

How U.S. Forest Products Exporters Use the World Wide Web

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ABSTRACT

In this working paper we examine the use of the World Wide Web by primary wood products exporters. Data for the study were collected by a mail survey of 324 firms conducted in February - March 1999. The adjusted response rate of the survey was 45.7 percent. The study discovered that respondents used the Web mostly for promotion activities. Although applications focused on value chain linkages and business processes are currently less frequently employed on respondents' Web sites, they are expected to experience the highest growth within the next two years. Using a Web site, respondents primarily target new customers, both foreign and domestic. However, only a small percent of respondents tries to reach foreign audiences by addressing them in their native tongue. The study also found that currently, multilingual Web sites are not likely to be more successful in reaching their objectives than English-only Web sites.

INTRODUCTION

Spurred by a tremendous growth, the Internet is today a truly international phenomenon. The number of Internet users world-wide is currently approximated to 147 to 159 million users (12). Two of the Internet technologies, namely the World Wide Web (also known as the Web) and e-mail, have become essential tools for conducting business for a wealth of companies with a vested interest in domestic and international markets. The Web facilitates eCommerce (electronic commerce, or selling products and services online), one of the most recent additions to the applications of Internet technologies that enhance business processes. By providing a means of interaction through the electronic medium, eCommerce represents a new way of bringing vendors and customers together. Both business-to-consumer and business-to-business transactions can be conducted through eCommerce. Specifically for business-to-business markets, eCommerce is believed to increase the competitiveness through reinforced partnerships and enhanced relationships (13). eCommerce is currently experiencing significant growth. An estimation of eCommerce revenues for the year 2002 is \$1 trillion (6).

Internet usage in the forest products industry

Potential applications of the Internet in the U.S. forest products industry were first analyzed by Vlosky and Gazo (16) in November 1995, when they surveyed a census of the Forest Products Society membership. The Forest Products Society (FPS) is an international organization comprising approximately 2,700 forest products firms, trade associations, researchers, academics, landowners, government, consultants, and other stakeholders across North and South America, Asia, and Europe. The findings of the survey revealed that 64 percent of the industry trade associations and 41 percent of the forest products companies surveyed used the Internet. Subsequently, Mosky and Fontenot (17) conducted a survey of United States primary and secondary wood products manufacturers, analyzing the status and projected trends of Internet usage in the industry. The study, conducted in 1997, showed that approximately 52 percent of the companies surveyed used the Internet. Additionally, 28.3 percent

of the companies surveyed had a Web home page and 33.2 percent intended to develop one in the future. In the 1998 annual survey of the forest products industry, the Southern Lumberman magazine reported a dramatic increase in Internet usage in the U.S. forest products industry between 1997 and 1998, from 43 percent to 64 percent (1). Although a relatively new addition to the portfolio of Internet applications, eCommerce is gaining popularity in the forest products industry. Two companies, TALPX and FPIX, positioned as intermediaries facilitating the exchange of information and carrying transactions between companies in the forest products industry, started to conduct business in 1998. Although some prospective firms are taking a more conservative approach by waiting for the new systems to be proven to be efficient, the two companies' reception by industry members has generally been positive (2).

Exporting activities facilitated by the Web

Nicovich and Cornwell have studied the ability of the Internet to bridge the gap between foreign cultures (11). By analyzing information gathering and dissemination, interactive communication, attitude towards advertising on different areas of the Internet (i.e. on the Web as opposed to on Usenet), and ethical issues such as privacy, the authors conclude that the "Internet culture" can act as a buffer zone between different cultures. The Internet appears to be an excellent channel of communication between different cultures, and therefore, it can lower traditional barriers to communication imposed by different cultures (11).

The Web has the potential to provide specific benefits for exporting activities. As revealed by Abrams, one area in which firms can achieve cost savings is export documentation (3). By using a Web site specializing in providing electronic integration between the exporter, freight forwarder, and the carrier, the cost of electronic lading filing can drop to \$0.50 - \$1.00, compared to about \$7.00 for conventional paper methods (3).

Another area of potential interest for exporters is the use of foreign languages on Web sites. Today most users of the Web speak English, at least as a second language. By the year 2002 though, it is expected that English will cease to be the first language for more than 50 percent of the 300 million estimated users (9). As argued by some authors, companies may already be ignoring important markets outside the United States by not addressing foreign customers that can only be reached in their native tongues (5,10).

