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## B2B Trade Exchanges: A Study from a Seller's Perspective

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**Abstract:** B2B transactions directly affect a company's bottom line. More businesses are turning to e-marketplaces to conduct their purchasing and selling operations. This paper examines online trade exchanges and studies 20 manufacturing trade exchanges from a seller's perspective.

### INTRODUCTION

The sheer velocity of change in today's business environment makes quick decision making vital but difficult. Businesses want solutions to "wicked" problems that are not easily solved with a product or software package. Technology should support solutions to these wicked problems. Horst W. J. Rittel defines a wicked problem as one in which the problem is defining the problem – there is no definitive formulation, no stopping rule, every one is unique, and solutions are defined by shades of gray rather than black and white. The wicked problem that trade exchanges need to address is not reducing prices but rather reducing the total cost of ownership. By some estimates, companies can save 15 percent or more by purchasing parts and materials via online auctions (Harbour, 2000). Based on a survey conducted by Jupiter Media Metrix, 85 percent of B2B transactions will be made between existing buyers and sellers online, compared to 95 percent offline (Alexander, 2001). Trade exchanges must support these pre-existing relationships.

The issue is not whether companies will communicate nor how will they communicate but rather what business models will be pursued. Marketplace communication channels in most industries are complicated by the presence of thousands of buyers and sellers maintaining business-to-business (B2B) relationships with one another. The conglomeration of these channels has produced an intricate network of unique relationships between partners that simultaneously encourages inefficient, non-standardized, information-flow transaction platforms. Through trading partners such as sales representatives, brokers, or distributors, a buyer maintains a unique business relationship with each of its suppliers. Inefficiencies exist, and everyday business operations are often tedious and time-consuming. Transactions may be significantly delayed due to failure of asynchronous communication, transactions may be improperly recorded, and inventories may be incorrectly measured. In this type of marketplace, each company maintains many unique relationships and trading partners. While e-mail, voice mail, faxes, phone calls, and office visits all provide different communication channels, the information sent from one party to another is vulnerable to factors that lead to message distortion. Therefore, for every business transaction conducted between companies, the effectiveness and efficiency of the exchange is determined by the cost associated with the transaction, the time taken to conduct the transaction, and the accuracy of the information. For years, companies have communicated using these traditional business transaction methods, while incurring all the side effects and system inefficiencies. Business partners have grown comfortable with the status quo and have thus resisted attempts to eliminate B2B exchange inefficiencies. Many costs of doing business in this type of environment are preventable. Under the proper circumstances, development of B2B trade exchanges provides a "win-win-win" environment for all parties.

An introduction to vertical and horizontal marketplaces will be discussed next, followed by a description of the four types of marketplaces. A distinction between aggregate and matching e-hubs, neutral, biased, logistical and enabler sites will also be covered, followed by a study of 20 manufacturing trade exchanges from a seller's perspective. This paper concludes with suggestions for future research.

### VERTICAL VS. HORIZONTAL MARKETPLACES

Usually trade exchanges involve competitors in a vertical industry creating or supporting supply chain hubs (Bacheldor and Wallace, 2000). "The concern is that these (trade exchanges) could become forms for firms to signal their intentions to each other," says William Kovacic, professor at George Washington University Law School in Washington, DC (Bacheldor and Wallace, 2000). Vertical marketplaces sell industry specific goods and can range from aerospace materials to perishable food items (Willis, 2000). Due to the sometimes obscure goods vertical industries deal with, special deliveries are common, causing logistics to be a problem as they cannot use normal third party services such as UPS (Kaplan & Sawhney, 2000). As with any e-hub, these sites will be most successful in those industries which "stand to derive the greatest potential savings" from online procurement (Willis, 2000, p. 126). Often this is best accomplished in industries which are fragmented due to the lack of a centralized marketplace (Willis, 2000). Another factor that contributes to success in vertical marketplaces is how standard are the products (Willis, 2000). Being a vertical marketplace does not automatically restrict one to a certain type of product. For example, VerticalNet, which now has been accepted among market buyers as well as sellers as being reliable, is selling a number of different "vertical" goods (Henig, 2000). These include everything from paper products to chemicals, to medical supplies (Henig, 2000). VerticalNet says that by diversifying the

types of products it sells, it is hedging against those markets that do not grow as rapidly as others (Willis, 2000). This is part of the concern the FTC has with third party providers growing too large and controlling the markets in the pricing of products. Other times vertical marketplaces have partnerships with particular industry leaders, which helps to secure their sources of income and in essence, hedge them against losses (Henig, 2000). Covisint is an example of such a partnered vertical market. At any rate, analysts expect the bulk of trades online to take place in vertical industries (King, 2000). This may be why it is also said that partnerships are going to be essential for horizontal marketplaces to survive in the bng run as "verticals will be the destination sites where people link to horizontals." (Willis, 2000, p. 128)

