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E-Commerce Adoption by Small Businesses in Grand Rapids

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Introduction

Electronic Commerce describes commercial activities conducted over the World Wide Web. At the most basic level, a company can become enabled for electronic commerce simply by adding communication over the Internet—e.g., e-mail—to its established forms of communication such as telephone, fax, or the postal service. In increasing levels of sophistication, the company can use the Internet to manage information (including on-line databases) or integrate electronic commerce into re-engineered business processes (e.g., on-line order entry, inventory tracking, and electronic billing). The company can also use electronic commerce to reach current customers, potential customers, suppliers, and other groups (e.g., financial institutions and the media).

Nearly half (46%) of all small businesses have yet to adopt electronic commerce [Wall Street Journal, August 17, 1999]. This report appears surprising because electronic commerce intuitively may be the first medium of choice for small businesses given its inherent nature of leveling the playing field between small and large businesses. With decreasing cost and availability of powerful user-friendly hardware and software, the benefits of information systems (IS), and hence electronic commerce, are now accessible to even the smallest business.

Since small businesses have unique computing needs as well as distinctive technology acceptance patterns, and that small businesses represent a distinct group that can benefit significantly from the adoption of electronic commerce, this study seeks to understand why some small businesses choose to adopt electronic commerce while others do not. Data for the study were collected through structured interviews with 62 top managers/CEOs of small businesses located in West Michigan.

Methodology

The methodology employed structured interviews with the top managers/CEOs of 62 small businesses (business with fewer than 200 employees). Twenty-six of these businesses had adopted electronic commerce and 36 had not. On average, non-adopters had 23 employees whereas adopters had 109 employees. The owners/CEOs were asked to identify the reasons for which they had decided either to adopt or not adopt electronic commerce for their business. Following the interview, they were also given a questionnaire with Likert-type measures of eight factors. The measures were drawn from several existing research instruments. To ensure their validity, satisfactory levels (> 0.8) of Cronbach’s alpha were computed for each of the eight factors.

In order to determine if the mean values of the eight factors were different across the two groups (i.e. adopters and non-adopters of electronic commerce), independent sample t-tests were conducted. The results of the tests are shown in Table 1. The factors—enthusiasm of the top manager towards IS (t = -3.417, df = 60, p < .001), compatibility of electronic commerce with the work of the company (t = -3.686, df = 59, p < .001), knowledge of the company’s employees about computers (t = -4.417, df = 60, p < .001), and relative advantage expected from electronic commerce (t = -2.403, df = 59, p < .01) were found to be significantly different between the two groups.

<table>
<thead>
<tr>
<th>Variable</th>
<th>T</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
<th>Mean Difference</th>
<th>Std. Error Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative advantage</td>
<td>-2.403</td>
<td>59</td>
<td>.019</td>
<td>-5280</td>
<td>.2197</td>
</tr>
<tr>
<td>Compatibility with company</td>
<td>-3.686</td>
<td>59</td>
<td>.000</td>
<td>-8922</td>
<td>.2421</td>
</tr>
<tr>
<td>Managerial time</td>
<td>.016</td>
<td>60</td>
<td>.987</td>
<td>2.849E-03</td>
<td>.1802</td>
</tr>
<tr>
<td>Information intensity</td>
<td>-1.809</td>
<td>60</td>
<td>.075</td>
<td>-4345</td>
<td>.2401</td>
</tr>
<tr>
<td>Competition</td>
<td>-.100</td>
<td>60</td>
<td>.920</td>
<td>-2.2792E-03</td>
<td>.02289</td>
</tr>
<tr>
<td>Knowledge of computers within the company</td>
<td>-4.417</td>
<td>60</td>
<td>.000</td>
<td>-9601</td>
<td>.2174</td>
</tr>
<tr>
<td>Cost of implementation</td>
<td>.424</td>
<td>60</td>
<td>.673</td>
<td>6.816E-02</td>
<td>.1609</td>
</tr>
<tr>
<td>Enthusiasm of top manager</td>
<td>-3.417</td>
<td>60</td>
<td>.001</td>
<td>-5050</td>
<td>.1478</td>
</tr>
</tbody>
</table>

Table 1: Independent sample t-tests across adopters and non-adopters of Electronic Commerce. (Significant variables are marked in bold font.)
A discriminant analysis was then conducted to determine whether the eight factors could predict adoption of electronic commerce by small businesses. The Wilks' lambda was significant, indicating that overall the eight factors differentiated among the two groups. Table 2 shows the within-group correlations between the predictors and the discriminant function as well as the standardized weights. Enthusiasm of the top manager/CEO towards electronic commerce, compatibility of electronic commerce with the work of the company, knowledge of the company's employees about computers, and relative advantage perceived from electronic commerce were found to have relatively large positive correlation coefficients with the discriminant function. The discriminant function was able to correctly classify 75.41% of the cases assuming homogeneity of the covariance matrices.