Looking at Web sites facilitating export marketing, Bennett investigated 358 U.K. exporting firms in 1997. He discovered that, on average, exporters that had a Web presence were less experienced at exporting, made less use of foreign branches or representatives, and had more staff literate in information technology. Seventy-six percent of Web owners were pleased with the result of Web use, while 11 percent were disappointed. Exporters without a Web presence considered the Internet costly, complicated, and perceived personal contact with customers as highly valuable (4).

As revealed by numerous authors, personal relationships are also of paramount importance for selling wood products (14,15,18), and it is likely that exporting of wood products is no exception. This would suggest that exporting wood products through electronic channels requires personal relationships established through traditional business contacts. However, once these business ties are formed, the Web has the potential to facilitate the flow of information and to increase efficiency across borders.

THE STUDY

The objective of the study was to collect, analyze, and interpret data that would help primary wood products exporters maximize the benefits offered by their Web presence. Primary wood products encompass logs, softwood lumber, hardwood lumber, plywood, oriented strand board (OSB), medium-density fiberboard (MDF), and particleboard.

The primary data for the study were collected by a mail survey, conducted in February-March 1999. The list from which the sample frame was drawn was provided by the most recent version (1999) of the *Big Book*, the annual directory of the forest products industry, published by Random Lengths Publications. The sample frame comprised 324 companies, and all units in the sample frame were sampled.

The survey was based on the Total Design Method (TDM) proposed by Dillman (8). In order to increase the response rate, it included:

- pre-notification postcards,
- stamped self-addressed return envelopes,
- an easy-to-complete questionnaire,
- insurance of confidentiality of responses,
- an offer of the summary results sent to respondents,
- reminding postcards, and
- a follow up questionnaire sent to non-respondents.

A total of 156 companies responded to the two mailings conducted. Of these companies, 44 indicated they were not conducting exporting business. Moreover, eight surveys lacked response reliability or were returned after the data collection period ended. These surveys were treated as non-responses. The adjusted response rate of the survey was therefore 45.7 percent, suggesting that the target population of the survey had a high degree of interest in the topic covered by the questionnaire.

Independent samples, two-tailed *t*-tests between respondents from the first and second mailing, were used to measure non-response error for the survey, based on the fact that second mailing respondents tend to behave in a manner consistent with non-respondents (7). For an α level of 0.05, there were no significant differences between first and second mailing respondents for any variable in the study, supporting the conclusion that non-response error is not a major concern for this study.

RESULTS

Respondent profile

A brief description of the respondent companies follows. Most firms (57.6 percent) are distributors, 25.2 percent are manufacturers, and 17.2 percent are both manufacturers and distributors. The majority of respondents (54.5 percent) have main offices/headquarters located in the Western U.S., followed by the South (36.4 percent), Northeast (6.1 percent), and North Central (3.0 percent) regions.

The product categories exported by most respondents are softwood lumber (74.2 percent), hardwood lumber (50.5 percent), and treated lumber (41.2 percent). Japan was the country where most respondents exported (44.7 percent of respondents), followed by Italy (27.7 percent), Germany (25.5 percent), Korea and U.K. (each 21.3 percent), and Spain (18 percent). The distribution of respondent companies by 1998 sales revenue is heavily skewed towards smaller-size firms, with 43.3 percent of respondents reporting sales revenues of less than \$10 million. An additional 26.8 percent of respondent firms had 1998 sales revenue from \$10 to \$49 million (Figure 1).

