INTERNET TECHNOLOGIES IN THE HOMECENTER INDUSTRY

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ABSTRACT

As competition intensifies in the $127 billion homecenter industry (1998 data), homecenter retailers are implementing electronic commerce technologies in order to generate and maintain competitive advantages. Internet technologies give companies an alternate method of expanding their trading communities, thus creating a streamlined supply chain and reducing costs (6). This research was designed to explore how internet technologies are impacting a key retail channel for forest products: the homecenter retail industry. The study sample consisted of the 500 largest homecenter retail companies (by sales) in the United States. This group of large homecenters represented over 75 percent of the total homecenter industry sales in 1998 (10). Study results show that 87 percent of the homecenter respondents had access to the Internet in 1998 and 57 percent of these companies used the Internet for company promotion via home pages. Results also showed that in 1998, 32 percent and 13 percent of respondents had intranets and extranets, respectively. As expected, large homecenter retail respondents are lead adopters for these important Internet technologies.

The homecenter market is driven by the repair and remodel demand sector, which includes expenditures by both do-it-yourself (DIY) customers and professional (PRO) contractors (15). In 1998, homecenter industry sales totaled $127 billion, with the two largest homecenter chains, Home Depot and Lowe’s, combining for 33 percent of total homecenter sales (10). In addition, the top 500 retailers had over 75 percent of the total homecenter industry sales in 1998 (10).

As the homecenter industry continues to grow, homecenter retailers are fiercely competing for market share through the strategic location of stores, aggressive pricing, larger warehouse-style shopping venues, and more sophisticated promotional materials such as displays, point-of-purchase (POP) literature, and interactive information technologies. Many homecenters recognize that the effective use of electronic technologies will likely improve their logistics efficiency and as a result, will reduce their costs, thus securing a more competitive position in the marketplace. This paper focuses on internet technologies, an emerging form of electronic commerce (EC), including home pages, intranets, and extranets.

The Internet

“...The body of interconnected computer networks that today is collectively known as the Internet” is the largest and most powerful computer network on the planet (17). In 1993, there were only 90,000 Americans with Internet access (1). This number increased more than 900 times to 81 million Americans by early 1999 (1).

The World Wide Web, the fastest growing part of the Internet, is “...outed increasingly as the great new marketing medium of our time” (13). It allows two-way communication, which makes it a powerful marketing tool. According to a study by Silvia Watkins-Castillo (20), “...the most common use of the Internet by companies is ... for information purposes, either to gather information or to disseminate information.”

In 1998, there were 829 million Web home pages (1). This number is projected to reach 1.45 billion by 1999 and 7.7 billion by 2002 (1). Ted Blackman (4) has stated that websites mostly contain information about the company and its activities, therefore focusing more on marketing the firm, not its products. For example, WTD Industries’ Vice Presi-

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Dillman’s Total Design Method (7). This procedure included an initial survey mailing, a reminder postcard, and a second survey mailing, resulting in the return of 135 usable questionnaires and an adjusted response rate of 27.3 percent.

To ensure that the largest and most influential homecenter respondents were included, pre-survey notification and follow-up phone calls were made to the top 20 homecenter retailers (by sales) to encourage participation and increase their response rates. The top 20 homecenter respondents exceeded 53 percent ($57 billion) of total homecenter industry sales in 1997 (5). These additional primary data collection efforts resulted in 16 of the top 20 homecenter respondents to our study.

**Nonresponse Bias**

The Kruskal-Wallis one-way analysis of variance (ANOVA) technique and a two-tailed t-test were used to test for non-response bias by comparing the first 45 respondents to the last 45 respondents (3). The assumption in this methodology is that late respondents, who respond only after increased follow-up efforts, tend to be similar to non-respondents. No significant differences were found between early and late respondents in terms of firm size or the adoption of Internets, home pages, intranets, or extranets at a 95 percent confidence level. As a result, non-response bias concerns were set aside.

**Results**

**Profile of Respondents**

Sales and locations. — Respondents represented a total of $57.2 billion in homecenter sales (n = 135) in 1997 resulting in a 72 percent weighted response rate (by sales) and representing 53 percent of the total homecenter retail industry sales that year. Average sales for responding homecenters were $424 million and ranged from $17 million to $24 billion. Homecenter respondents had an average of 29 locations and ranged from 1 store to 636 stores.

The top 500 homecenter respondents were divided into two groups: “large” (n = 20) homecenters with 1997 sales ranging from $200 million to $25 billion and “small” homecenters (n = 115) with 1997 sales ranging from $17 million to $199 million. In 1998, there were 35 U.S. homecenters in the study sample of top 500 homecenters that had sales greater than $200 million (5).

**Internet**

Of the 135 homecenter respondents, 86.7 percent (n = 117) had Internet access in 1998 and an additional 4.4 percent (n = 6) were planning to be on-line by 2000 (Table 1). The 117 companies with Internet access represented 99 percent ($56.6 billion) of the total respondent revenue while the 6 companies that were planning to implement Internet access by 2000 represent an additional 0.3 percent ($171 million) of the total respondent revenue.

