are already using the Internet for marketing and 77 percent expected to include the Internet in their marketing mix within the next 5 years. Only 7 percent said they'd never use the Internet for marketing.

As is consistent with much of the literature regarding consumer wariness of the Internet, 53 percent of corporate respondents were concerned about the lack of security and confidentiality. General confusion over lack of technology standards was identified as another perceived disadvantage of marketing on the Internet.

METHODOLOGY

RESEARCH CONTEXT

We examined current and potential use of the Internet to conduct business and market products in a business-to-business setting. The Internet was examined in the context of implementation strategies of U.S. wood products suppliers. Respondents were asked to discuss their current or planned Internet strategies and impacts that are perceived to exist with Internet-linked customers. By conducting an extensive search of Web Home Pages, a sample frame was developed consisting of 257 wood supplier companies that have an Internet presence. Each company was telephoned to confirm Internet use and to identify a key respondent that would be appropriate for this study.

In addition to companies with a known Internet presence, a random sample of the remaining wood products manufacturers in the United States was taken from a purchased list of companies. This resulted in an additional 798 companies for a total of 1,055 companies surveyed in the study.

QUESTIONNAIRE DEVELOPMENT

Based on the literature, an extensive list of topics and questions were generated by the authors. The survey instrument explored concepts using questions developed by the authors and adapted from other sources. This list was reviewed and revised by the authors and a senior executive at the corporate research sponsor. Initial drafts of the questionnaire were reviewed by the authors and colleagues at the authors' university. Questionnaire pre-testing was conducted by the corporate sponsor in a number of internal departments and regional divisions. An iterative process resulted in the final instrument.

Structured mail questionnaires were then developed and mailed to 257 Internet wood product manufacturers and 798 additional companies. Pre-addressed, postage-paid envelopes and a personally signed cover letter were included with the questionnaire. In addition, copies of an article on the subject of the Internet in the wood products industry was included as a means of encouraging participation. The cover letter promised summary results of the study if the questionnaire was completed and returned. A pre-notification postcard was sent to targeted companies 1 week before

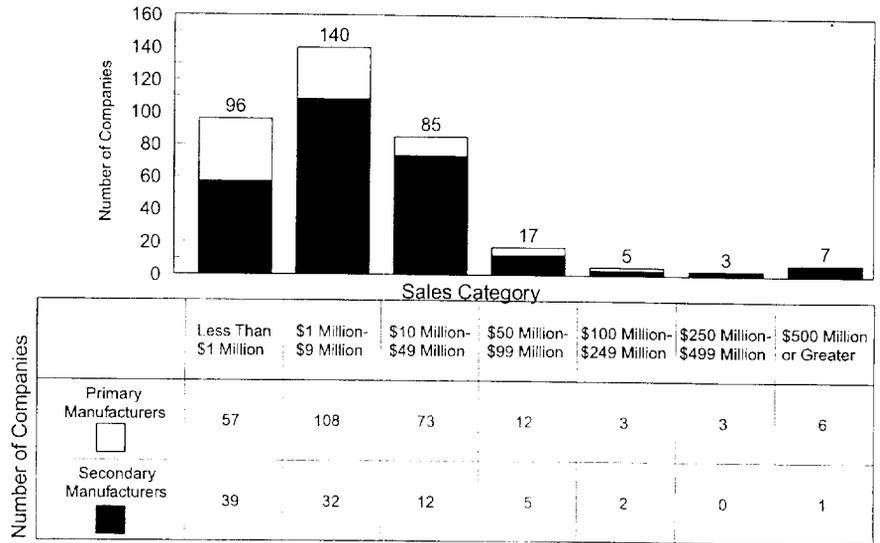


Figure 2. — Number of respondents by sales category.

