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AN EXAMINATION OF THE BENEFITS OF E-BUSINESS TO SMALL AND MEDIUM SIZE BUSINESSES

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Abstract

Small and Medium Sized Enterprises (SME) play a significant part in economies throughout the world. In the early developmental stages of e-commerce/e-business many believed that it would enable these SMEs to compete head-to-head with large companies. While much has been done to examine the adoption of e-commerce/e-business, few have addressed the benefit that it is providing these businesses. This study identifies the types of e-commerce that SMEs are using and examines the benefits that are received from this use.

Keywords: E-commerce, e-business, small & medium business, organizational benefits

Introduction

While the dot.com bubble has burst, the long-term interest and promise of e-commerce remains high. Firms, both large and small, continue to invest in developing the Internet based segments of their organizations. Researchers have stated that e-commerce provides many opportunities to create better business economics (Oliver 1999) and some have gone as far as indicating that e-commerce is the “great equalizer” (Quinn 1999). If these statements are true then it would appear that SMEs should be receiving some sort of benefit from the implementation of these technologies.

Review of Relevant Literature

In 1999 Kalakota and Robertson identified e-commerce as the most significant challenge that the business model will face since the introduction of information technology in general. Recent studies have looked at the reasons SMEs adopt e-commerce technologies and the factors that affect its adoption (Mehrtens et al. 2001, Korchak and Rodman 2001, Tobias 2002). Three major drivers behind the adoption of e-commerce technologies were identified: perceived benefits, organizational readiness, and external pressure. Building on these studies, several studies have looked at limited segments of the business environment in an attempt to identify the benefits of e-commerce to SMEs. These efforts have generally been restricted to qualitative evaluations of specific e-commerce endeavors (Hasan and Tibbits 2000, Kuan and Chau 2001, Straub et. al. 2002).

Recently authors have begun to delineate more explicitly a difference between e-commerce and e-business. E-commerce is emerging as the term used when discussing the process of transacting business over the Internet. E-business, on the other hand, involves the fundamental reengineering of the business model into an Internet based networked enterprise. The difference in the two terms is the degree to which an organization transforms its business operations and practices through the use of the Internet. (Hackbarth & Kettinger 2000, Mehrtens et.al. 2001, Poon 2000, Poon & Swatman 1997)

The Business Process Reengineering literature has reported that projects that replace or provide incremental improvements to a process have generally only produced incremental or unnoticeable performance improvements. Only radical transformations that involve rethinking of the business model have produced dramatic performance rewards. There is some evidence that this transformation process may, also, be a significant factor in the successful expansion of business operations into the e-commerce dimension. (Huizing et.al. 1997, Torkzadeh and Dhillon 2002, Wilcocks 2002)

In the past, SMEs have often been restricted from participating in revolutionary technology because of cost and personnel limitations. In the present environment, the incremental cost of evolving technology is far smaller than with past changes since most SMEs already possess an IT infrastructure. SME have traditionally been noted for their ability to respond to new opportunities and innovations more quickly than large enterprises. Recent studies have shown that SMEs are moving ahead into an Internet based business environment.(Kemp 2001, Korchak and Rodman 2001, Rendleman 2001, Poon 2000)

Problem and Purpose

"Small firms need to get in the e-commerce game or they are going to be shut out of a critical part of the marketplace," Jerry Jasinowski, President, National Association of Manufacturers (Wall Street Journal 2000)

The importance of e-commerce has been well documented in reports by the U.S. government as well as independent organizations (Arthur Andersen & NSBU 2000, Williams 1999, Small Business Administration 2000). Realizing the criticality of e-commerce to SMEs, the purpose of this study is to determine if there is indeed a performance improvement for SMEs that have adopted an Internet based business strategy. This study seeks to extend the existing literature by undertaking an examination of the performance results of the companies that have adopted e-commerce methodologies to determine if measurable organizational benefits have been achieved. This paper then reports the first step of that effort.

