

CR Vol. 16, No. 2, 2006

COMPETITIVE ADVANTAGE WITH E-BUSINESS: A SURVEY OF LARGE AMERICAN AND SWEDISH FIRMS

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EXECUTIVE SUMMARY

Advances in information and communications technology have allowed for a wide range of electronic business models and applications. These applications are providing a competitive advantage for organizations by creating efficiencies and cost reductions. Electronic business should be part of the overall corporate strategy and be integrated into core business processes. This study provides interesting insights into electronic business applications in large corporations and discusses similarities and differences that exist between Swedish and American corporations.

INTRODUCTION

Continuous advances in information and communications technology as well as the decreasing costs of that technology have made it possible for organizations to look for ways, more than ever, of incorporating technology into their business processes and strategies. Integration of information and electronic technology into business processes and strategies can provide a unique opportunity for the organization to sustain or enhance its competitive nature by lowering personnel requirements and reducing both transactions and agency costs of the business.

In recent years, one of the most significant opportunities offered by new computing technology is electronic business. E-business is a way for companies to conduct business transactions electronically and to become more efficient and to promote operational flexibility. In addition, responsiveness to consumer needs and supplier relations can be improved. According to Bill Gates, the way business is conducted will change more over the next 10 years than in the last 50 years (Dedhia, 2001).

The Internet in general and e-business in particular have provided business opportunities for both small and large firms. A study conducted by Barua, et al (2001) found that small businesses were utilizing the Internet more than their larger

counterparts. This is believed to be due to fewer obstacles associated with systems integration and more flexibility to implement change. However, large companies are finding e-business to be a competitive advantage and a powerful management tool for their complex supply chains. E-business implementation allows businesses to share information with suppliers, buyers and partners, and to better plan and manage supply and demand. Companies can use e-business to conduct business at anytime, day or night and to reach potential, Web connected buyers regardless of their location. In addition, they can present better customer service and reduce the costs of production and distribution of products and services. For example, the entrance of General Motors, Ford, and Daimler Chrysler into online bazaar made it possible for these companies to interact with their major suppliers for price competitiveness, to decrease personal contact, and to minimize manual processing. This in turn, allowed the suppliers to conduct transactions with each other and to be more competitive on price. This decision by the three automobile manufacturers resulted in savings of \$2,000 to \$3,000 on a \$19,000 vehicle (Barens-Vierya & Claycom, 2001; Barua, et al, 2001).

While corporations can realize many benefits by using e-business, there are, however, some disadvantages associated with the application of this technology. These include: security issues concerning transmission of corporate information electronically; access to corporate databases by hackers; new technology acquisition and implementation costs; personnel hiring/training costs; maintenance and operational costs; lower barriers to entry for new competitors; and lack of proper e-business strategy (Brache & Webb, 2000; Rodgers, et al, 2002).

Once e-business is considered a strategic necessity, the e-business strategy should be integrated into corporate strategy to achieve maximum results. The right model and proper implementation can provide economic and competitive opportunities by lowering costs, boosting sales, and improving customer service and supply chain/distribution channels.

E-BUSINESS MODELS AND STRATEGY

The high costs of e-business development, implementation, and maintenance on the one hand and the failures of numerous dot-coms on the other hand, necessitate the development of a well thought out e-business plan and model. Follit (2000) suggests that an effective e-business plan must include five

factors: a champion, a vision, a plan to achieve the e-transformation, a rigorous communications strategy, and a healthy company culture. In order to be successful in implementing an e-business plan, Cunningham (2000) recommends that corporations should develop a "go to market" strategy in order to iron out issues with the implementation of the business plan. All groups involved in developing the plan for business should participate in formulating the strategy. This strategy should include:

- Marketing plan and tactical actions
- Press plan and tour
- Introduction to new and existing clients
- Site traffic promotion
- Pricing and packaging information
- Introductory offers-if applicable
- Partner program-if applicable
- Internal promotion and explanation of the new site and purpose
- Validation of the business model
- Internal communications
- Product development and release schedule

In general, businesses should not implement e-business just because they can, rather, they should determine whether or not e-business, as an enabler, will facilitate the execution of their plan to sustain or enhance their competitive edge.