Number of Companies With Access to the Internet (n=364 respondents)

Number of Companies By Manufacturing Category With Access to the Internet (n=182 respondents)

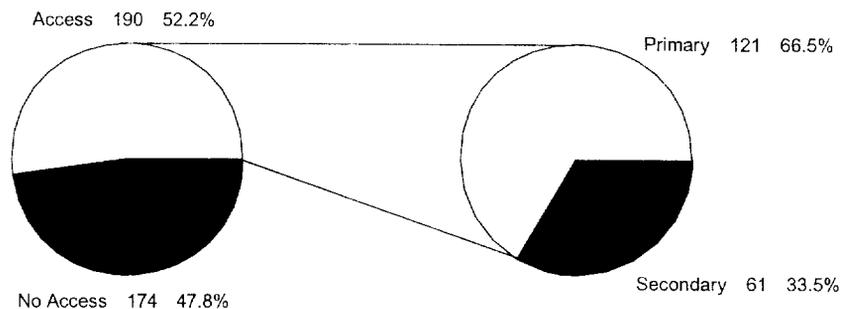


Figure 3. — Access to the Internet by respondent companies.

the first questionnaire mailing took place. One week after the initial mailing, a reminder postcard was sent. A second questionnaire mailing was conducted to companies that had not responded to the previous mailing.

Every effort was made to identify all key informants by name and title. However, in the few cases when this was not possible, questionnaires were sent to the attention of the President or VP Marketing.

RESULTS

RESPONSE RATES

For each of the two populations surveyed, **Table 1** shows the number of re-

spondents initially sampled, the adjusted sample size after accounting for non-deliverable surveys (due to company closures, change of address, or deceased), and adjusted response rates. All survey respondents with multiple manufacturing facilities were surveyed at the corporate headquarters level. Given that typical response rates for industrial studies range from 15 to 30 percent, a response rate of 36 percent in this study is considered very good. Responses for individual questions differ from total number of respondents because not all respondents answered all the questions.

GEOGRAPHIC DISTRIBUTION OF STUDY RESPONDENTS

Figure 1 shows the geographic distribution of the study respondents. All regions of the country are well represented.

COMPANY SIZE DISTRIBUTION

Of the 356 respondent companies that indicated their industry affiliation, 264 (74%) are primary product manufacturers (lumber, plywood, particleboard, etc.) while 92 companies (26%) are sec-

ondary manufacturers (furniture, cabinets, millwork, etc.)

As seen in Figure 2, most respondents are in the mid- to small-size categories by sales in 1995. Almost two-thirds of primary producer respondents had 1995 sales of \$9 million or less. Secondary manufacturers are much smaller as 43 percent of respondent companies had sales of \$1 million or less in 1995 and almost 80 percent had sales of \$9 million or less.

CURRENT AND PROJECTED USE OF THE INTERNET

As is shown in Figure 3, currently 52.2 percent of the companies responding have access to the Internet. Twice as many primary manufacturers than secondary manufacturers (66.5% versus 33.5%) reported that they presently have Internet access.

Currently, 103 respondents reported having a Web Home Page. This represents 28.3 percent of all respondents (364). Secondary manufacturers had a slight edge over primary manufacturers with regard to having a Home Page: 56.3 and 46.4 percent, respectively. The somewhat greater representation by secondary manufacturers may be indicative of the greater importance they place on using the Internet as a promotional vehicle for consumer sales.

Of the 247 respondents that indicated they did not have a Home Page, 33.2 percent plan to develop one at some point in the future, while 66.8 percent do not. Of those companies planning to develop a Home Page, 80.5 percent are primary manufacturers while 19.5 percent are secondary manufacturers. Although secondary producers currently have a greater presence on the Internet, primary producers are decisively moving toward implementation.

The average cost to develop a Web Home Page across all respondents was estimated to be \$8,000. Most firms (90.8%) indicated that their cost to develop and launch a Web Home Page was less than \$10,000. A small number of firms (6.3%) reported their costs to be between \$10,000 and \$24,000; the remaining 2.8 percent reported their costs were greater than \$25,000 to develop and launch a Home Page. The relative low cost is likely a contributing factor to the attractiveness of establishing a Home Page among secondary manufacturers, who are considerably smaller than primary firms in terms of sales.

The rapid acceleration of companies developing Web Home Pages has paralleled the growth of the Internet. Of the 103 respondents that reported when their Home Page was placed on-line, 43.7 percent had their page since January 1996, 37.9 percent during the last 6 months of 1995, and 14.6 percent between January and July of 1995. Only 3.9 percent noted having their Home Page on-line prior to January 1995 (Fig. 4).