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1 The Kruskal-Wallis ANOVA was used to test the nonmetric (ordinal) data (11).

2 A parametric statistical test (t-test) was used to analyze ratio data comparisons between early and late respondents (11).
One hundred percent \((n = 20)\) of the large homecenter respondents had Internet access in 1998 (Table 1). Eighty-four percent \((n = 97)\) of the small homecenters had access to the Internet in 1998 with an additional 5.2 percent \((n = 6)\) planning to be on-line by 2000.

The large and small homecenter respondents with Internet access were compared using the Kruskal-Wallis one-way ANOVA statistical technique. This non-parametric test for nominal data computes a statistic with a chi-square distribution under the hypothesis that the groups have the same distribution (11). Using this test, Internet access between our large and small homecenter respondents differed significantly at \(\alpha = 0.058\) (Table 1).

Of the 117 homecenters that had Internet access in 1998, over half \((n = 67)\) used the Internet to promote their company (Fig. 1). Other key Internet uses by respondents included providing on-line services \((n = 36)\), to make purchases \((n = 31)\), and for sales \((n = 28)\).

As expected, all 67 responding homecenters that used the Internet to promote their company also indicated that they had home pages (Table 2). These 67 homecenters represented 86.7 percent \(($49.6\) billion) of the total respondent revenue. An additional 33 companies \((24.4\%)\) were planning to create a company home page by 2000 and represented 11.0 percent \(($6.3\) billion) of the respondent revenue.

Of the large homecenter respondents, 85 percent \((n = 17)\) representing 90.3 percent \(($47.4\) billion) of the large homecenter respondent revenue had home pages in 1998. The other three large homecenter respondents were planning to create a home page by the year 2000. Forty-three percent \((n = 50)\) of small \((n = 115)\) homecenter respondents had home pages in 1998, with an additional 26.1 percent \((n = 30)\) planning to create a home page by 2000. Home page usage by large and small homecenter respondents differed significantly at \(\alpha = 0.001\) (Table 2).

**INTRANET**

Of the 135 homecenter respondents, 31.9 percent \((n = 43)\) had implemented an intranet in 1998. These 43 firms represented 79.1 percent \(($45.3\) billion) of the total respondent revenue (Table 3). Sixty-five percent \((n = 13)\) of the large homecenter respondents and 26.1 percent \((n = 30)\) of small \((n = 115)\) homecenter respondents were using intranets in 1998. The implementation of intranets by large and small homecenter respondents differed significantly at \(\alpha = 0.001\).

Homecenter respondents that had intranets were asked to indicate the types of information contained or provided on their intranet (Fig. 2). Of the 43 homecenter respondents that had intranets, 20 \((46.5\%)\) of the intranets included access to phone directories and memos. Homecenter respondents’ intranets also frequently have access to schedules, management policies, price lists, and calendars of events.

**EXTRANET**

Thirteen percent \((n = 18)\) of the 135 homecenter respondents had implemented extranets in 1998 and an additional 16.3 percent \((n = 22)\) were planning to implement extranets by 2000 (Table 4). The 18 companies that had extranets represented 58.2 percent \(($33.3\) billion) of the total respondent revenue while the 22 companies that were planning to implement an extranet by 2000 represented an additional 26.5 percent...
TABLE 4.—Top 500 homecenters with an extranet in 1998.

<table>
<thead>
<tr>
<th></th>
<th>All respondents (n = 135)</th>
<th>Large(^b) (n = 20)</th>
<th>Small(^c) (n = 115)</th>
<th>Chi-square(^e)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unweighted</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>13.3</td>
<td>25.0</td>
<td>11.3</td>
<td>2.745</td>
<td>0.098</td>
</tr>
<tr>
<td>1999 to 2000</td>
<td>16.3</td>
<td>30.0</td>
<td>13.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>29.6</td>
<td>55.0</td>
<td>25.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weighted by sales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>58.2</td>
<td>62.2</td>
<td>10.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999 to 2000</td>
<td>26.5</td>
<td>27.1</td>
<td>19.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>84.7</td>
<td>89.3</td>
<td>29.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) Top 500 homecenter respondents with 1997 sales ranging from $200 million to $25 billion.
\(^b\) Top 500 homecenter respondents with 1997 sales ranging from $17 million to $199 million.
\(^c\) A Kruskal-Wallis one-way ANOVA technique was used to test the hypothesis of no difference in extranet implementation between large and small homecenter respondents.

TABLE 5.—Reasons that homecenters implemented an extranet in 1998.

