



Supply chain coordination in buyer centric B2B electronic markets

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Abstract

While over the past 4 years more than 1000 B2B electronic markets that cater to a wide spectrum of industries have been established, many of them have already disappeared. This reality can be explained by several factors, two of which we think are important: the transaction fees that owners of these markets charge participants, and the supply chain coordination mechanisms that these markets do (or actually do not) facilitate. In this paper, we take the viewpoint of supply chain coordination to analyze the decision of suppliers and buyers to do or not do business in electronic markets while selling perishable products with random demand.

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1. Introduction

Recently we have seen the fast development of Business-to-Business (B2B) e-commerce. Jupiter Communications estimates that by 2005, the expected online B2B transactions of goods in the US would amount to \$6.3 trillion out of a total of \$15.1 trillion. Internet-based *electronic markets* (e-markets) play a particularly important role in B2B e-commerce; they are expected to produce an online transaction volume of over \$6 trillion by 2004 (Bermudex et al., 2000). Currently there are over 1000 established B2B e-markets catering to a wide spectrum of industries such as aerospace,

agriculture, apparel, automotive parts, energy and chemicals, high technology, food and beverages, logistics, office supply, services, utility, soft goods, and raw materials. Interestingly, however, many of the e-markets that were established over the past few years have disappeared. This reality may be explained by several factors. For example, Porter (2001) points out that Internet technology has some negative effects on the industry structure: Internet technology tends to negatively bolster buyer bargaining power, reduce barriers to entry for new competitors, creates new substitute products or services, intensify the rivalry among competitors, and encourages destructive price competition. Wise and Morrison (2000) also identify three flaws in the B2B e-market: competitive bidding among sellers allows buyers to get the lowest possible prices; B2B e-market delivers

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little benefit to sellers; and the business model of most B2B e-markets are, at best, half-baked. In this paper, we attempt to identify two other important factors that may help to explain the reality of current B2B e-markets: the kind of *transaction fees* that e-market owners charge participants, and the kind of *supply chain coordination mechanisms* that B2B e-markets do (or actually do not) facilitate.

In traditional markets, transactions between suppliers and buyers begin with a buyer looking for goods or a supplier seeking potential buyers. Both supplier and buyer will incur some kind of transaction costs in traditional markets. One part of the transaction costs is incurred prior to the actual transaction. It includes expenses for searching, advertising, participating in trade shows, rewarding brokers, dealers or sales force, etc. Another part of the transaction costs is incurred after a contract has been signed. It includes the expenses associated with ordering, billing, making transportation arrangements, confirming payments, and accepting deliveries, etc. (Lucking-Reiley and Spulber, 2000).

B2B e-markets are essentially aimed at significantly lowering transaction costs for both buyers and sellers. Because B2B e-markets vary along several notable characteristics, numerous ways to classify these markets have been proposed. A classification that is of interest in this paper looks at who owns the e-market. This classification distinguishes between *neutral*, *buyer centric*, and *seller centric* e-markets. Whereas neutral e-markets (e.g., E-Steel, FastParts, and Chemdex) do not favor buyers or sellers, buyer centric e-markets (e.g., FreeMarkets, FOB, and Covisint) or seller centric e-markets (e.g., Ingram Micro, Echemicals, and Deutsche Telekom MarketPlace) have exchange mechanisms that favor either buyers or sellers. Firms with great market powers would favor participating in either buyer or seller centric e-markets. By contrast, smaller buyers and sellers would favor participating in neutral e-markets.

Owners of e-markets may earn revenues by imposing various charges on market participants (Phillips and Meeker, 2000). Most owners earn revenues mainly from *transaction-based commission fees*, which usually range from 0.5% of the

transaction value to 3% on more complex transactions. Additionally, e-market owners may opt for standard annual *subscription fees* for the full year based upon usage. Some e-market owners may earn *storefront fees* that range from zero to \$150,000 annually for listing vendor's product catalogues and promotional materials in the e-market. Other owners may charge the participants certain *affiliation fees* or *referral fees*, etc.

Wise and Morrison (2000) point out that most current B2B e-markets are immature. One of the reasons they identify is that most B2B e-markets normally provide competitive bidding among suppliers, something that allows buyers to get the lowest possible prices. This practice often hurts buyer-supplier relationships and delivers little value to suppliers. As a result, many believe that buyer centric (e-procurement) e-markets will not be able to attract a critical number of suppliers and transactions. By now, there is sufficient anecdotal evidence to support this belief, as explained in the following online report (Feuerstein, 2000):

It takes two to tango, but unfortunately for B-to-B marketplaces, suppliers aren't quite ready to lace up their dancing shoes. That's right, suppliers are still unhappy that the focus of most marketplaces or trading exchanges continues to be centered around the buyer. Or more specifically, how the buyer can save money by moving procurement online, or by running online auctions that obliterate a supplier's profit margin. And just to rub salt in an open wound, many marketplaces are still charging suppliers "set-up" fees or other charges to participate.

Conflicts between buyers and suppliers in e-markets are even intensified in industries featured by uncertain demand patterns and short-life-cycle products. For example, in apparel, electronics, toy, and semiconductor industries, buyers have great chances of facing the risk of either excess stock or lost sales. As time-based competition intensifies, product life-cycles in general become shorter and shorter, and so more and more products acquire the attributes of fashion or seasonal goods. If both supplier and buyer try to maximize their own expected profits, a phenomenon well known as "double marginalization"

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