

A framework for analyzing B2B e-commerce

by

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Most U.S. companies today are attempting to figure out how they should approach business-to-business (B2B) e-commerce despite the stock market gyrations – positive and negative – of B2B companies. By separating the physical and information flows connected with each transaction, the Internet potentially will radically change the ways in which corporations provide and trade goods and services with each other. It is the prospect of such change that motivates companies to consider B2B.

In this paper, we introduce and describe a framework that we find helpful in thinking about B2B. We then discuss the implications of our framework for B2B start-ups and for companies considering their B2B strategies.

Framework

The framework begins with a key question: Does the internet do things that the old economy -- phone, fax, EDI -- cannot? Or in other words, does the internet reduce transaction costs (defined below) relative to the old economy? A company or individual must have an affirmative answer to these questions to justify implementing B2B. A start-up must have an affirmative answer to these questions to have any chance of succeeding.

The key effect of B2B is to change the costs (and benefits) of transacting. B2B potentially changes transaction costs in five ways: (1) it changes / improves processes;

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(2) it changes the nature of the marketplace; (3) it changes decisions; (4) it changes the degree of information incompleteness / asymmetry; and (5) it changes the ability to commit. The choice between an Internet-based transaction or marketplace and a physical one comes down to the relative transaction costs of the two alternatives.

Changes in processes. B2B e-commerce can improve efficiencies by reducing the costs involved in an existing business process. Such an improvement may take place in two basic forms. First, it may simply reduce the cost of an activity already being conducted, as when a transaction that is currently conducted by phone or fax is automated. For example, Ariba reduces the cost of processing a purchase order for MRO purchases. Second, the Internet provides an opportunity to redesign the existing process. For example, Autodaq creates on-line auctions for used cars without having to ship the cars to a physical auction. This change in the process reduces transportation costs and time for both buyers and sellers.

It should be straightforward to measure or estimate the value of process improvements. First, describe and measure the time and costs of the activities involved in the existing process in detail. Second, describe and measure the time and costs of the process using B2B e-commerce. The difference, if any, is the value of the process improvement.

Changes in the marketplace. B2B e-commerce can reduce transaction costs by making a marketplace more efficient. These reduced transaction costs or, equivalently, marketplace benefits come in some of the following forms. First, the Internet potentially reduces a buyer's cost of finding suppliers because it is less expensive to search for products and compare prices over the Internet than it is to read catalogs and make phone

calls. Conversely, sellers can reach more potential customers at lower cost. As a result, buyers will find sellers they might not have otherwise found. EBay is an example of this on the consumer side. (eBay is C2C – consumer-to-consumer.)

Second, the Internet potentially provides buyers with better information about product characteristics (including prices and availability) because it is less expensive to obtain.

Third, the Internet potentially provides better information about buyers and sellers. This is particularly relevant in the area of credit.

On the other hand, conducting the transaction over the Internet may also increase these transaction costs, due to the buyers' inability to physically inspect the merchandise object of the exchange. This may be the case when buyers need to match their needs for objects based precisely on a characteristic that requires physical inspection

Estimating these costs and benefits is appreciably more difficult than estimating the process improvement benefits. One place to look is at the prices buyers pay and the prices sellers receive. Higher prices for sellers would be consistent with lower search costs and better matching. Lower prices for buyers also would be consistent with lower search costs and better matching. Unfortunately, lower prices are not proof of marketplace efficiencies because it is possible that lower prices represent (1) reductions in seller processing costs; or (2) a reallocation of the surplus of the transaction.

Other places to look include the amount of trade and prices sellers receive. If B2B e-commerce delivers marketplace benefits, trade should increase. Ebay is a clear example of this in that trade occurs that would not occur otherwise.