Methodology

The study followed several stages beginning with initial interviews of small business experts. After these discussions an initial survey was developed, after which additional interviews with the experts were conducted to refine the survey. Using these interviews, the survey was revised and then distributed to a group of 10 small businesses as a pilot sample to further refine the survey. The survey instrument is shown in the Appendix.

Our target population was the manufacturing SMEs in the Southeast United States (AL, FL, GA, LA, MS, NC & SC). The population includes both e-commerce adopters and non-adopters. The population was stratified into those companies having 10 to 19 employees, companies having 20 to 99 employees, and companies having 100 to 400 employees. The stratification was based on strata used in an earlier e-commerce study. Manufacturing was selected as the target industrial classification because this sector has shown the most aggressive use of e-commerce by large companies. Company selection was based upon their SIC classification (Table 1) and represents 80 percent of the total SME employment in this sector. (Korchak and Rodman 2001).

InfoUSA provided our business information database. Our population strata contained 7810 companies with 10 to 19 employees, 8606 companies with 20 to 99 employees and 2005 companies with 100 to 499 employees. A random sample of 400 companies, proportionately based upon the underlying state demographics, was drawn from each stratum. A survey packet was prepared that contained a personally addressed cover letter, the questionnaire, and a prepaid business reply envelope. The questionnaire contained a control number that enabled matching the questionnaire responses to the demographic data in the InfoUSA database. The completed packet was mailed to the presidents and owners of SMEs throughout the Southeast. After three weeks, a second mailing of the survey packet was completed. Two weeks after the second mailing, a follow up postcard, signed by the Director of SBA in Louisiana, was sent.

Table 1. SIC Classifications

SIC Code	Description
20	Food & Kindred Products Mfrs
23	Apparel & Other Finished Products Mfrs
24	Lumber & Wood Prods Except Furniture Mfrs
25	Furniture & Fixtures Mfrs
26	Paper & Allied Products Mfrs
27	Printing Publishing & Allied Industries

30	Rubber & Miscellaneous Plastics Mfrs
34	Fabricated Metal Products Mfrs
35	Industrial & Commercial Machinery Mfrs
36	Electronic & Other Electrical Equipment Mfr
37	Transportation Equipment Mfrs
39	Miscellaneous Manufacturing Industries Mfrs

Presentation and Discussion

Currently this study is still at the research in progress stage. However, it is interesting to examine some of the responses to this point. This section will present some preliminary observations about the initial respondents. Sixty-three usable responses were obtained initially and surveys are still being returned. This analysis addresses these sixty-three usable responses. In this section, demographic data will first be presented. Descriptive statistics for some of the key questions will then be presented to provide a foundation for the future studies and analyses.

Demographics

As table 2 indicates, the respondents are from a diverse group of small businesses.

Table 2. Basic demographics of initial respondents

Demographic	Statistic				
	N	Mean	SD	Min	Max
Number of years in business	59	30.05	21.06	1	95
Revenues	43	11,364,603	25,586,674	20,000	139,288,000
Fulltime employees	58	68.14	107.51	3	500
Advertising expenditures	43	93,332	18,9051	0	808,000
Internet related expenditures	37	32,231	93,511	0	500,000

The respondents include new businesses and well established businesses. They also cover all extremes of the definition of a SME with the smallest having 3 employees and the largest having the maximum of 500, the upper limit to be classified as an SME.

Initial Items of Interest

The focus of this study is the benefits that SMEs achieve through e-commerce. A key to this question is the level of e-commerce activities in the organizations. Table 3 presents a summary of the respondents' activities.

Table 3. SME e-commerce activities

Activity	N	Yes	%
Provide information about company	63	34	53.97
Allow suppliers to interact electronically with company	63	14	22.22
Provide information about products or service	63	38	60.32
Allow customers to place or request orders online	63	25	39.68
Allow customers to interact electronically with company	63	24	38.10
Integrate with back office systems	63	7	11.11
Other	63	1	1.59

Building off the activities that the respondents undertake are the business benefits. Table 4 summarizes the respondents' perceptions of the percent of activities within their individual organization that benefit from the use of e-commerce.