During the recent years several e-business models have been introduced and used by businesses. Depending on the nature of the business each model can provide a competitive opportunity for the firm. There are five common models of e-business: business to business (B2B), business to consumer (B2C), portals, websites as goodwill or promotional vehicles, and peer to peer (P2P) or consumer to consumer (C2C) systems (Winsor, et al, 2001). However, the majority of organizations that utilize e-business use B2B and/or B2C with B2B being the dominant of the two models in the electronic marketplace. In fact, B2B accounted for 93 percent of all e-commerce transactions in 2002 (U.S. Department of Commerce E-Stats, 2004).

B2C AND B2B MODELS

Companies, implementing the B2C model, use the Internet to support retail transactions and derive profit by acting as an intermediary between suppliers and the ultimate consumers. Today, many businesses implement a B2C model as a convenience for their customers and to gain a competitive advantage or keep up with competitors. Online buying has increased in the consumer section by 580 percent (Biehn, 2001), and as consumers become

more comfortable and secure in accessing the Internet, this number should continue to increase. According to the U.S. Department of Commerce (2004), e-commerce retail sales were \$55.996 billion in 2004, up from \$44.287 billion in 2003. The volume of these transactions was up by 23.1 percent during the second quarter of 2004 when compared to the same period of 2003.

B2B models are designed to streamline the supply chain, reduce procurement costs, and increase operating efficiencies. B2B models rely upon the Internet, intranets, and/or extranets to facilitate the communications among the users and to improve efficiency of the processes in an automated environment.

Once the decision is made to utilize a B2B model, companies can connect up in several different ways. There are five different models that a firm can use: one seller to many buyers, many sellers to one content aggregator to many buyers, one seller to one broker to many buyers, many sellers to one buyer, and many sellers to many buyers (Barnes-Vieyra & Claycomb, 2001).

In one seller to many buyers, companies take on the responsibility of building and maintaining their own websites and processes. Since customers are directly served, customer service is an important aspect of this model. Customer service can be enhanced by implementing several features: order status, after-sale information, 24/7 access to information, searchable online catalogs, and technical information and service. Security is another important feature that should be considered. It is important to determine how much access should be given to the customer and how to protect the integrity of the system. To successfully use this model companies should develop new channel strategies that incorporate e-business with traditional channels. Involving the customer as well as participation by every business function in the development of channel strategies are critical to the success of this model.

The many sellers to one content aggregator to many buyers model uses an intermediary as a hub or portal between the buyers and sellers. To make the distribution channel more efficient, automation of processes should be maximized in order to make search mechanisms and transactions flow smoothly. Buyers and sellers that utilize this model benefit from lower transaction costs, productivity gains, and favorable price negotiations. Two areas of specialization exist among these aggregators: vertical and horizontal.

Vertical aggregators or hubs are specific to the industry and involve electronic transactions up and down the industry's supply chain. In addition to

products, they provide a wealth of industry specific information. Successful vertical aggregators focus on developing long-term relationships within the supply chain and overcoming barriers that may exist in the channel. Horizontal aggregators focus on offering a specific service such as supplies or logistics across multiple industries. Horizontal aggregators serve to add value through automation and reduced process costs. A successful horizontal aggregator relies upon its expertise, standardization, its process knowledge, and its ability to customize for industry-specific differences.

The one seller to one broker to many buyers model is basically an online auction or commodity market and is best chosen in a situation in which products and services are differentiated or perishable. Buyers and sellers are typically unrelated and may see the product's value differently. The use of a broker lessens or eliminates time, distance, and location hurdles. It is possible that the seller and buyer could be located on opposite sides of the world. Buyers can take advantage of lower search and information gathering costs. Sellers benefit from a global marketplace which is particularly important when the product is perishable, an overstock item, or unique.