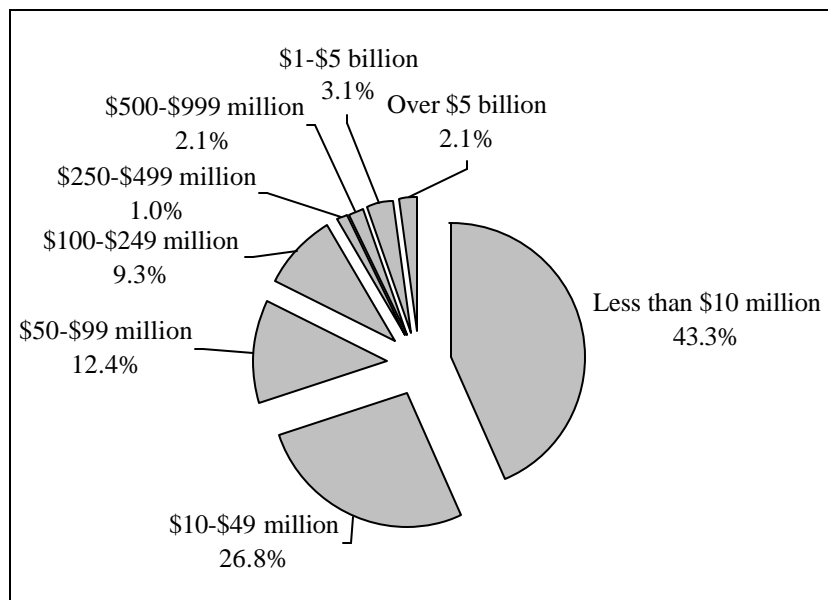


Figure 1. Distribution of Respondent Companies by 1998 Sales Revenue (n=97)

The percentage of sales revenue reflected by respondents' exports suggests that wood products exporters either dedicate most of their resources to exporting activities, or involve only marginally in exporting (Figure 2). A one-tailed Spearman's rank order correlation test also indicates a significant ($p=0.01$) negative correlation between company sales revenue and the percentage of exports in the sales revenue. This suggests indicates that smaller exporters are more specialized in international markets, whereas for larger companies the U.S. market tends to be more important.

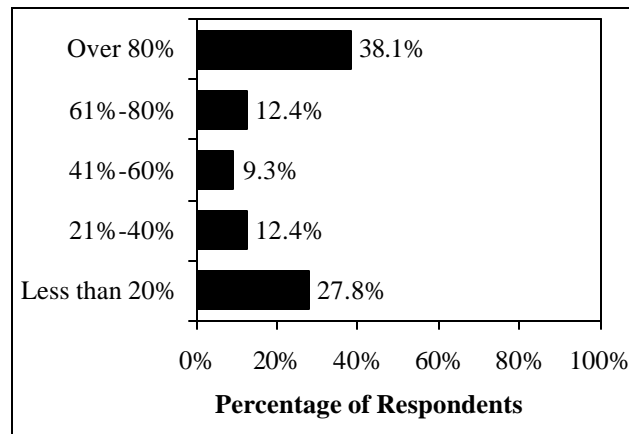


Figure 2. Percentage of 1998 Sales Revenue Reflected by Exports (n=97)

Internet tools usage

Use of the Internet is currently widespread among wood products exporters, as reflected by the 81.7 percent of Internet-capable respondents. However, use of the Internet is shared among different tools. While e-mail communication and promotional Web pages are currently popular applications, the percentage of respondents having an on-line catalog or conducting eCommerce has only started to grow recently, to reach a total of 20.3 and 14.3 percent, respectively (Figure 3).