<table>
<thead>
<tr>
<th>Extranet technology was implemented to</th>
<th>All respondents (n = 18)</th>
<th>Large(^b) (n = 5)</th>
<th>Small(^c) (n = 13)</th>
<th>Unweighted means(^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be part of our company’s corporate strategy</td>
<td>3.56</td>
<td>3.40 (3)</td>
<td>3.62 (1)</td>
<td>3.56</td>
</tr>
<tr>
<td>Create a cost savings</td>
<td>3.50</td>
<td>4.20 (1)</td>
<td>3.23 (4)</td>
<td>3.50</td>
</tr>
<tr>
<td>Facilitate transactions with vendors</td>
<td>3.50</td>
<td>3.60 (2)</td>
<td>3.46 (2)</td>
<td>3.50</td>
</tr>
<tr>
<td>Improve business relationships</td>
<td>3.39</td>
<td>4.20 (1)</td>
<td>3.08 (5)</td>
<td>3.39</td>
</tr>
<tr>
<td>Respond to vendor requests</td>
<td>3.17</td>
<td>2.80 (4)</td>
<td>3.31 (3)</td>
<td>3.17</td>
</tr>
<tr>
<td>Share information with vendors</td>
<td>3.11</td>
<td>3.60 (2)</td>
<td>2.92 (6)</td>
<td>3.11</td>
</tr>
</tbody>
</table>

\(^a\) 5-point scale: 1 = strongly disagree; 3 = neutral; 5 = strongly agree.
\(^b\) Top 500 homecenter respondents with 1997 sales ranging from $200 million to $25 billion.
\(^c\) Top 500 homecenter respondents with 1997 sales ranging from $17 million to $199 million.

($15 billion) of the total respondent revenue.

Twenty-five percent (n = 5) of the large homecenter respondents had extranets in 1998 and 30 percent (n = 6) of these large respondents were planning to implement extranets by 2000. Eleven percent (n = 13) of the small homecenter respondents had extranets and an additional 13.9 percent (n = 16) of these smaller (n = 115) respondents were planning to implement extranets by 2000. Use of extranets by our large and small homecenter respondents differed significantly at $ \alpha = 0.098$ (Table 4).

Homecenter respondents who had an extranet were asked to indicate all the business applications that were used with their extranet (Fig. 3). Seventy-two percent (n = 13) of homecenter respondents who had implemented an extranet used the extranet for product inquiry, EDI, ordering from suppliers, order processing, and price inquiries were also frequently used business applications. As mentioned earlier, extranet EDI is a very attractive option to homecenters interested in an EDI system because it is relatively inexpensive and has no compatibility problems.

Homecenter respondents who had an extranet in 1998 were asked to indicate their relative agreement with the perceived benefits that influenced their decisions to implement an extranet. Table 5 shows the mean responses of these rated attributes using a 5-point scale, where 1 = strongly disagree, 3 = neutral, and 5 = strongly agree. All six of the reasons received a mean agreement rating between 3.11 and 3.56. Keep in mind that all respondents who answered this question regarding extranet implementation were current users of this technology. Table 5 also compares large and small homecenter respondents with unweighted means followed by the ranking in parentheses. Creating a cost savings and improving business relationships had the highest unweighted means ($\mu = 4.2$) for large homecenters, but were the number 4 and 5 reasons according to the small homecenters. Corporate strategy had the highest unweighted mean ($\mu = 3.62$) for small homecenter respondents, but was ranked number 3 by the large homecenters. Large homecenters generally had higher unweighted means as compared with small homecenters. However, large
homecenter respondents rated “be part of our company’s corporate strategy” and “respond to vendor requests” lower than the small homecenter respondents (Table 5).

Summary

This study reports the status of Internet EC among the top 500 homecenter retailers in 1998. Study results showed that nearly 87 percent of the 135 responding homecenters had access to the Internet in 1998. Over half of these 135 homecenters had home pages that were used to promote their company. Approximately one-third of U.S. homecenter respondents had intranets in 1998 and only 13 percent of responding U.S. homecenters had implemented an extranet with their suppliers.

Study results show that large homecenters are leading the adoption of Internet-based EC. Also, results show that large and small homecenter respondents implemented their extranets for different reasons. Large homecenter respondents rated cost savings and business relationships as their primary reasons to implement their extranet, while small homecenters rated corporate strategy and vendor transactions as their top two reasons for implementing their extranet.

Although businesses are increasing their use of the Internet, this study suggests that the use of the Internet for business-to-business activities was not yet firmly established among the top 500 homecenter retailers in 1998. However, since 87 percent of the 135 respondents had Internet access, it seems that the foundation has been set for future expansion of Internet-based business activities.

Conclusions

Internet-based electronic commerce can drastically alter the way companies do business. Because the Internet is compatible with any computer, language, or web browser, it offers a myriad of business opportunities. Therefore, Internet EDI via extranets can be transacted between current users of EDI and non-EDI users. As a result, business-to-business transactions over the Internet are expected to increase dramatically.

The Internet is a revolutionary tool that allows companies to perform a multitude of business functions. A company can use a home page for cost-effective promotion. For example, Louisiana-Pacific’s website is designed primarily to enhance communication and serve their customers’ informational needs such as the companies’ financial data, growth strategies, company news, and environmental programs (4). In contrast, Crestbrook Forest Industries’ website includes product availability information for their customers to access inventory in real time and at their convenience rather than waiting for a weekly fax (4).

The forest products industry and the homecenter industry are rapidly expanding their use of the Internet. Companies that fully utilize the Internet’s potential for business activities at the corporate level have opportunities to increase their competitive position within the marketplace.

Literature Cited


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