Even though the predictions are for vertical industries to be dominant in the future, horizontal marketplaces carry current procurement cost savings of 30 to 35 percent in manufacturing companies and up to 50 percent in service based companies (Willis, 2000). Thus right now, making use of such a marketplace is therefore financially beneficial. Horizontal marketplaces link buyers and sellers of generic goods and services that everyone uses no matter what the industry (Willis, 2000). These goods are not industry specific and are often referred to as MROs (Maintenance, Repair and Operating supplies) that can range from plane tickets to spare parts, or office supplies (Kaplan & Sawhney, 2000). Since horizontal marketplaces serve all industries and deliver "normal" goods, third party delivery such as UPS can be used, making horizontal marketplaces logistically easier (Kaplan & Sawhney, 2000). As with vertical marketplaces, savings will be most apparent with goods that are standard for all companies (a paper clip is a paperclip is a paperclip) and if one can order and deliver them cheaper by using an online process one should (Willis, 2000).

## E-MARKETPLACE TYPES

Kaplan and Sawhney categorize four major types of e-marketplaces, separated into the "what" and the "how" as described in Table 1. Purchases can be separated into two types, manufacturing inputs and operating inputs (Kaplan and Sawhney, 2000). This constitutes the "what", meaning what exactly is being traded. Then these inputs are divided into the "how" of either systematic or spot trading (Kaplan and Sawhney, 2000). Systematic trading is more of a contractual agreement, often establishing or fostering long-term relationships between buyers and sellers. Reciprocally spot trading is often for an immediate need at the lowest possible price and buyers and sellers depend on the third party marketplace to match them up quickly and efficiently. They do not foster long-term relationships and usually buyers and sellers do not know each other's identity. Kaplan and Sawhney set up these four types in a branching effect, with each "what" having two branches of "how" stemming from it. The four types, Catalog hubs, Exchanges, MRO hubs and Yield Managers, resemble the more elementary vertical and horizontal exchanges in that vertical exchanges sell manufacturing inputs and horizontals sell operating inputs. The four types are explained in more detail below (see Table 1).

		What Businesses Buy	
		Operating Inputs	Manufacturing Inputs
How Businesses Buy	Systematic Sourcing	<b><u>MRO Hubs</u></b> Ariba MRO.com BizBuyer.com	<b><u>Catalog Hubs</u></b> Chemdex SciQuest.com PlasticsNet.com
	Spot Sourcing	<b><u>Yield Managers</u></b> Employease Adaction.com Capacity.com	<b><u>Exchanges</u></b> eSteel PaperExchange.com AltraEnergy

Table 1. Major Types of e-Marketplaces

- **Catalog hubs** – "are vertical markets that enable systematic sourcing of manufacturing inputs" and in the process reduce transaction costs, therefore creating value (Kaplan & Sawhney, 2000, p. 98). They are created for industry specific goods and can be either biased or unbiased in nature. Because of the specialty of most of the goods sold on these exchanges, they work closely with logistic distributors to ensure reliable and safe fulfillment of the orders.
- **Exchanges** – "are vertical markets that enable spot sourcing of manufacturing inputs" (Kaplan & Sawhney, 2000, p. 98). Procurement managers like these sites because they help to level out the peaks and valleys in the demand and supply curves by allowing rapid exchanges when needed. Because of the nature of spot trading, these marketplaces maintain the relationships between buyers and sellers, and finish the trades without contracts and often without informing either party who the other one is.
- **MRO hubs** – "are horizontal markets that enable systematic sourcing of operating inputs" (Kaplan & Sawhney, 2000, p. 98). The goods traded here most often are of low value but have high transaction costs associated with them. These sites therefore, provide value by decreasing the cost of procurement and increasing their efficiency. Because of the generality of these goods, third party logistic managers such as UPS can be used.

- **Yield managers** - "are horizontal markets that enable spot sourcing of operating inputs" (Kaplan & Sawhney, 2000, p. 98). These sites create immediate markets for operating resources such as manufacturing capacity, labor and advertising. They allow companies to contract and expand with their current needs without having to add fixed assets to their income statement. They can simply use online resources to fill in where they need help. These markets are beneficial to those industries with high price and demand volatility such as the electricity and utility markets. These industries also have high fixed assets with low liquidity, making the rapid change in demand troublesome.