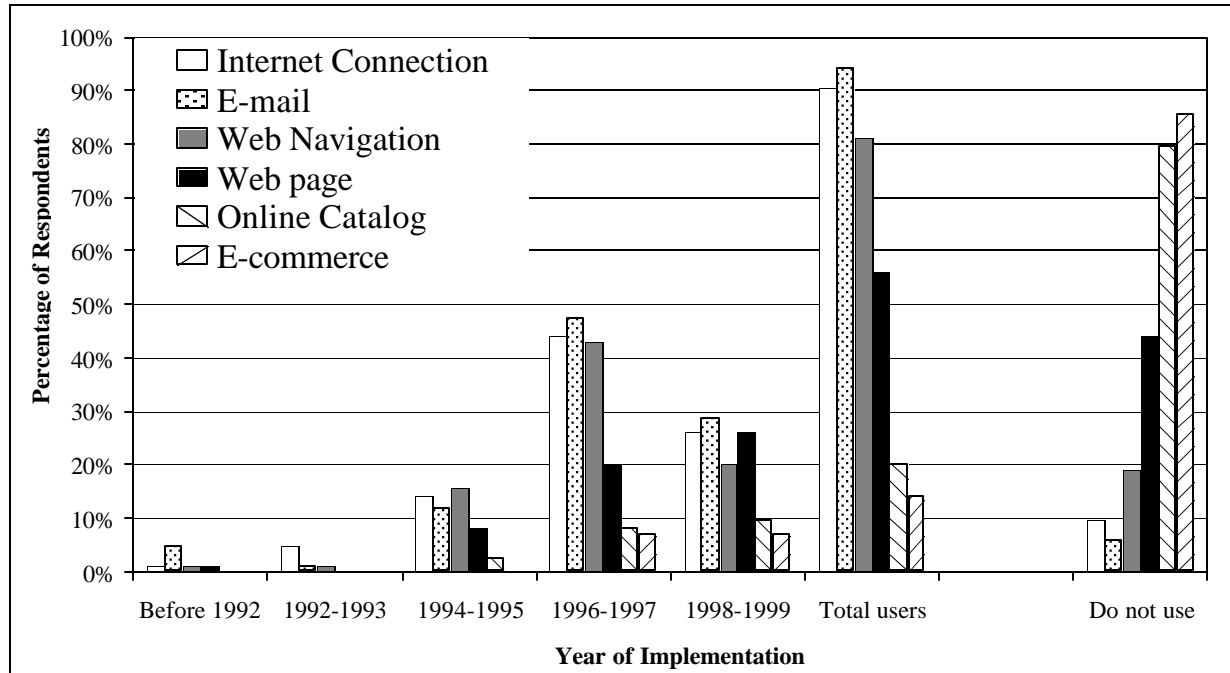


Figure 3. Exporter Uses of the Internet (n=84)

Web Presence

More than half of respondents (62.4 percent) were found to have a Web presence. Of these, 84.7 percent had also registered a domain name for their firm. For the purpose of this study, Web presence was defined as having a Web site, Web page, or simply a listing on somebody else's Web site/page. Respondents were screened so that all following questions would be answered only by firms that had already established a Web presence. Therefore, all results subsequently reported pertain only to such companies (n=58).

A hypothesis was tested to discover if the higher capitalization and more technical and financial resources available to larger companies are statistically correlated with the likeliness of a company to establish a Web presence.

H_{1null}: Sales revenue is not statistically correlated with the likeliness of establishing a Web presence.

H_{1a}: Companies with higher sales revenues are more likely to have an established Web presence.

A one-tailed Spearman's test was used to test for rank order correlation between the independent variable quantifying sales revenue and the dichotomous variable describing Web presence. Spearman's correlation coefficient is 0.279, which is statistically significant for an α level of 0.01. This result indicates that there is a strong and direct correlation between company size and the likeliness of having a Web presence. Larger companies are more likely to establish a Web presence than smaller companies.

In figure 4 are presented relative frequencies of current and projected stages of Web site development for the respondent companies. Most respondents (63.8 percent) had a Web presence in the form of a listing in a Web directory, most likely on a trade association's Web site. However, almost half of respondents (43.1 percent) reported having established a Web site with reciprocal links to other industry-related sites, suggesting a common Web promotion strategy (Web rings). A fifth of respondents (20.3 percent) had a Web site with no links to similar companies. Respondents anticipated an increase in their Web presence, in the next two years. Of all respondents having already established a Web presence, 27.6 percent expected to join an industry-related Web ring, 6.9 percent expected to establish a Web site with no outside links, and 10.3 percent anticipated being listed in a third-party Web directory.