The many sellers to one buyer model is often used when large companies require suppliers to make electronic transactions. Buyers benefit from quick delivery, improved inventory planning, reduced transaction costs, and increased availability of information. Sellers bid against each other in order to fulfill the buyer needs, resulting in a price-taker position for the seller.

Of all available models, the many sellers to many buyers model is the most challenging to implement. This is due to the dependency of all

buyers and sellers having compatible systems. All participants in the model can switch from the role of buyer to seller. Sellers face price pressures due to the abundance of information and diminished competitive advantages as it relates to distribution. Also, this model allows all participants to occasionally be on the side of the buyer and take advantage of buyer benefits as offered by the one seller to many buyers model (Barnes-Vieyra & Claycomb, 2001; Chen & Siems, 2001; Kaplan & Sawhney, 2000).

RESEARCH METHODOLOGY AND OBJECTIVES

The purpose of this study is to evaluate the impact of e-business in large corporations in the United States and Sweden and to establish a foundation for further research. Given that the use of electronic technology transcends cultural and geographical boundaries in the business world, the study sought data from top 500 American and Swedish firms for a comparative analysis. In order to compile a representative sample of large firms in both countries, selections were not limited to a single industry or sector. To gather data and to increase response rate, two population groups were surveyed using an easily completed questionnaire with a cover letter and a return envelope.

Mailing to the US corporations provided 95 responses of which eight responses were not usable due to missing data. Thus, 87 usable responses (17.4%) supplied data for analysis. A second mailing was made to 500 Swedish firms. There were 114 complete and usable returns constituting a 22.8 percent response rate.

TABLE 1

E-Business Models Used by Respondents

Model	Sweden (%)	United States (%)
B2C	12	9
B2B	61	59
Both	27	32

E-BUSINESS MODEL USAGE AND DEVELOPMENT

All respondents from both countries indicated that they use electronic business models in their businesses. A majority of Swedish (61%) and the United States respondents (59%) reported that they were using a B2B model. More Swedish firms (12%) used only a B2C model than those in the United States (9%). Table 1 compares the percentages of businesses using these models. All percentages are rounded to the nearest percent.

The differences in B2C and B2B users are not significant between the two countries and the higher percentage of the usage of both B2C and B2B models in businesses in the United States (32% versus 27%) probably reflect the earlier start of these organizations in e-business implementation. Table 2 compares the development of e-business models used by the responding firms. A firm may decide to have an outside party to develop the e-business model rather than developing it in house. The decision to seek an outside agency to develop the proper e-business model is generally based on economics and does not diminish the strategic value of the model to the firm.

It is clear that the majority of U.S. firms have opted for in-house development of their e-

business applications. This could be attributed to the unusual economic growth and the explosion of the Internet in the United States during the 1990s. In Sweden, however, only the majority of the firms that use both B2C and B2B developed them in house. However, the majority of Swedish B2C or B2B model users outsourced their development to an outside agency.

THE IMPACT OF E-BUSINESS ON ORGANIZATIONAL STRUCTURE

In general, integration of new technology often results in a major change on the structure of the organization by streamlining business processes, reducing layers of management, and changes in job design. Perhaps, in recent years, the most significant impact of new technology on the organization has been the reduction in management levels and staff in large organizations. This allows the organization to be more flexible and react to changes in the market conditions more quickly.

The majority of Swedish firms that implemented B2C (57%) or both B2C and B2B (55%) reported that changes were made to their organizational structure. The highest degree of

TABLE 2

Development of E-Business Models

Model	Sweden		The United States	
	In-House (%)	Outside Agency (%)	In-House (%)	Outside Agency (%)
B2C	46	54	63	37
B2B	43	57	52	48
Both	79	21	71	29

change (62%), however, was reported by the U.S. corporations that deployed a B2C model. The least amount of change occurred in both population groups, Swedish firms (38%) and U.S. companies (41%), using a B2B model. Considering that Electronic Data Interchange (EDI) was the start of B2B electronic business, it is safe to assume that many of the surveyed organizations had made

structural changes during EDI implementation and did not find it necessary to make major structural adjustments. Table 3 shows these changes.