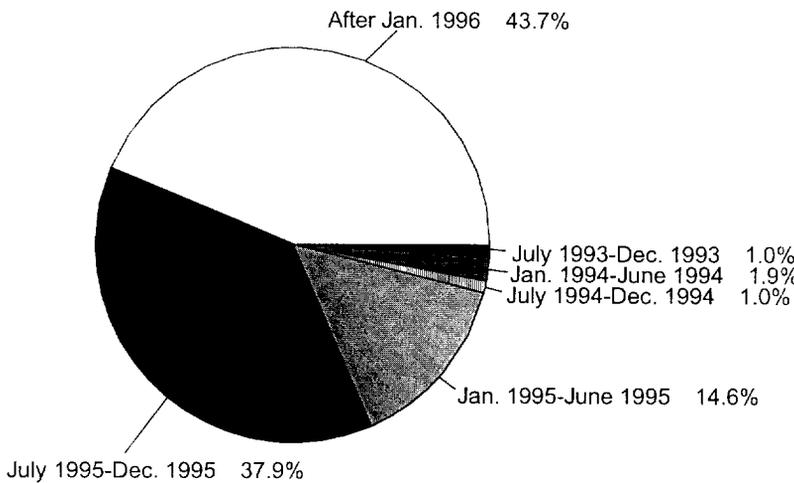


Figure 4. — Dates when respondent companies established Home Pages (n = 103 respondents).

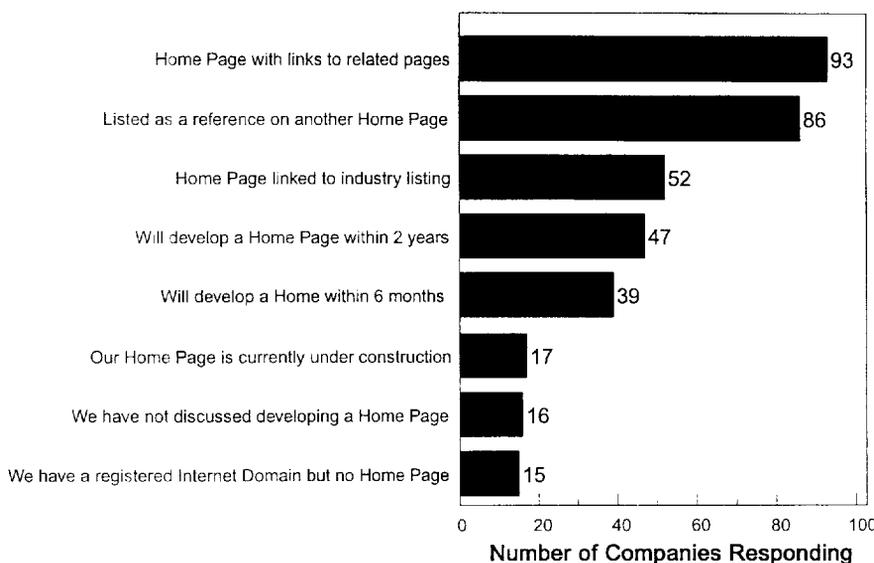


Figure 5. — The Internet presence of respondents in 1995.

With the recent growth in Web Home Pages, it is easy to recognize why 52.0 percent of the respondents indicated that they were *among the first* to have an Internet presence. There were 13.3 percent of the respondents that claimed to have been *the first* to have an Internet presence, while 8.1 percent reported that they believe that *all companies were on the Internet at the same time*. Approximately one-fourth (24.9%) believe they will be behind most companies in having an Internet presence and 1.7 percent purport that they expect to be the last company to have an Internet Home Page on-line.

An overwhelming majority of firms reporting an Internet presence (93 of 103) have a Home Page with links to related pages (Fig. 5). Eighty-six firms reported being listed as a reference on another Home Page and 52 firms have their Home Page linked to an industry listing. For firms that have not yet made their presence known by means of a Home Page, 47 said they will develop a Home Page within the next 2 years; 39 said they will have a Home Page within 6 months. Seventeen firms said that their Home Pages are currently under construction and 15 firms reported that they have a registered Internet domain but have yet to develop a Home Page.

When the categories *current*, *in the next 6 months*, and *in 2 years* are viewed cumulatively, the primary use of the Internet is e-mail (305 companies) and customer contacts (253 companies) (Fig. 6). Product promotion, Home Page development, providing on-line services, and sales to customers are also important uses for respondents. Vendor contacts, using the Internet as a public relations tool, and product purchases are additional uses. Providing company news, developing special interest bulletin boards, file transfer protocol (FTP), list servers, and Gopher site access rated as least frequent uses of the Internet.