Table 4. SME business benefits from e-commerce activities

	N		
	52		
Response		No#	%
None		8	15.38
1-20%		32	61.54
21-40%		6	11.54
41-60%		4	7.69
61-80%		1	1.92
81-100%		1	1.92

One means of receiving a benefit from a system is its ability to interact with existing systems. Table 5 presents a summary of the respondents' perceptions of their company's e-commerce applications interaction with other company systems.

Table 5. How well e-commerce applications interact with other applications

	N	Mean	SD
	51	1.86	1.06
Response		No#	%
No Interaction 1		24	47.06
2		16	31.37
3		7	13.73
4		2	3.92
Extensive Interaction 5		2	3.92

Finally, a company's commitment to e-commerce will be directly related to the belief that e-commerce will be important to the overall business. Table 6 presents the respondents' perceptions of the importance of e-commerce to their overall businesses.

Table 6. How important e-commerce is to the overall business

	N	Mean	SD
	57	2.51	1.14
Response		No#	%
Not At All Important 1		11	19.30
2		20	35.09
3		16	28.07
4		6	10.53
Very Important 5		4	7.02

Building on the quantitative data that has been received so far is the qualitative data that indicates the state of e-business in SMEs as well as the frustrations with which they some are dealing. The following quotes are directly from the respondents and add additional insights.

"I wish I had devoted more time and money to Ecommerce. If I continue operating the company, Ecommerce will be a major part of marketing ordering and account receivable."

"Allowing customers to interact and place orders on line can be very important to us, but we aren't there yet."

"Our internet business off our website is a very small portion of our sales (less than 1%) but we feel our presence is a valuable tool in promoting our catalog sales."

"Bidding for business we've had for 30 years, with on-line bidding is the worst thing I've ever seen!"

These quotes further emphasize the point that e-business is a disruptive technology and remains an issue that SMEs need to address and update continually. The last quote is particularly interesting because it highlights the impact that e-commerce is having on entire industries and recognize the fact that SMEs can not avoid this impact.

Conclusions and Directions for Future Research

Clearly this study is still in the early stages; yet it provides some interesting insights into the state of e-business at SMEs. E-business has changed the dynamics of business, and SMEs are not immune to its impacts. The initial respondents are a diverse group and are at different stages in implementation of e-commerce applications within their organizations. They appear to be receiving some benefit from e-commerce, and they recognize the importance of e-commerce to their organization's survival.

Building on this foundation, future research should address the level of e-commerce adoption within SMEs and the impact that the technology is having on organizations. Much of the research in regards to e-business that has been conducted on large businesses should also be conducted on SMEs not only because they can be more responsive to changing market conditions but also because they can also suffer a greater level of harm.

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Appendix. Survey Instrument

Control Number:

Benefits of Electronic Commerce to Organizational Performance

Business Demographics

In what year was your business started? _____

For the following questions, please provide your current operating numbers and then compare those numbers with a similar period 12 months ago.

	Current Period Numbers	12 months ago Numbers				
		Down 15% or more	Down 5% to 10%	About the Same	Up 5% to 10%	Up 15% or more
1. What are your total revenues for the last 12 months?	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. What is the current value of your Raw Materials Inventory?	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. What is the current value of your Product/Finished Goods Inventory?	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. What are your advertising expenditures for the last 12 months (exclude all costs associated with a web site)?	_____ <input type="checkbox"/> NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. What are your web site, Internet and other related expenditures for the last 12 months?	_____ <input type="checkbox"/> NA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. How many full time employees do you have?	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. How many part time employees do you have?	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. How does the number of customers/clients you currently have compare to last year?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. How does the number of products and/or services you currently offer compare to last year?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Current Business Functionality

