

# Business to Business in Electronic Marketplaces

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Author:	Charitaki Eleni
Student number:	51
Date:	December 2006
Coach:	Petrakis Manolis

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# **Business-to-Business E-marketplaces**

## **Introduction**

Although Internet commerce has experienced some setbacks, its potential should not be underestimated. Possibly the drawbacks in the business models of many dot.com companies arise from the fact that there have been too many B2C (business-to-consumer) websites competing to give out free services simply to increase their customer base or market share. This business model has failed to produce profits.

On the other hand, one of the casualties of the Great Dot-com Shakeout of 2000 has been the B2B (business-to-business) eMarket which can bring efficiency and reduce costs for both suppliers and clients. An e-marketplace can do that by establishing an electronic or on-line platform that provides support between buyers and sellers for all the steps of the entire order fulfillment process.

However, technology failures, financial woes and other setbacks have brought unwelcome publicity to these online exchanges, which new economy pundits once predicted would replace traditional relationship-based buying and selling.

What happened? Mainly a recognition that the costs to most businesses - transaction fees for buyers, content management costs to suppliers and integration costs for everyone - were often higher than expected and the benefits to participants more elusive than anticipated. These and other issues were exacerbated when suppliers failed to join eMarkets en masse, as was widely expected. Liquidity, rather than the build-out of capabilities, quickly became the number one priority for many eMarkets as they struggled to survive.

E-marketplaces can be described as virtual online markets where buyers, suppliers, distributors and sellers find and exchange information, conduct trade, and collaborate with each other via an aggregation of information portals, trading exchanges and collaboration tools.

E-marketplaces could be e-commerce only (when they offer only transaction facilities). They can also be e-business tools when solutions for integration with other

internal processes are provided. Since the first e-marketplaces appeared on the Internet the times have changed and it is time to take stock of the situation.

This study explores the key e-marketplace success factors, which are largely determined by the willingness on the part of suppliers and buyers to participate in a certain market. The strength and competitiveness of an e-marketplace operator depends on its market position and its relationships with major suppliers and buyers in that market. Service-offering strategies for the evolution of an e-marketplace are also analyzed.

## **1. Electronic marketplaces**

Several authors developed their own definitions of electronic marketplaces. Some use a narrow definition, others a broader one. Due to rapid changes in the business environment, is this research area a very dynamic one. As a result the scientific relevance would be very limited if I would choose a very narrow focus. It could become a part of history much too early. For this reason I have chosen to adopt a widely used definition of electronic marketplaces among scientific researchers.

I will use the following definition of electronic marketplaces: 'Internet-based business to business electronic marketplaces represent an interorganizational information system that facilitates electronic interactions among multiple buyers and sellers.'<sup>1</sup>

The facilitation of electronic interactions means that electronic marketplaces extend their services beyond the sole process of matching buyers with sellers and vice versa. These additional services that support the transactions are included in my discussion of electronic marketplaces. As a result of this the model has been primarily designed for professional, internationally operating marketplaces that mostly offer a variety of market making mechanisms and coordination tools.

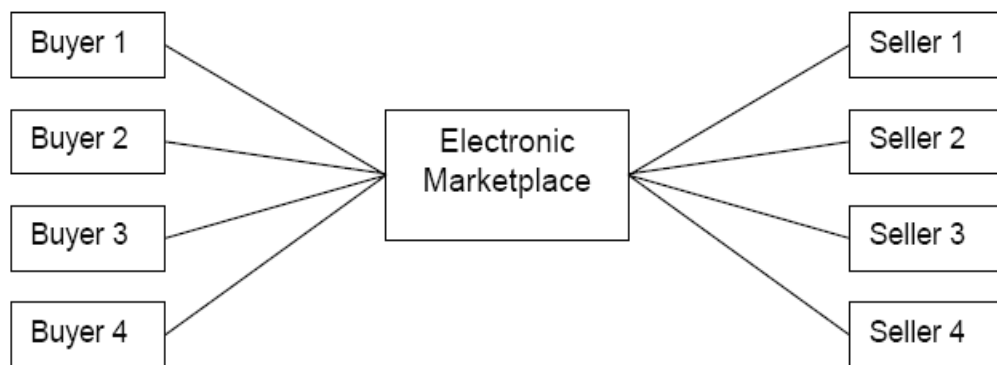
Several names are used for the same phenomenon. Kaplan and Sawhney (2000) use the term *Ehubs* for electronic B2B marketplaces. Choudhury (1998) uses the term

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<sup>1</sup> Bakos, Y. (1991) .A strategic Analysis of Electronic Marketplaces., MIS Quarterly, 15: 295-310.

