Business-to-Business E-Commerce: Models and Managerial Decisions

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The adage "The Internet changes everything," which along with many other apocalyptic quips was made popular by Oracle Corporation, warns that the rules of business are being transformed. The latest headlines indicate business-to-consumer (B2C) electronic commerce success will pale in comparison to the financial wonders of business-to-business (B2B) e-commerce. The formation of several new B2B e-businesses and Web sites provides anecdotal evidence that companies across many industries are seeking to negotiate lower prices, broaden their supplier bases, and streamline procurement processes using e-commerce.

It stands to reason that B2B e-commerce is changing the way companies purchase from and sell to each other. The losers will be those companies that do not adapt to emerging technology and fail to adopt e-commerce strategies. Although current research does not yield specific, substantial data on e-commerce's influence on buying and selling processes, it does provide a better understanding of the new processes and opportunities inherent in B2B e-commerce. Through this understanding, one can better observe the e-commerce game and prepare to measure and manage effects.

The term "e-commerce" is used widely across many disciplines, and is evolving at a rate equally as swift as the technology supporting the process. Some definitions broadly hold that e-commerce encompasses *all* electronically facilitated business processes, including data transfers among buyers, sellers, and various other supply chain entities. Other definitions, such as IBM's "electronic business" definition, include an Internet-specific relationship wherein business processes are electronically facilitated through Internet technologies.

Buying and selling between firms may never be the same again.

Before the mass acceptance of the Net, electronic commerce between businesses and consumers was constrained to processes within an existing relationship, such as ATM facilitation provided by a bank. Similarly, although commerce between businesses has been conducted electronically since the advent of EDI (electronic data interchange) in the 1970s, such processes were based primarily on pre-existing relationships between large companies. Small firms were largely excluded because of the costs associated with procuring, implementing, and maintaining the required EDI hardware and software. The misconception of the Net as the sole facilitator of e-commerce appears to have evolved with the growth of B2C trade on the World Wide Web. Although the Net, and more specifically the Web, are not the only facilitators of e-commerce, they have proven to be the predominant generators of new e-commerce relationships.

E-commerce is merely a part of a new method of communication that has been opened up by the development of the Net. So B2B e-commerce is defined here as the use of the Net for exchanging information of value between firms and their trading partners, employees, and customers with the absence of geographical and time restrictions. In essence, B2B e-commerce is the secure trading of goods, information, and services among businesses through the use of Internet technologies.

Figure 1 demonstrates the plenitude and broad inter-industry appeal of e-commerce opportunities as evidenced by reported corporate plans and projects. To aid in understanding B2B e-commerce, we set out to identify a model for each reported project. Hence, we have separated current activity into the following five models:

1. One seller to many buyers;
2. Many sellers to one content aggregator to many buyers;
3. One seller to one broker to many buyers;
4. Many sellers to one buyer; and
5. Many sellers to many buyers.

Although each represents increased efficiencies, such as those inherent in frictionless routine ordering and after-sale online services, each also represents necessary business processes that are merely extensions of traditional B2B processes. With the description of each model that follows, we discuss the efficiencies and the potential benefits and profitability gains. **Figure 2** provides a diagram of each of the five models.

One Seller to Many Buyers

The *One Seller to Many Buyers* model is evident in such firms as Cisco Systems, Inc. and Dell Computer Corporation. These firms do not use online intermediaries such as content aggregators or brokers in their e-commerce processes; rather, they build and maintain their own Web sites and back office processes to better serve customers directly. Enhanced customer service—not only in the traditional sense but also in added information utility—strengthens relationships with customers by providing a variety and depth of information about goods and services to speed up decision-making processes. The effectiveness of such traditional customer service activities as order status, after-sale product information, and troubleshooting are enhanced when offered on-

Figure 1
Business-to-Business Electronic Commerce Examples

Industry or Segment	*Reported Service Outcome*	*Major Players*	*Model*
Small Business	Auction for small firms of fewer than 100 employees	eBay	**One seller to one broker to many buyers.**
Consumer Products: Nondurable	Marketplace for goods and services supporting the consumer-products industry	Procter & Gamble, Nestlé USA, H.J. Heinz, Kraft Foods	**Many sellers to one content aggregator to many buyers.** In these examples, the content aggregators are separate companies that were initially funded by the group of major players, who individually are the buyers.
Air Transportation	Marketplace for procuring such items as fuel and fuel services, airframes, avionics, engine components, and maintenance services	American, Continental, Delta, United, British Airways, Air France	
Power: Electric and Natural Gas	Marketplace for procuring goods and services supporting the industry	American Electric Power Co., Cinergy Corp., Consolidated Edison Inc., Duke Energy Corp., Edison International, Entergy Corp., FirstEnergy Corp., FPL Group Inc., PG&E Corp., Public Service Enterprise Group, Reliant Energy Inc., Sempra Energy, TXU, Unicom Corp.	
Railroad Freight	Marketplace for rail customers to procure, execute, and track freight movements	Union Pacific Corp., CSX Corp., Norfolk Southern Corp., Canadian Pacific, Ltd.	**Many sellers to one content aggregator to many buyers.** In this example, the content aggregator is Arzoon; the major players are the sellers.
Medical Supplies	Health care exchange for buyers of hospital products to execute and track buying transactions	Johnson & Johnson, GE Medical Systems, Medtronic, Baxter International, Abbott Laboratories	**Many sellers to one content aggregator to many buyers.** In this example, the content aggregator is a separate firm that was initially funded by the group of major players, who comprise the sellers.
Hospitality	Marketplace for procuring goods and services supporting the hospitality industry	Hilton Hotels Corp.	**Many sellers to one content aggregator to many buyers.** In this example, PurchasePro.com is the content aggregator; the major player is a buyer.