When asked if companies were where they wanted to be in regard to Internet development, 49.7 percent responded affirmatively. Similarly, 50.9 percent responded positively that they had received the benefits they had anticipated through the Internet.

The prevailing measure, currently or intended, that firms report will be used to assess the success of their Home Page is its ability to generate requests for more information about the company's prod-

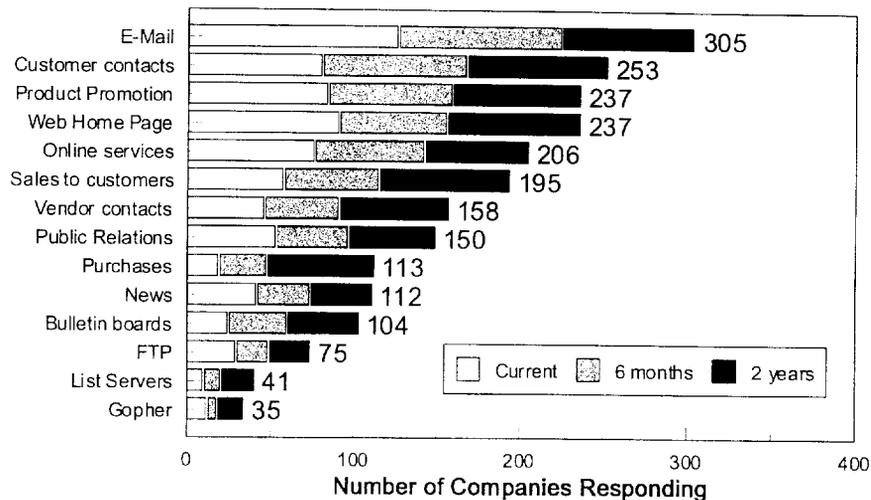


Figure 6. — Current and planned uses of the Internet ($n = 364$ respondents).

ucts, services, or activities in the industry (Fig. 7). E-mail messages, purchases, and number of hits were closely grouped as second indicators of the success of a Home Page. Responses to direct questions, guestbook registry, and participation in promotional efforts were not seen as important indications of the measure of success of a Home Page.

BUSINESS APPLICATIONS ON THE INTERNET

Unequivocally, the primary business application on the Internet *now*, *in 6 months*, and *in 2 years* is sales (Fig. 8). Product and price inquiries are also important business applications that respondents plan to incorporate into an Internet environment. Internet use for shipping notices, quality, ordering from suppliers, Electronic Data Interchange

(EDI), transportation documents, administration, and payment had the lowest responses for current use, although a number of companies plan to incorporate these applications in the future. In general, there is an anticipated increase in use for most business applications by respondents over the next 2 years.

BUYING AND SELLING FOREST PRODUCTS ON THE INTERNET

Overall, the Internet is used more as a selling tool than it is as a purchasing tool by respondent companies. Current sales to customers were indicated by twice as many respondents (58 companies) than current purchases from suppliers (21 companies). In addition, secondary manufacturers reported greater current use of the Internet than primary manufacturers in both sales and purchasing.

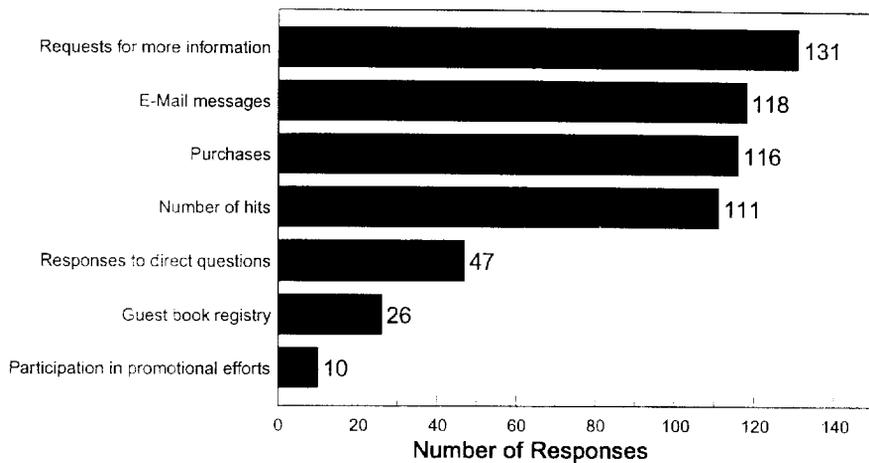


Figure 7. — Measures of Home Page success, current or intended ($n = 131$ respondents).