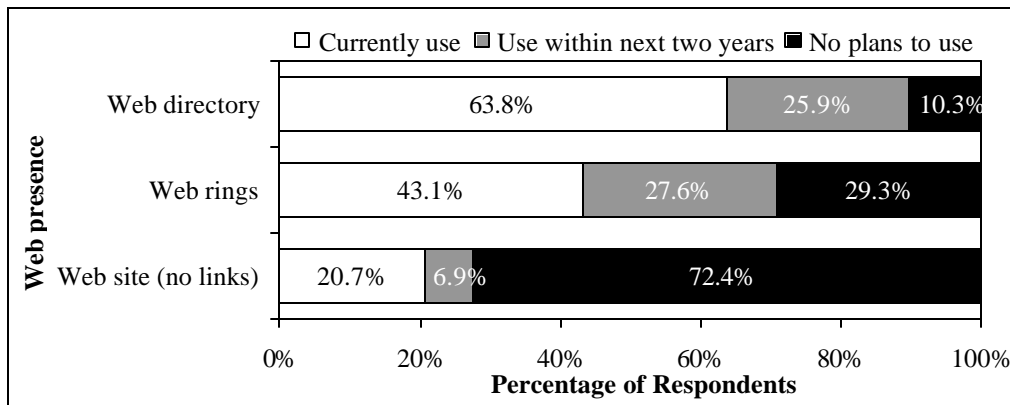


Figure 4. Current and Projected Web Presence Stages (n=58)

The business applications currently employed by using a Web site emphasize the WWW's strong potential as a promotion tool. Respondents were asked to indicate what specific business applications were being carried out by means of their Web site. Future use of the Web for these applications was also analyzed. Presently, promotional and PR activities are facilitated by the highest

percentage of Web sites, and they are expected to be the favorite applications within the next two years. Activities associated with value chain linkage (customer and vendor contacts and online buying and purchasing) and competitive assessments are deployed on a smaller number of Web sites but are expected to experience some significant growth during the next two-year time interval. It is significant to note though that the application with the highest expected growth within the next two years is eCommerce, with over 31 percent of respondents planning to employ it by means of their Web sites. Business processes, such as shipping notices, order tracking and delivery, and inventory management, were supported the least by Web sites (Figure 5).

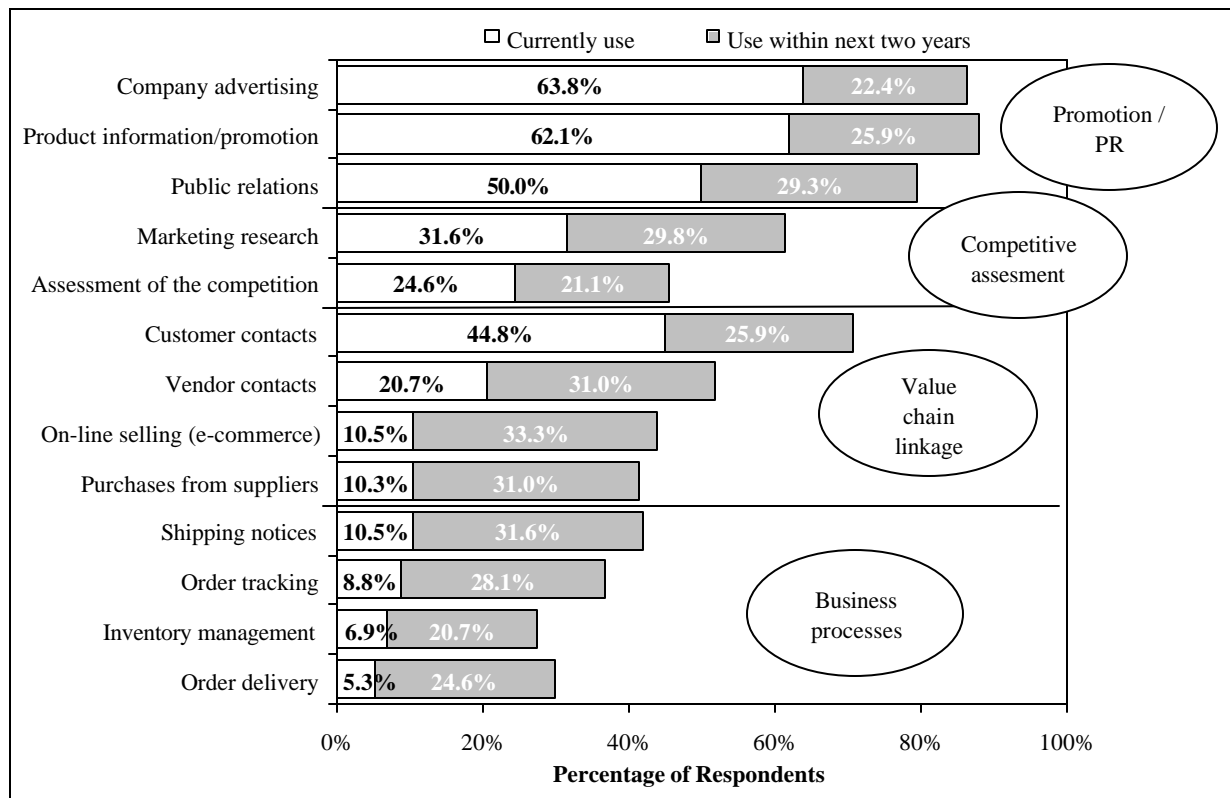


Figure 5. Current and Projected Business Applications Employed on Respondents' Web Sites (n=58)

