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## ***An Investigation of the Perceived Financial Performance of Commercial Printing Firms for Conducting B2C Activities Using Web Technology***

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# **An Investigation of the Perceived Financial Performance of Commercial Printing Firms for Conducting B2C Activities Using Web Technology**

**By Dr. Devang P. Mehta**

## **Abstract**

This paper is primarily based on Rogers' diffusion of innovations theory and Auger's empirical study. An empirical research study was conducted to investigate the perceived financial performance of commercial printing firms for conducting business-to-customer (B2C) activities using Web technology. Financial performance was measured using four financial indicators: sales, profits, costs, and return-on-investment (ROI). The diffusion of innovations theory states that an innovation brings changes to a company. Web technology is an innovation that affects company's performance. This paper investigates the effect of Web technology on commercial printing firms' financial performance.

## **Introduction**

The Web is relatively new and an emerging technology. Companies can use Web technology as a business tool to publish the information about their products and services, to market and sell their products and services, to communicate with their customers and vendors, to offer technical support, and to receive payments. Findings gathered from the review of literature showed that there was a mixed trend among companies for using Web technology. Some professionals believed that their companies were performing better because of Web technology. Some professionals did not notice any change in the company's financial performance. On the other hand, some professionals perceived that Web technology adversely affected their financial performance. This paper

investigates the perceived financial performance of commercial printing firms for conducting B2C activities using Web technology.

## **Review of Literature**

This research study was partially based on the diffusion of innovations theory. Rogers (1995) defined diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 5). The innovation can be an idea, practice, or object that is perceived as new by an individual or other unit of adoption (Rogers, 1995). In this study, the Web is such an innovation or technology and its diffusion in the society in terms of how it brings changes to financial performance of companies was discussed. Consequences are the changes that occur to an individual or to a social system as a result of the adoption or rejection of an innovation (Rogers, 1995). In this study, changes related to financial performance were investigated as a result of adoption of Web technology for conducting B2C activities.

There are many illustrations of desirable, direct, and anticipated consequences with Web technology. McLean (2000) said that Web sites could be powerful tools for printers, if they were well constructed. He added that Tonya Starr, president of Premierprinter.com, cited the research study finding that a company that has a Web site achieves a 35 percent higher level of credibility than to a company that doesn't. Behrens (1997) indicated that the usefulness of e-mail and Web sites as present-day marketing vectors

can trigger sales promotion, and thus can be widely used by many printing companies. Hirshowitz (1997) stated that the World Wide Web provides several benefits to quick printers. Kinko's uses its site to display products and services; while Herndon, Virginia-based Insty-Print generates \$5,000 to \$15,000 monthly sales on the Internet (Hirshowitz, 1997). Hirshowitz (1997) cited that AlphaGraphics in Scottsdale, Arizona, developed a Web site that allows customers to transact business with its 300 franchised print shops worldwide. Frank Romano, chair of the School of Printing, Rochester Institute of Technology, mentioned that e-commerce would allow printers to deal more efficiently with the everyday rapid changes ("E-commerce options," 2000).

There are undesirable, indirect, and unanticipated consequences associated with Web technology, also. It was stated in the "the ultimate e-commerce study" (2002) that the Indian industry has clearly understood that e-commerce is not a solution for all business problems and marketing strategies. A blind choice of technology has further added to many firms' problems, those who have been unable to comprehend the effect of the Web on their businesses. Durfee and Chen (2002) indicated that one of the important lessons learned in the last year is that e-commerce is not for everyone, because investments are significant, and mistakes are expensive and highly visible. Roth (1998) cited the findings of research conducted by the Graphic Arts Marketing Information Service of Printing Industries of America (GAMIS/PIA) that not many companies are making profits by conducting business-to-customer activities on the World Wide Web. She indicated that only 11% made money on Web sites, while 43% thought they broke even and 38% lost money. Burke (1997) discovered that existing retailers have also been reluctant to support electronic shopping for the following reasons:

1. Building and maintaining a Web site requires a significant investment of time and money with an uncertain return on investment.

2. If retailers post their prices on the Internet, customers and competitors have easy access to this information, increasing market efficiency and reducing margins.
3. Electronic-sales incur shipping and handling costs.
4. Electronic-sales have higher return rates of goods because sometimes customers do not obtain the goods that meet their expectations.

Auger (1997) conducted similar research to investigate the relationship between a Web strategy and the financial and non-financial measures of performance of a company. He concluded that there were positive associations between multi-objective sites and overall performance, between advertising of the Web site and overall performance, between the number of visitors and overall performance, and between the frequency of site updates and overall performance. Surprisingly, he found a negative association of Web site design features and services with overall performance. Further, Auger found that the more complicated the Web site, the less the number of visitors. Hence, the overall performance could be negatively affected.