These distinctions should help to define what types of services are available for online procurement. But they are not the only aspects that determine what type of services are available. There are also aggregate and matching marketplaces which are described next.

## AGGREGATES AND MATCHING MARKETPLACES

Marketplaces differ in the type of trading that occurs, ranging from auction settings, to aggregate, or matching settings. These settings help to determine the relationships between the marketplaces and the customers. Aggregates bring together buyers and suppliers in large numbers providing one stop shopping. Set prices are the norm in an aggregate marketplace, and the buyer and seller positions are fixed (Kaplan and Sawhney, 2000). These marketplaces are most likely to succeed in those industries where the products are specialized, supplier industries are fragmented, and the cost of ordering is higher than the actual cost of the good (Kaplan and Sawhney, 2000). AltraEnergy and PlasticsNet are both examples of aggregate online marketplaces (Kaplan and Sawhney, 2000). Matching marketplaces bring together large numbers of buyers and suppliers to negotiate in real time (Kaplan and Sawhney, 2000). This can also be a setting for auctions online. FreeMarkets being a prime example of this type of exchange. Matching marketplaces are often used more in spot markets because the prices are determined at the point of sale, and buyers and sellers are able to switch roles more readily. The matching technique works best in industries where the volume of goods traded is high, the logistics are easy (because of the nature of the goods sold), and the demand and prices are volatile. "Matching is a more powerful business model than aggregation, but the matching mechanism is far more complex and far more difficult to scale." (Kaplan and Sawhney, 2000, p. 102)

## NEUTRAL AND BIASED MARKETPLACES

There are also differences in the way participants are treated within different markets depending on whether the marketplace is neutral or biased. If the marketplace is operated by an independent third party company who does not favor either buyers or sellers in either their advertising or fees, they are considered to be neutral (Kaplan and Sawhney, 2000). Those marketplaces who push supplies through the supply chain by attracting suppliers first and then matching up with buyers, are considered to be forward biased, pushing the supplies through (Kaplan and Sawhney, 2000). If the marketplace pays more attention to what buyers are looking for and goes out and tries to find suppliers to fill their needs, they are considered to be reverse biased, pulling the goods through the system (Kaplan and Sawhney, 2000). Neutral marketplaces tend to succeed in fragmented industries on both the buyer and supplier sides (Kaplan and Sawhney, 2000). These supply side views of online marketplaces have been of recent concern, in terms of the logistics of providing security for both buyers and sellers.

## LOGISTICS

B2B marketplaces have sprung up in numerous industries and yet most are lacking in the key supply chain areas including logistics, credit, financing and customer service (Banham 2000). Logistics are important because even if a good is sold online at a discount, if the total cost to fulfill the order is outrageous, then the savings are lost. This idea has set off a new wave of start up Internet companies providing services such as logistical planning, credit ratings of customers, and other B2B needs (Banham 2000). These new sites hoped to be linked to existing sites and be an icon portal allowing an order to be placed on such sites as FreeMarkets.com, and then linked to a logistics page to determine for example how much they will pay for delivery or what the financing terms will be (Banham 2000). These sites will reduce the downside to online marketplaces as they will take the unknown, often hidden, expenses out of the process. Reliability will be a big marketing technique for these new firms as they will help to ensure that once money is deposited, the goods will be delivered safely, or once the goods are sent, the money will be deposited. This creditworthiness has been a problem for online markets as demonstrated in the major loss resulting from a 12-year-old bidding \$12 million for a URL address of Star Wars. He was obviously not able to pay, causing the issuing company to lose out on several other bids for the URL (Banham, 2000). Unfortunately, this happens all too frequently.

## ENABLERS

Enablers are those companies doing the dirty work behind the scenes, creating the technology that powers these marketplaces (Willis, 2000). Even within this realm, there are differences in terms of the services they provide (Willis, 2000). Some of them offer a full range of services covering all the technology needed in order to run a marketplace, and others sell only niche products, such as software needed to start an online auction site. Despite what type they are, all enablers need to have competent sales people, able to talk to, correspond with and explain things to the major Cs of companies -- the CEO, the CFO and the CTO (Willis, 2000). These are the people who are initiating the changes and have the final say. Therefore they are talking to the enablers themselves, creating a need for a more technologically competent personable sales staff (Willis, 2000). Computers tend to scare more traditional business people, and therefore communication fosters relationships with those who need greater assistance. Analysts predict that those enablers who offer a full range of products for e-commerce solutions will succeed due to companies not wanting to pay for a piece now, and a piece later on, and the constant integration costs associated with each new software design (Willis, 2000). This will weed out several niche suppliers (Banham, 2000).