In accordance with the promotional applications facilitated by the Web, new customers (both abroad and within the U.S.) are found most frequently among the targeted Web audience of respondents. However, existing customers are also targeted by about half of the respondents' Web sites, suggesting that the Web can be used not only for reaching new customers but also for retaining them (Figure 6).

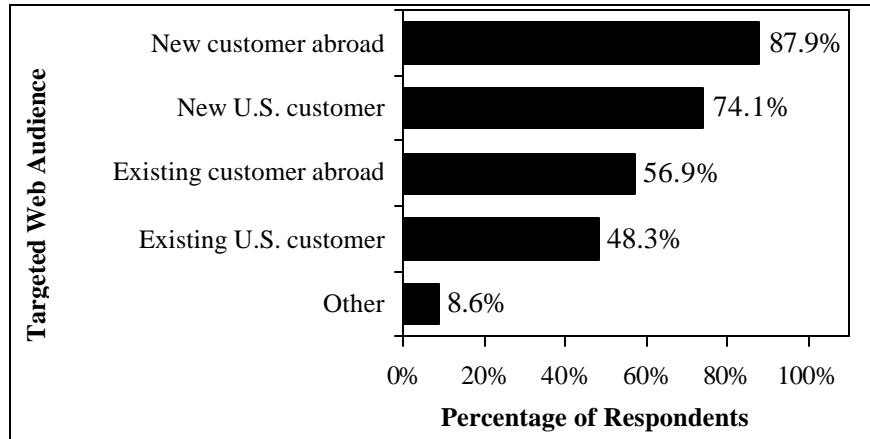


Figure 6. Relative Frequencies of Targeted Web Audiences (n=58)

In order to test if multilingual Web sites are more successful than English-only sites, respondents were first asked whether or not they employed a formal method of measuring Web site success. The measures of Web site success most used by respondents were e-mail messages (81.8 percent), requests for more information (70.3 percent), and number of direct hits (51.4 percent). On a scale from 1 (significantly below expectations) to 3 (as expected) to 5 (significantly above our expectations), wood products exporters expressed the success of their Web sites on average to be 2.9.

Respondents were then asked to indicate whether or not they offered a translated version of their Web site in a language other than English. Only 26.3 percent of the 57 respondents having a Web site indicated that they also had a section translated in at least one foreign language. Of these, nine sites (15.8 percent) had sections in one foreign language, four sites (7.0 percent) featured two foreign languages, and two sites (3.5 percent) had sections in four foreign languages. The languages that wood products exporters most often used to translate their Web sites were French and Japanese (7 Web sites for each language).

Most respondents (84.6 percent) indicated that the decision to offer a translated Web site was a consequence of internal company considerations (84.6 percent), rather than a response to customer requests (30.8 percent). The focus that wood products exporters were found to have on attracting new customers is confirmed by the benefits sought from offering a translated Web site. All respondents

expected to reach more customers by translating their Web sites, while only 60 percent of them considered that their established customers would thus be better served.

A hypothesis was tested to discover if respondents that have implemented a multilingual Web site perceive their site as more successful than those respondents that have not. Due to content that has to be duplicated in another language(s), multilingual Web sites require more resources to develop and maintain. For exporters, the incentives justifying the additional commitment of resources could be reaching more customers and better serving of existing customers, as investigated by the questionnaire instrument.

H_{2null} : Multilingual and English-only Web sites are equally successful in meeting their objectives.

H_{2a} : Multilingual Web sites are more successful in meeting their objectives than English-only sites.