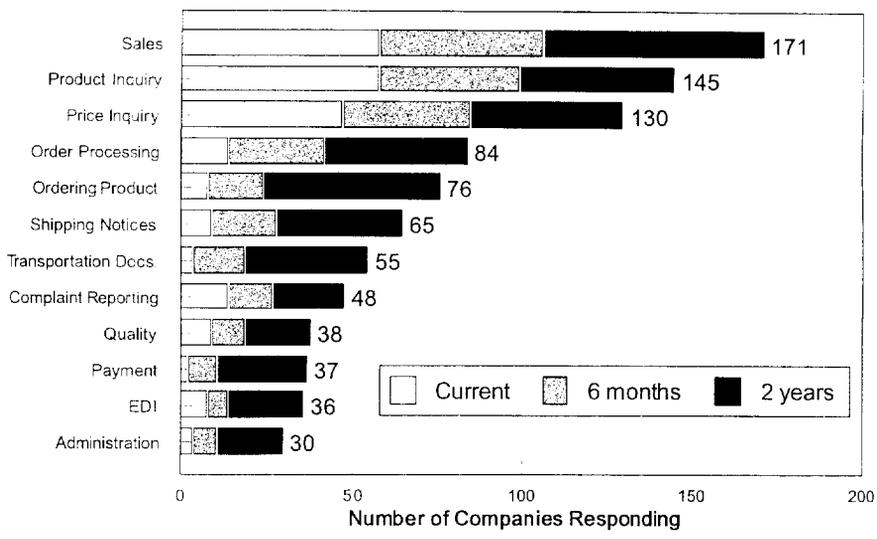


Figure 8. — Business applications on the Internet ($n = 364$ respondents).

	Current	6 Months	2 Years
Sales	58	48	65
Product Inquiry	58	41	46
Price Inquiry	47	38	45
Order Processing	14	28	42
Ordering Product	8	16	52
Shipping Notices	9	19	37
Transportation	4	15	36
Complaint Reporting	14	13	21
Quality	9	10	19
Payment	2	9	26
EDI	8	6	22
Administration	4	7	19

Firms with sales of less than \$1 million reported the highest current and anticipated use of the Internet for sales to customers (Fig. 9). As firm size increases, there is a decrease in the number of respondents using the Internet for both sales and purchases. However, this distribution of respondent firm size by sales may be indicative of the distribution of companies, by sales, in the industry as a whole.

The number of firms reported planning to have a Home Page and using the Internet for business activities corresponds with the general willingness to use the Internet to buy and sell. A majority of respondents answering this question (53.3% or 103 companies) reported being *very willing to use the Internet to sell products* while only 27.2 percent (52 companies) were *very willing to make purchases*. Only 10 percent of respondents reported either being *not very willing* or would *never buy or sell* on the Internet.

As a customer or a supplier, the most important incentive to buy or sell on the Internet is related to the ability to receive better information. Responding from a customer perspective, respondents indicated that the primary reason they would be encouraged to purchase products on the Internet is better information on pricing, delivery, products, etc. Only slightly less important were lower prices. Promises of improved service, assurance of secure transmission (encryption), and more direct contact with the supplier were secondary reasons that a customer would be encouraged to participate in an Internet marketing exchange.

Respondents were asked to evaluate the incentives they would offer their customers to participate in an Internet business relationship, with particular emphasis on sales. Better access to product information and direct contact with the sales department rank as greatest incentives. Direct ordering, without the intervention of a sales person, was also ranked as a positive incentive (greater than 3.0 on a scale of 1 to 5; 1 = would not offer and 5 = would offer). Direct ordering is one of the potential applications of the Internet that has great promise, but many companies are hesitant to forego person-to-person contact with customers.

Overwhelmingly, a Home Page is expected to be the method by which Internet business contacts are initiated.

Only after personal contact is made ranked a distant second as the expected method initiating Internet business contacts, followed by industry newsletters, and on-line user groups. Industry conferences were the least expected method by which Internet business contacts would be expected to be initiated.