## RESULTS OF STUDY

Although the varieties of e-hubs are numerous, there are some commonalities. In any exchange, the benefits to both buyers and sellers must be mutual (Henig, 2000). Otherwise, there would be no purpose for participating online. As seen in recent years, the move to the Internet is inevitable. Everyone seems to have a website of some sort, and the move to using e-hubs will be no different. Companies will join together due to economic factors, and those that do not "will be wounded in their economic underbellies" (King, 2000, p. 48). Another characteristic of almost all online e-hubs is that expert advice is available. Marketplaces will need to employ experts in order to stay competitive in the long run. Venture capitalist John Mumford states, "You can always find the technology guys needed to make the marketplace work, but it's the industry specific expertise that sets a . . . marketplace apart." (Willis, 2000, p. 126) A significant shift has occurred in economic power from sellers to buyers. This study examined the twenty trade exchanges listed alphabetically in Table 2 from a seller's perspective.

Trade Exchange	Goods and/or Services Traded
AltraEnergy	Trade, schedule, transport and account for energy
Busy Trade	Revolves around 20 vertical industries
Chemdex	Life sciences
Covisint	Automobile parts
eCredit	Credit, financing and related services
eLogistics	Logistics industries
eSteel	Steel industry
etransport	Shippers, carriers and intermediaries
Exostar	Aerospace and defense
Fast Parts	Equipment, contract electronics and component manufacturers
FreeMarkets	Surplus assets, industrial equipment, parts, raw materials, and services
GoCargo	Transportation/Freight
Guru	Connects quality talent with companies
MRO	Maintenance, Repair and Operating (MRO) supplies
Npassage	Freight service providers
PaperExchange	Pulp and paper
PlasticsNet	Plastics industry
Transora	Consumer durables, food/beverage/tobacco
Virtual Chip	Electronics and computer chips
WorldBid	Import and export

**Table 2. Trade Exchanges Examined in This Study**

The decision to participate in an exchange must fit a company's corporate strategy. The trade exchanges (listed in Table 3) were evaluated based on the criteria below:

- What type of fee is involved in participating in this trade exchange? membership, listing, transaction, no fee, other
- What type of exchange is it? horizontal, vertical, meta
- Is membership required?
- Does the trade exchange provide automated services for participating sellers?

- What services sought by sellers are offered? real time transactions, real time management of inventory, online order processing, ability to collaborate, qualification of buyers
- What system capabilities sought by sellers are offered? differentiate themselves in the marketplace, allow profiling of customers, segment prospects, allow system-to-system communication

Many different fees were involved in participating in a trade exchange. Fees were charged to companies for membership, listing of goods on the exchange, transactions, and a variety of miscellaneous other fee structures were found. Less common fees or one-time setup or special project fees were grouped into the other category. Figure 1 reports the fees for participating in a trade exchange.