**Table 2. Standardized Coefficients and Correlators of Predictor Variables**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Correlation Coefficients with Discriminant Function</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relative advantage</td>
<td>0.420</td>
<td>0.320</td>
</tr>
<tr>
<td>Compatibility with company</td>
<td>0.609</td>
<td>0.033</td>
</tr>
<tr>
<td>Managerial time</td>
<td>0.010</td>
<td>0.233</td>
</tr>
<tr>
<td>Information intensity</td>
<td>0.294</td>
<td>-0.231</td>
</tr>
<tr>
<td>Competition</td>
<td>0.048</td>
<td>0.067</td>
</tr>
<tr>
<td>Knowledge of computers within the company</td>
<td>0.715</td>
<td>0.523</td>
</tr>
<tr>
<td>Cost of implementation</td>
<td>-0.010</td>
<td>0.279</td>
</tr>
<tr>
<td>Enthusiasm of top manager</td>
<td>0.570</td>
<td>0.611</td>
</tr>
</tbody>
</table>

**Discussion**

It is helpful to place the results of the data analysis in the context of the comments made by the top managers during the interviews. Enthusiasm of the top manager towards electronic commerce was evidently different between the adopters and non-adopters. One CEO who was in favor of electronic commerce said:

"Customers today are much more likely to jump on the Internet than to flip through the yellow pages to find a company that provides the service they are seeking."

Another CEO commented on ability of his company's web site to reach customers without adding to the cost. He said:

"Our web site is like a store without a location, and that is one less rent bill we must pay."

However one top manager who had not adopted electronic commerce had the opposite view:

"Being on the Internet can become a big expense for a small company such as myself. I can't see how spending the money to be on the World Wide Web will help my company make more money. I only see it as being another expense and causing me to lose money."

Another non-adopter commented:

"As a small business with hourly employees it is hard to find time to allocate to get things done, let alone set up a web site.

Several other CEOs felt that their businesses were already stretched to the limit and they could not expand further. One said:

"We are a local business and do not have enough resources to support growth of our business outside the area without compromising our customer service."

The enthusiasm of the CEOs was also related to how compatible they felt electronic commerce was with their company's business. Several businesses cited their close relationship with their customers and feared losing this personal touch through a web site. As one CEO commented:

"We pride one-to-one interaction with customers and personally answering their questions."

Another CEO was more blunt, commenting:

"There really has never been a time where our company thought we could benefit from having a web site. It is just not something that is necessary for our business."

Companies that had not adopted electronic commerce almost universally mentioned employees' lack of computer and
technology knowledge. This usually stemmed from the top, and many CEOs admitted not being personally comfortable with technology or familiar with the benefits of IS. One CEO said:

"First off, I don't know very much about computers. Second, I don't think a site would enhance my business profits at all. Thirdly, I don't have extra time or money to have someone come in and set one up for me if I think it is not going to be beneficial to my business."

Another CEO said that he was unaware of how difficult maintaining a web site would be, commenting:

"We don't want to develop a web-site and have to have it continuously updated each time we make a change to the business."

Several of the businesses interviewed did not use computers at the workplace at all, though their CEOs might have had access to the Internet from their homes. One CEO said:

"I don't have access to the Internet while I'm on a job site. The only way I could check the Web to see if people have contacted me is in the evenings when I'm at home and usually I don't have a lot of time to work on the computer then."

Finally, several non-adopters did not feel that current use of electronic commerce would provide them strategic advantage, however, they were optimistic about the future. One CEO who held this view said:

"I think that it would be a good idea to put the company on the Internet but at the current point in time, I can't see how it will be of any great benefit to me or my company to try and implement it. Maybe someday down the road, I will be able to take a look at where the company is at, and I could possibly be able to implement some new ideas, such as going on the Web."

Conclusions
This research has sought to identify factors that influence the adoption of electronic commerce in small businesses. Enthusiasm of the top manager/CEO of Greater Grand Rapids organizations towards electronic commerce, compatibility of electronic commerce with the work of the company, relative advantage perceived from electronic commerce, and knowledge of the company's employees about computers were found to discriminate between adopters and non-adopters of electronic commerce. The interviews conducted with non-adopters of electronic commerce also identified their difficulty in hiring and retaining skilled IS professionals to implement electronic commerce. Clearly the arrival of electronic commerce to the world of business has facilitated a shift from the mass labor paradigm of past decades to a knowledge worker paradigm that is likely to dominate the economy for the future. Small businesses that are able to retain technology-skilled employees will be the beneficiaries of the electronic commerce economy.