10. What is the position of the person who is the Information System advocate/promoter in your company? _____

11. Which of the following computer applications are used at your company? (Check all that apply)

- | | | |
|--|--|--|
| <input type="checkbox"/> Order Entry/POS | <input type="checkbox"/> Inventory of Supplies | <input type="checkbox"/> Purchasing |
| <input type="checkbox"/> Accounts Receivable | <input type="checkbox"/> Accounts Payable | <input type="checkbox"/> Other Financial/Accounting Data |
| <input type="checkbox"/> Product/Materials Inventory | <input type="checkbox"/> Customer Profile Information | <input type="checkbox"/> None |
| <input type="checkbox"/> Job Costing | <input type="checkbox"/> Production/Service Scheduling | <input type="checkbox"/> Other(s) _____ |

12. Which of the following types of information are available electronically at your company?(Check all that apply)

- | | | |
|--|---|--|
| <input type="checkbox"/> Order Tracking | <input type="checkbox"/> Inventory Status | <input type="checkbox"/> Your Company & Product Literature |
| <input type="checkbox"/> Accounts Receivable | <input type="checkbox"/> Accounts Payable | <input type="checkbox"/> Other Financial/Accounting Data |
| <input type="checkbox"/> Bids/Quotes | <input type="checkbox"/> Customer Profile Information | <input type="checkbox"/> None |
| <input type="checkbox"/> Production Scheduling | <input type="checkbox"/> Project Status | <input type="checkbox"/> Other(s): _____ |

Please answer question 13 by checking your selection, where "1" is "no interaction" and "5" is "extensive interaction".

13. How well do your company's computer applications interact with one another?

No Interaction 1 2 3 4 5 Extensive Interaction

Questionnaire continues on the back

This industry study is confidential. Specific information that identifies your company, such as company name, will not be revealed.

14. At your company, do you share information electronically? (Check all that apply)
- No **Yes:** Internally With customers With suppliers

If yes:

- 14.1. What tools does your company use to share information? (Check all that apply)

- email Shared databases Groupware
 Internet EDI Other: _____

- 14.2. Which of the following activities share information electronically? (Check all that apply)

- Production/ Manufacturing Product Development/ Engineering Finance/ Accounting
 Sales/ Marketing Personnel/ Human Resources Customer Communication
 Supplier Communication Purchasing/ Procurement Other: _____

15. Answer this question set if your company has an Internet connection

- 15.1. When did your company acquire its first Internet connection? Month Year

- 15.2. What type of Internet connection does your company have to this location?

- Dial up ISDN, DSL, Cable T1, T3, OC3, etc. Don't know connection type

16. Answer this question set if your company has a Web site.

- 16.1. What is the **position** of the person who is the Electronic Commerce advocate/promoter in your company? _____

- 16.2. When did your company initiate its first Web Site? Month Year

- 16.3. Where is your web site hosted? in house external hosting company

17. Answer this question set if your company engages in Electronic Commerce activities.

- 17.1. What Electronic Commerce activities does your company undertake? (check all that apply)

- Provide information about your company Provide information about products and/or services Allow customers to interact electronically with your company
 Allow suppliers to interact electronically with your company Allow customers to place or request orders online Integrate with back office systems
 Other(s): _____

- 17.2. What % of your business operations benefit from your Electronic Commerce activities?

- None 1 – 20% 21 – 40% 41 – 60% 61 – 80% 81 – 100%

Please answer question 18 by checking your selection, where "1" is "no interaction" and "5" is "extensive interaction".

18. How well do your Electronic Commerce applications (e.g., online order entry) interact with your company's other computer applications (e.g., invoicing/accounts receivable)?

- No Interaction 1 2 3 4 5 Extensive Interaction

Please answer question 19 by checking your selection, where "1" is "not at all important" and "5" is "very important".

19. How important is Electronic Commerce to your overall business?

- Not at All Important 1 2 3 4 5 Very Important

Do you have any final thoughts to share regarding these topics?

This industry study is confidential. Specific information that identifies your company, such as company name, will not be revealed.