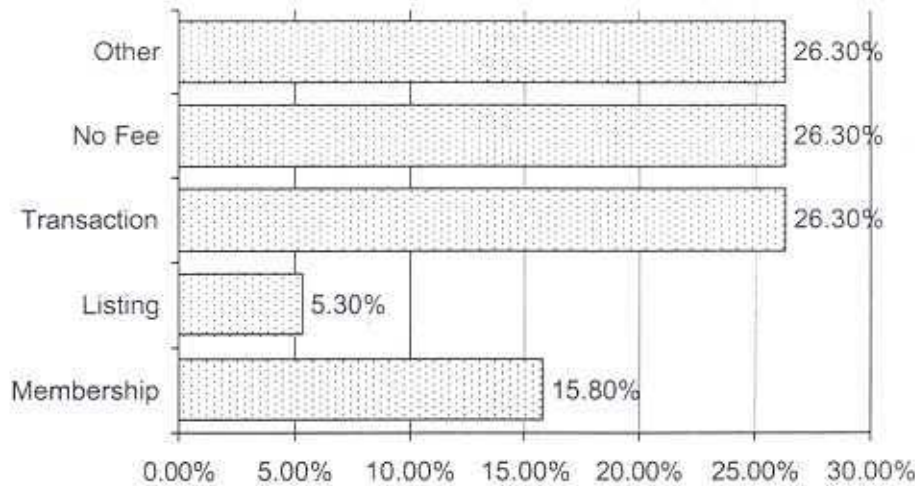


FIGURE 1. Fees Involved in Participating in a Trade Exchange

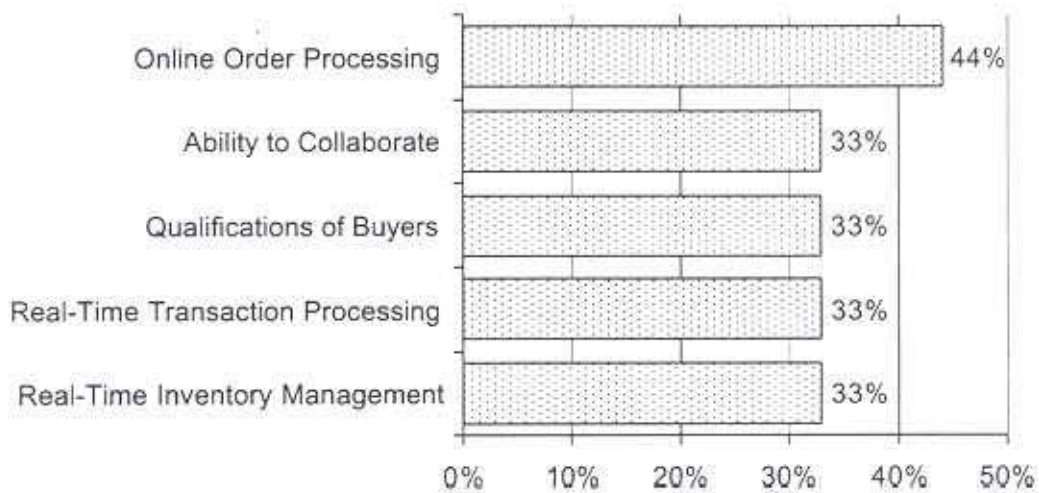


FIGURE 2. Percentage of Automated Services Offered to Sellers

In terms of the distribution of the types of trade exchanges, 47.1% were vertical exchanges, 47.1% were meta-exchanges, and the rest were horizontal exchanges. Meta exchanges are evolving into a dominant medium for B2B eCommerce. Whether membership is required to participate in a trade exchange was also examined. Roughly 64.7% of the exchanges required some sort of approval before buyers and sellers could participate. In most cases, buyers were examined to determine their creditworthiness and

sellers to determine their ability to fulfill order obligations under a variety of circumstances. Last, we examined the automated services offered by trade exchanges and found that 65% of the exchanges sampled offered some sort of automated services. Within those exchanges that offered automated services, the question asked was how many of those services offered were services desired by sellers. Of the services desired by sellers, online order processing was most often offered (see Figure 2). Online order processing was offered about 44% of the time and all other services were offered in 33% of the exchanges. When examining these exchanges, no exchange allowed sellers to profile customers and sellers were unable to segment prospects. The most prevalent system characteristic sellers desired that was found was system-to-system communication (provided in 38% of the exchanges surveyed). Some means for sellers to differentiate themselves in the marketplace was found in 11% of the sample. As trade exchanges evolve, a greater emphasis must be placed on creating value for all participants.

## CONCLUSION AND FUTURE RESEARCH

The hype surrounding trade exchanges has been high. Some online trade exchanges generate more publicity than revenues. Failures are highly publicized but many trade exchanges are flourishing. The hype associated with trade exchanges has peaked. We are currently in a period of increasing despair over the failure of some well-known trade exchanges. This shake-out is natural. Some future research questions that still need to be addressed are:

- How are trade exchange participants selected? Who does it?
- What are the legal obligations?
- What are the criteria for buyers? Sellers?
- What technologies are best able to support the application process? What is the impact of trust? Do people need to meet face-to-face first?
- What role should trade exchanges play in building relationships between trade exchange participants?
- What impact does trade exchange participation have on the total cost of buying? Selling?
- As trade exchanges evolve, what impact does this have on participants? Total cost of buying? Total cost of selling?
- What role will the exchange of knowledge play in successful business models for trade exchanges?
- Ultimately, how will trade exchanges impact productivity in specific industries?

As one can see, there are a number of interesting areas for future research. Given the pace of technological change, such research is challenging.

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