Although it is expected that the new technology reduce the layers of management in most companies, there are instances, however, that the organization needs additional managers and employees. The highest percentage of reduction in

the number of managers working for the responding groups was reported by U.S. firms (12%) and Swedish companies (7%) that use a B2C model. It is interesting to note that U.S. corporations using both B2C and B2B models increased the number of managers working for them by four percent. However, the opposite is true for Swedish firms that use these models and reported a decrease in the layers of management by three percent.

STRATEGIC IMPLICATIONS OF E-BUSINESS

Today's global business, fragmented marketplace, and information technology proliferation require that organizations incorporate customer needs into their processes and to optimize

performance in all areas. Corporations adopt the new technology if it is believed to add value to the business or to create a competitive advantage. Porter (1980) introduced three generic strategies to gain competitive advantage that are still viable today. In each strategy, information technology plays an important role. In developing a competitive strategy a company must first determine its position with respect to other firms in the industry.

A structural analysis, which is fundamental in developing a competitive strategy, relates the firm to its environment and will identify its critical strengths and weaknesses. This analysis will help the firm to decide in what areas a change in strategy will yield the greatest benefits.

TABLE 3

The Impact of E-Business on Organizations

Model	Sweden			United States		
	Structural Change (%)	Reduction in Management (%)	Increase in Management (%)	Structural Change (%)	Reduction in Management (%)	Increase in Management (%)
B2C	57	7	5	62	12	0
B2B	38	3	0	41	4	0
Both	55	3	0	49	0	4

In general, a firm can increase the value of its products and/or services by lowering the cost of the product or service, differentiating the product or service from the competition, or finding a market niche. The competitive advantage of being a low cost producer is that even in tough competitive markets, the firm can earn above average returns. Those returns can be reinvested into the firm and used to purchase new technology, equipment, and facilities that will help the firm to maintain its low cost position. Product differentiation involves producing a product that has some characteristic or feature that the consumer perceives to be unique. Product differentiation creates brand loyal customers who are fewer prices sensitive. Finally, a firm can obtain a competitive advantage by identifying a market niche and develop processes to meet the needs of that specialized market.

Any firm that competes in the marketplace, regardless of the strategic choice, must have access to information to make decisions and have organizational flexibility to execute their decisions in a timely fashion. Advances in information technology and the Internet have made it possible for companies to reach their employees, customers, suppliers, business partners, and stakeholders electronically and in real time. In this way, an organization can react to changes in its internal and external environment more quickly and remain competitive.

Table 4 depicts that a significant number of survey participants, more than 90 percent, reported that e-business has added value and created a competitive advantage for their business. The high scores in both countries reflect an awareness by these corporations that the marketplace demands product

variety and customer service that are both time and cost sensitive.

Core competencies are functions that are critical to the long-term viability of the business. These competencies are kept within the organization and given proper resources and attention they require. If a function is considered to be essential to the

continuity and profitability of the organization but not a core competency, it can be outsourced. Building, maintaining, and updating an e-business system is expensive and complex. For this reason, a company may decide to outsource this function to another party. The majority of organizations that use B2C or both B2C and B2B models in both surveyed

TABLE 4

Strategic Implications of E-Business

Model	Sweden			United States		
	Value Added (%)	Competitive Advantage (%)	Core Competency (%)	Value Added (%)	Competitive Advantage (%)	Core Competency (%)
B2C	93	93	57	100	100	63
B2B	91	92	46	94	96	43
Both	100	93	55	96	93	61

groups reported that they considered these models part of their core competency. However, less than 50 percent of the corporations that use a B2B model regard it as a core competency in both Sweden (46%) and the United States (43%).