BENEFITS AND CONCERNS

The principal benefit that respondents would expect from the Internet is greater exposure to customers, followed closely by greater access to their company by potential customers (Fig. 10). Other perceived benefits that respondents expect from the Internet, in descending order of response, are: increased access to vendors; timeliness of information exchanged, enhanced image of their organization, being seen as a cutting edge organization, increased sales, increased value to customers, a public relations tool, improved competitive position, lower cost to promote companies' products, and improved service to customers. Firms also perceive that the Internet will benefit them through stronger bonds with customers, greater access to vendors, and better relations with customers. Using one-tail t-tests, all benefits with a mean score above 3.0 (neither disagree nor agree) were found to be statistically different from the 3.0 neutral score at $\alpha = 0.001$.

The Internet was not perceived to be any better or worse for selling products. Respondents did not perceive the Internet to benefit them by means of lower costs of doing business, faster delivery, or lower prices to customers.

Respondents register very little concern about using the Internet. Most responses to the list of concerns were neutral. Speed of access and cost were the highest reported concerns (3.2 on a scale of 1 to 5; 1 = not a concern and 5 = of great concern). Security of information was ranked third, but only as a slight concern. Loss of contact with customers and less contact from the sales force were not seen as concerns.

Respondents indicate that there are no strong impediments to Internet implementation. The impediment that had the highest reported mean (2.7 on a scale of 1 to 5; 1 = not an impediment and 5 = a significant impediment), stated that there is a lack of understanding of the benefits that the Internet will give to a firm. The expense of devel-

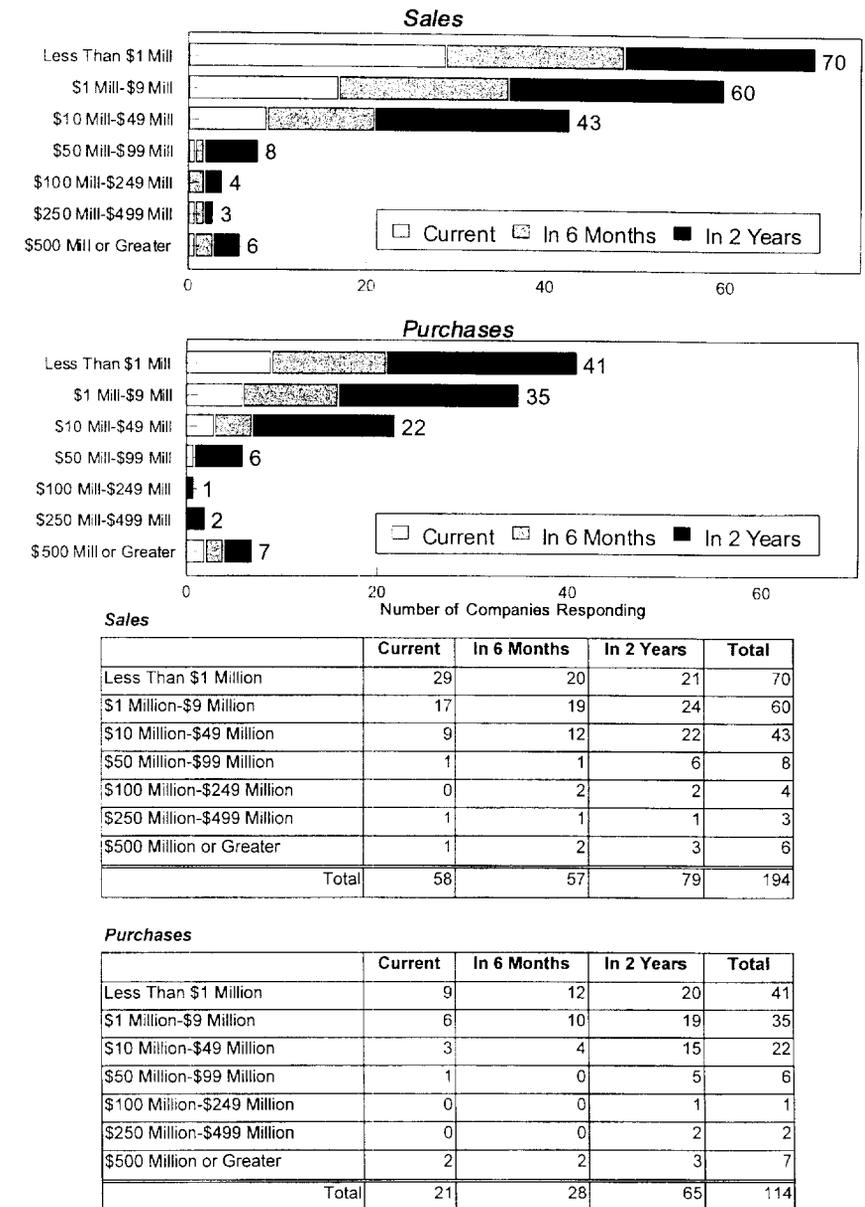


Figure 9. — Purchases and sales on the Internet, by company sales class.