Based on the literature, Web technology brings about both positive and negative consequences that affect organizational performance. Positive consequences of Web technology, such as reaching a large number of customers, online marketing and sales, online transactions, and customization of messages, usually improve performance of a company. On the other hand, there are negative consequences as well, such as the costs of building and maintaining a Web site, shipping and handling costs for tangible goods, higher return rate of items sold on the Web, and increasing competitiveness.

### Methodology

A survey instrument, questionnaire, was pre-tested for its validity and reliability. A pilot test was conducted to check the validity of the questionnaire, eliminate any ambiguity, and make

appropriate changes according to respondents' suggestions. A targeted sampling technique was applied to select the final subjects. Commercial printing firms of the midwest region of the United States who had Web sites were selected. Questionnaires were sent to appropriate graphic communications professionals such as presidents or owners, vice-presidents, directors, and marketing managers of those firms. A seven-point Likert scale was used to measure the financial performance. The seven-point Likert scale was designed as: (1) strongly disagree, (2) disagree, (3) somewhat disagree (4) no difference, (5) somewhat agree, (6) agree, and (7) strongly agree. Four financial indicators, including sales, profits, costs, and return-on-investment (ROI) were used to measure the financial performance. The mean was calculated for each financial indicator. The t-test was performed to measure the effect of Web technology for conducting B2C activities on each financial indicator and overall financial performance (Table 1).

### Findings

A total of 38 questionnaires out of 103 subjects were received. The response rate was 36.89%. Approximately one third of the total respondents believed that conducting business-to-customer activities on the Web does not affect financial indicators of performance. On the other hand, about two-thirds of the total respondents perceived that conducting B2C activities on the Web affects sales, profits, costs, and return-on-investment (Table 1). Conducting B2C activities on the Web had a significant positive effect on sales ( $x = 4.58$ ,  $p = 0.0153$ ), but had a significant negative effect on costs ( $x = 3.76$ ,  $p = 0.0241$ ) at  $\alpha = 0.05$ . Other financial performance indicators, profits and return-on-investment, were not significantly affected by conducting B2C activities on the Web. As a result, conducting B2C activities using the Web technology had no significant effect on the overall financial performance.

The respondents' comments were divided into three groups: positive, neutral, and negative. The positive comments consisted of comments in

favor of conducting B2C activities on the Web. One of the respondents mentioned “greatest benefit is electronic file transmissions, which cuts back need for additional sales/customer service contacts and FedEx expenses.” Five such positive comments were received. Respondents’ comments that conducting B2C activities did not benefit their business were classified as negative comments. There were a total of four negative comments. One of the negative comments was “commercial printing is not a commodity. It is difficult to have a B2C Web site.” A couple of comments were neither positive nor negative, so they were grouped as neutral comments. One of the respondents said “the use of the Internet is a great tool for printers, but will also decrease profits due to increased competition.”

### Conclusions

In relation to the consequences of an innovation model, it is concluded that the use of Web technology as a business tool brings desirable, direct, or anticipated changes; that is, it increases sales. At the same time, it brings undesirable, indirect, or unanticipated changes; that is, there is no significant improvement in profits and return-on-investment, indeed, Web technology increases costs. Conducting B2C activities using Web technology has no significant effect on the financial performance of commercial printing firms.

The results match with the GAMIS/PIA study that not many printing firms are making profits by conducting B2C activities on the Web. The results show similarities with the results of “the ultimate e-commerce study” and Durfee and Chen’s study that e-commerce is not for everyone. Future research studies should be conducted to determine how to boost the profits of commercial printing firms for conducting B2C activities using Web technology, and verify the results over a larger population.

### Recommendations for Future Research Studies

Recommendations are made based on research methodology and findings. The following recommendations are made for future research studies. The findings of those studies could be different from this study.

1. A longitudinal experimental study should be conducted in a commercial printing firm in order to study the effect of Web technology on the financial performance, once it is introduced.
2. A research study should be performed with a larger sample size of commercial printing firms to verify the results, and generalize findings for the larger population.
3. A correlation study should be performed to determine the relationship between independent variables and the dependent variable, financial performance. The independent variables include Web site features, advertising of the Web site, the length of Web site operation, the number of visitors, and the Web site modification frequency.
4. The above-mentioned research studies should be conducted in different industries to investigate the impact of Web technology on their financial performances.

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**Table 1. Degree of Agreement/Disagreement of Financial Performance Indicators**

Financial Performance Indicators	Means	G/L	t-Test Procedure	
			t-Statistics	p-value
Financial Performance	4.01	G	0.07	0.4716
Sales	4.58	G	2.25	0.0153*
Profits	4.00	—	—	—
Costs	3.76	L	1.01	0.0241*
Return on Investment	3.83	L	0.78	0.2193

**Note.** G =  $H_0: \mu \leq 4$  against  $H_A: \mu > 4$   
 L =  $H_0: \mu \geq 4$  against  $H_A: \mu < 4$   
 \*significance level  $\alpha = 0.05$