This hypothesis was tested by a one-way ANOVA. The variable describing Web site success (on a scale from 1 to 5) was treated as the dependent variable, while the presence of a translated Web site was considered the treatment variable. At the $\alpha = 0.05$ level of significance, the null hypothesis was found to be tenable in light of the data (the value of the test statistic is 0.400). This result does not indicate strongly that offering a Web site in a foreign language increases the success of that Web site in meeting its expected objectives.

Respondents were asked to identify the departments that were responsible for setting up, maintaining, and updating their company's Web site (Figure 7). Findings indicate that Information Systems, Marketing, and Sales were most responsible for both activities. Generally, the departments responsible for setting up the Web site were also responsible for updating it, with the exception of outside specialists. Only about half of the companies that used an outside Web design specialist chose to use the same services to maintain and update their Web site.

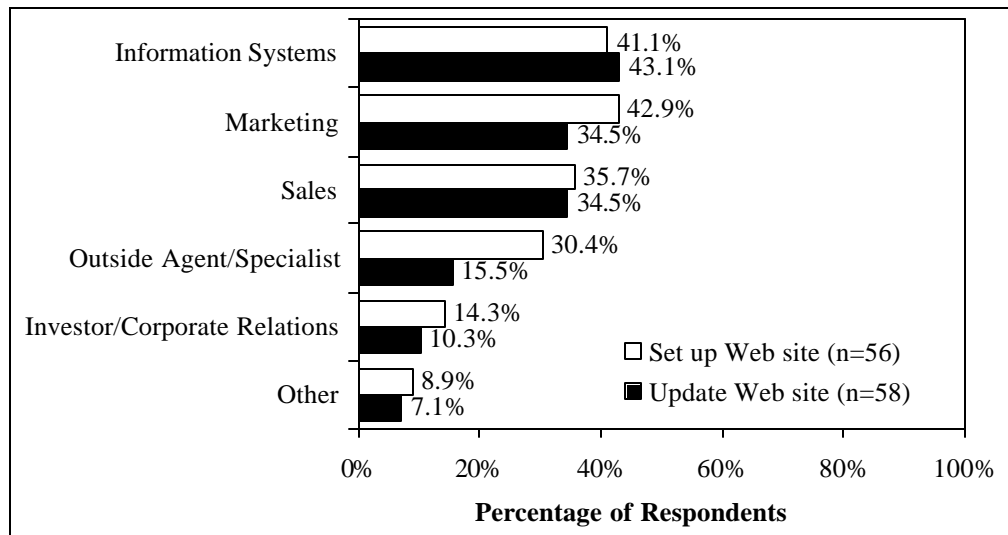


Figure 7. Departments Responsible for Setting Up and Updating Web Sites

CONCLUSIONS AND RECOMMENDATIONS

The Web has a high potential for facilitating marketing applications. This is reflected in the high percent of wood products exporters that conduct promotion activities on their Web site. Although applications focused on value chain linkages and business processes are currently less frequently employed on respondents' Web sites, they are expected to experience the highest growth within the next two years. Firms that are quick in taking full advantage of the Internet by implementing such applications are likely to achieve a competitive advantage.

The study did not find that the use of a foreign language increased the efficiency of Web sites belonging to wood products exporters. While this information may suggest that the additional efforts of building and maintaining a multilingual Web site are not likely to be reflected in significant benefits, at least at present times, care should be taken in building a long-term Internet marketing strategy based on this consideration. The present lack of incentives for multilingual wood products Web sites may merely be a reflection of the large percentage of English-speaking Internet users. However, as Internet growth nears saturation point in the U.S., other countries, of which the majority are not English speaking, will account for future growth. As a consequence, the importance of the English language relative to other

languages, while remaining high, will decline in significance, and firms looking at attracting foreign customers will have to cater to their individual language requirements.

Based on these observations, the authors suggest that wood products exporters develop a Web strategy that will focus on increasing the functionality of the Web site. Inventory levels, prices, delivery terms, and product specifications are examples of information that can help the exporters increase the value offered to the visitors of their Web site. Implementing eCommerce is the logical continuation of these steps, but careful planning and a well-defined strategy are of paramount importance for success. Although not a priority at the present time, the development of a multilingual section may prove a worthy addition in the future, especially as the Web develops into a truly multilingual medium.

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