oping a Home Page, related services, and hardware and software were the next strongest impediments to Internet implementation. With the reported average cost of developing and launching a Web Home Page of less than \$10,000, this cannot serve as a very significant impediment. Resistance by management, employees, vendors, and customers was not seen as an impediment.

SUMMARY

The Internet offers a revolutionary tool for business development and management. 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. In addition, using the Internet to facilitate sales and purchases is expected to increase significantly in the next 2 years.

Small, consumer-oriented secondary wood product manufacturers currently have a greater Internet presence relative to larger, primary manufacturers. How-

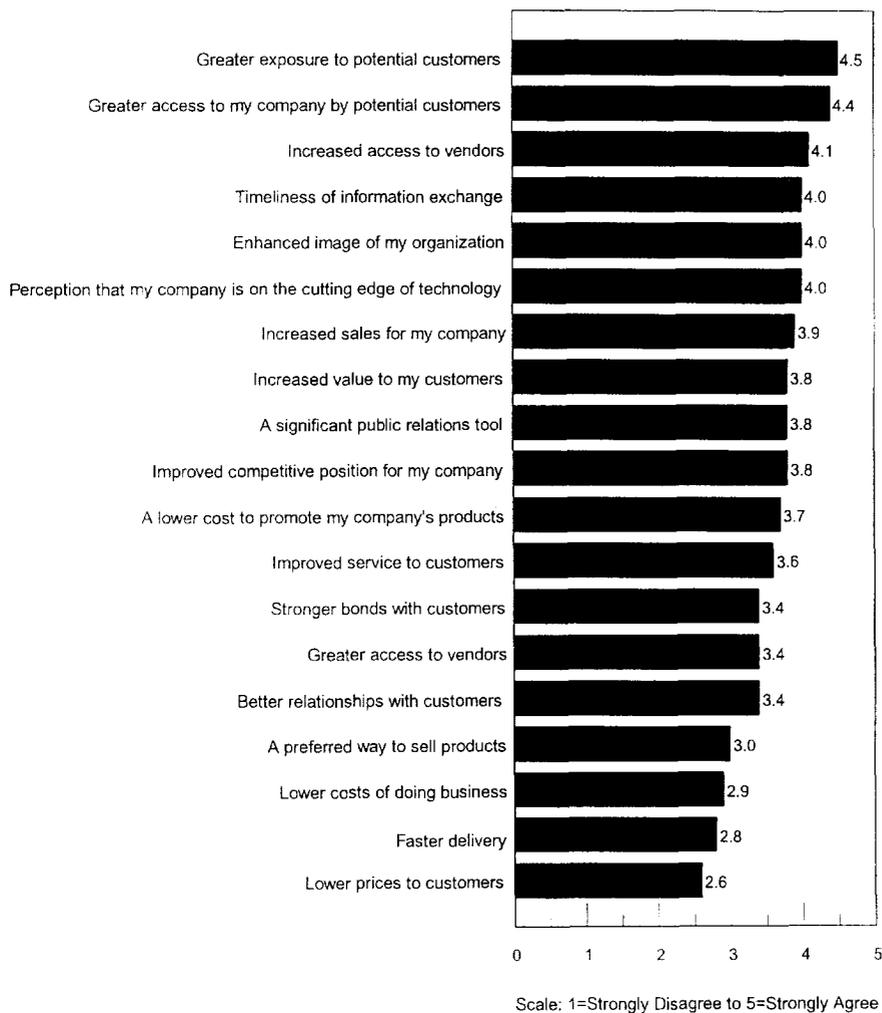


Figure 10. — Perceived benefits from the Internet ($n = 193$ respondents).

ever, over time, large primary producer companies plan to develop and implement Internet business strategies. In time, e-mail will be as common as telephone and fax communication and the Internet will become an addition to the marketing mix. Given the significant trend toward Internet applications in business in general, it would seem that those forest products companies that develop an Internet strategy will be better able to compete in the marketplace.

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