FINANCIAL IMPACT OF AND SATISFACTION WITH E-BUSINESS

Corporations have realized that conducting business electronically reduces costs, improves revenues, and enables them to manage corporate resources in a more efficient and effective manner. Chopra and Meindl (2001) suggest that e-business will offer enterprises cost-reduction opportunities as follows:

- Shorter supply chain and less product handling
- Postponing product differentiation until after the order is placed
- Reducing facility and processing costs
- Decreasing inventory costs through centralization
- Decreasing delivery cost and time with downloadable products

- Improving supply chain coordination through information sharing

By engaging in e-business, companies can reduce both transaction and agency costs.

E-business can provide organizations with the ability to increase sales by using low-cost networks to reach customers without regard to their geographic locations. According to Violino (2001), many businesses in industries such as travel and hospitality, technology, transportation, financial, chemical, and pharmaceutical among many others have improved their sales and expanded their customer base by conducting business electronically. In addition, these companies collect data about their customers to improve marketing strategies, sales, and customer service.

Table 5 provides the data for costs reduction, sales volumes, and satisfaction with e-business. The highest level of cost reduction is reported by companies that use a B2B model in both countries, 73 percent and 77 percent for Sweden and the United States respectively.

This is expected since B2B allows firms to bypass traditional channels and deal directly with each other and avoid intermediaries. In addition, orders can be fulfilled at a fraction of the cost

TABLE 5

Financial Impact of and Satisfaction with E-Business

Model	Sweden			United States		
	Reduced Costs (%)	Increased Sales (%)	Satisfied (%)	Reduced Costs (%)	Increased Sales (%)	Satisfied (%)
B2C	33	31	71	38	25	75
B2B	73	7	76	77	8	78
Both	68	45	84	64	46	86

of paper-based processes, automatic billing and fund transfers, and better supply chain management can provide significant savings. In both countries, the percentages drop considerably for B2C users, when compared to others, with 33 percent in Sweden and 38 percent in the United States. However, in both countries the users of B2C and B2B reported cost savings of 68 percent and 64 percent for Sweden and the United States respectively. The highest percentage of increase in sales is reported by the corporations that use both B2C and B2B models (45% in Sweden and 46 percent in the United States); the lowest scores are for the Swedish (7%) and American (8%) B2B users.

Successful implementation of and satisfaction with a new technology requires planning, leadership, and the inclusion of the user groups in the process. It is noteworthy that the users of e-business models reported almost the same level of satisfaction for each model in both countries.

The highest satisfaction in Sweden (84%) and in the United States (86%) was reported by the users of both B2C and B2B.

CONCLUSIONS

Many factors, in today's competitive and global business environment, contribute to an organization's financial success. A business enterprise's management must adopt a strategy that fully exploits information technology's power as a key element to optimize the organization's competitiveness. Recent spectacular technological advances, in computer networks, the Internet, and electronic business have made the effective use of technology a critical, competitive business tool. There are numerous electronic business models and

strategies available, but it is necessary to thoroughly examine the requirements of the business and the requirements of the technology in order to find an appropriate match.

This study provides data for electronic business users of large corporations in Sweden and the United States. The study found many similarities with regard to the impact of e-business on cost savings, sales, organizational structure, and change in levels of management between two countries. This is not surprising; the United States is the world leader in electronic business and Sweden is considered to be a leader among the European countries in Internet access and has a population that is well educated in Internet usage (Asfaw, et al 2001).

A significant number of responding participants in both survey groups reported that electronic business has added value to their business and given them a competitive advantage. There are, however, a considerable number of companies that are dissatisfied with their e-business applications. Dissatisfaction with e-business could stem from problems in one or more of the following areas:

- Planning and design of e-business model
- Hardware and software security
- Integration of e-business applications with internal information systems and business partners
- Telecommunications network and protocols
- Web page design and navigation

Further research is needed in this area in order to determine the reasons why e-business applications are not working as well as they should for these companies.

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