*electronic markets*.<sup>2</sup> Basically they all address the same idea. I prefer using the term electronic marketplaces, electronic markets, or just marketplaces. Figure 1 shows a visual explanation of an electronic market.

Figure 1.1: Visual explanation of an electronic market.



Source: Adapted from Choudhury et al. 1998

## 1.1 Participant segments

Typically, electronic marketplaces are defined in terms of participants, using acronyms B (for business), C (for consumers), and G (for governments)<sup>3</sup>. The focus of this thesis is on business-to-business (B2B) electronic marketplaces. That means electronic marketplaces that facilitate electronic interactions between businesses. Table 1.1 will show an overview of the different participant segments based on Coppel (2000).<sup>4</sup> The focus of this thesis (B2B) is indicated in bold.

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<sup>2</sup> Choudhury, Vivek (1998) .Uses and Consequences of Electronic Markets: An Empirical Investigation in the Aircraft Parts Industry., MIS Quarterly, December: 471-507

<sup>3</sup> Skjott LT, Kotzab H, Grieger M. 2003. Electronic marketplaces and supplychain relationships., Industrial Marketing Management 32: 199-210.

<sup>4</sup> Coppel J. 2000. E-commerce: impacts and policy challenges. Economics Department Working Paper No. 252

## 1.2 Market mechanisms

Electronic marketplaces conduct several different functions. The basic function of an electronic marketplace is matching buyers with sellers and vice versa. Several electronic marketplaces go beyond this. They aim at increasing efficiency by enhancing interfirm cooperation. García- Dastugue and Lambert (2003) distinguished between two primary functions of an electronic marketplace, the market mechanism and the coordination flows. The coordination flows will be subject to discussion in the next paragraph.

Just as in traditional markets, the market mechanism determines the way products are traded on the electronic marketplace. It is used to conduct a business transaction, to purchase or sell a good or service at a given price. Market mechanisms can be used to stimulate price competition among potential suppliers. As a result of this, market transactions are often one-time transactions. Different suppliers can be selected for each transaction. The information that is shared while using market mechanisms is generally limited to the terms and conditions of the transaction, delivery information and payment, in addition to the bidding process. Combinations of different market mechanisms on one marketplace are also possible. These so called 'all-in-one markets aggregate multiple transaction mechanisms, often on a shared electronic platform, creating new opportunities for firms to take advantage of the best features of open-market and nonmarket forms of exchange'.<sup>5</sup> Different market mechanisms can be selected for different products, and in different markets. There is no 'best market mechanism'; this can only be stated in a very specific context. As a result some marketplaces offer a wide variety of market mechanisms, in order to adjust the right mechanism for the right type of goods.

Among the market mechanisms that can be identified are different kinds of auctions (standard, reverse, multidimensional, etc), electronic tenders, fully automated exchanges, and a number of electronic purchasing aids such as electronic catalogues and purchasing groups. Certain goods are best suited for trade on a fully automated exchange, such as commodities; other goods need a more time consuming trading mechanism such as an auction.

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<sup>5</sup> Kambil Ajit; Nunes Paul F.; Wilson Diane (1999) .Transforming the Marketspace with All-in-One Markets., *International Journal of Electronic Commerce*, 3 (4): 11-28



The mechanisms are different, but the purpose is the same: enhancing efficiency in the trading process. Only the way to achieve it is different. Some specific benefits of electronic marketplaces are a direct result of these market mechanisms. The extent to which a marketplace offers market mechanisms that meet participants' demand, can be one of the factors that influence a decision to participate or not.