Changes in decisions (or indirect effects of transaction cost reductions). Clearly, any reduction in transaction costs results in direct economic gains through a reduction in the cost of undertaking these transactions. It is possible, however, that other indirect benefit also will arise. As the costs of undertaking spot market transactions decreases, participants in these transactions may adjust their behavior and realize further efficiency gains. These are particularly likely to come from two sources: better information processing, and changes in organizational form.

Better information about future demand through B2B e-commerce may allow a seller to improve its demand forecasts, and use that information to change its production decisions to better match demand. Conversely, a buyer might obtain better information about existing (and future supply), and use that information to change its inventory decisions.

Second, make or buy decisions are likely to be affected. If the Internet is able to produce important decreases in the costs of carrying out transactions in the market, the transaction costs economizing paradigm leads us to predict that fewer transactions will be undertaken inside firms and more will be undertaken in the market / outsourced.

Although these effects are difficult to measure, they are potentially large. Companies should think hard about these possible benefits in considering their B2B strategies.

Changes in informational incompleteness and asymmetries. Buyers and sellers typically do not have the same information about a particular transaction. As a result, one party (or both) may be at a disadvantage to the other in evaluating the desirability of a transaction. The internet potentially changes the informational positions of buyers and

sellers. For example, to the extent that physically observing the merchandise to evaluate its condition is valuable to the buyer, some of that information is lost through the conduct of the transaction through an electronic format.

This loss of information about the object of the exchange may translate into an efficiency loss if adverse selection worsens in virtual transactions. Consider, for example, the original lemons issue in second hand automobile markets studied by Akerlof. Holding observable characteristics constant, sellers might try to sell cars with strange sounding motors exclusively thorough the Internet. If sellers offer this type of object more frequently over the Internet, buyers willingness to pay for the average object decreases, leading sellers of higher (unobserved) quality to withdraw from the market.

Changes in the ability to commit. B2B e-commerce has the potential to both increase or decrease the ability of buyers and sellers to commit to transactions. First, by standardizing processes and by leaving an electronic trail, the Internet has the potential to increase the ability to commit (and, therefore, reduce the costs of imperfect commitment). Alternatively, a buyer may avoid intermediary fees by viewing the product over the Internet, but contacting the seller directly.

Implications

Implications for companies in general

We believe that companies that are considering B2B e-commerce solutions can benefit from applying this framework.. In fact, we think that many companies already have because our framework explains a number of the successes and failures in B2B to date.

First, companies should choose B2B solutions that provide measurable benefits (in excess of the price charged for them) that cannot be obtained otherwise. Conversely, B2Bs that succeed will be those that provide measurable benefits and charge customers as a function of those benefits. Interestingly, the most successful B2Bs to date do exactly that.

For example, Ariba delivers process improvements that can be measured in the form of reduced processing costs per transaction. Ariba prices their service as a fixed licensing fee and / or as a fixed fee per transaction. This kind of solution is attractive to corporate purchasing officers.

Freemarkets specializes in reverse auctions where savings can be measured. Freemarkets then charges customers a fraction of those savings.

Second, companies will be less likely to use B2B solutions that focus on price discovery without requiring commitment. Companies will be tempted to use the B2B, if at all, to determine the market price for a particular good, but will then trade with an existing supplier. Conversely, B2Bs that primarily provide price discovery will be terrorized by the inability of the Internet to force parties to trade with one another.

This explains why many generic marketplaces have not succeeded and will not succeed. It is difficult for such marketplaces to allow buyers and sellers to discover prices, but force them to transact on the exchange. The marketplaces exacerbated the commitment problem by charging transaction fees that were a percentage of the transaction when the savings from using the marketplace were more likely fixed rather than a percentage. In response to this, many B2B marketplaces are now changing their business models and incorporating other functionality to deliver process improvements and value-added services.

Implications for the overall economy

We think that the impact of B2B on the economy overall is almost certain to be very positive. Process improvements, in particular, are likely to generate substantial increases in productivity over the next five years. At the same time, process improvements, marketplace changes and changes in decisions will all put downward pressure on costs and on inflation.