### **1.3 Coordination flows**

Another functionality of electronic marketplaces is the facilitation of coordination flows between buyers and suppliers. Coordination flows aim at reducing the costs of coordination in long-term relationships. They are implemented to manage businesses more effectively by focusing on the relationships with other supply chain members rather than on individual transactions.<sup>6</sup> These coordination flows are separate data flows, apart from the market mechanisms. Often, they are used to connect internal logistics systems with each other, for example to organize just-in-time delivery or to enable a Continuous Replenishment Program<sup>7</sup> (CRP) between a retailer and a supplier.

Coordination flows are used when managers do not need to search the market and evaluate each alternative. Information is shared and used to streamline supply chain management. These coordination flows can also be used for joint product development. Because these coordination flows have a greater impact on the internal organization than market transactions, they are more suited for stable relations.

Electronic marketplaces are not the only way to establish efficient coordination flows. Interfirm coordination has been established for many years through the use of peer-to-peer EDI (Electronic Data Interchange). Actually, some electronic marketplaces use web based EDI technology for these purposes.

Participation in an electronic marketplace may depend on the possibility of establishing coordination flows between organizations. A typical benefit derived from coordination flows is a possible reduction of inventory levels.

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<sup>6</sup> García-Dastugue.S. J, Lambert.D. M. 2003 .Internet-enabled coordination in the supply chain. *Industrial Marketing Review*. 32: 251-263

<sup>7</sup> In a CRP a retailer shares real-time inventory data with its suppliers in order to get continuous replenishment of its inventory by that supplier (Raghunathan and Yeh, 2001).

## 1.4 Stakeholders

The stakeholders in a marketplace determine the bias of the marketplace, the group it favours. Electronic marketplaces can be biased or neutral. I will explain them below.

### **Biased**

Biased marketplaces can be biased on the supply-side or on the buy-side. The role of a buy-side marketplace is to aggregate buyers. Such marketplaces concentrate primarily on creating efficiencies for the corporate buyer. Buy-side networks generally have several objectives, that is, to drive procurement costs down from the participating buyers, to allow buyers to aggregate spending, to reduce administration costs, to increase visibility, and to facilitate global sourcing.

The supply-side aggregated marketplace concentrates on bringing multiple suppliers together into a central catalogue. The key to a supply-side marketplace is to provide multiple suppliers a forum to present their catalogues and conduct in trade with as many buyers as possible. In other words, to aggregate the content that will meet the buyers need. Supply-side marketplaces also have the ability to aggregate their suppliers, acting as a public service provider, wrapping products and services together, and offering them to buyers, to marketplaces, and to buy-side aggregated networks directly. All types of relationships are aligned to increase benefits to suppliers.<sup>8</sup>

### **Neutral**

Neutral marketplaces are operated by an independent third party. According to Kaplan and Sawhney (2000)<sup>9</sup> these marketplaces can be seen as true market makers because they are equally attractive to sellers and buyers. These neutral electronic markets are the only real markets according to Malone et al. (1994)<sup>10</sup>. However, these marketplaces often face the chicken and egg problem: buyers do not want to participate unless there is a sufficient number of sellers, and sellers do not want to participate unless there is a sufficient number of buyers. At the moment these marketplaces are having a difficult time, without the backing of an industry.

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<sup>8</sup> Skjott LT, Kotzab H, Grieger M. 2003. Electronic marketplaces and supplychain relationships., *Industrial Marketing Management* 32: 199-210.

<sup>9</sup> Kaplan S., Sawhney M. 2000. E-Hubs: The New BtoB Marketplace. *Harvard Business Review*.: 97-103

<sup>10</sup> Malone T.W., Yates J, Benjamin R.I. 1994. Electronic Markets and Electronic Hierarchies. *Information technology and the corporation of the 1990s* : 61-83

Attaining financial investments can be problematic for neutral marketplaces, because investments from large buyers or suppliers can create a perception of bias. The market maker has to be very careful when attracting investors. Another problem for neutral marketplaces is the sellers channel conflict, because sellers usually participate in these markets at the expense of their normal distribution channels. (Kaplan and Sawhney 2000)<sup>11</sup>

The foregoing discussion about stakeholders is directly related to participation. Marketplaces that are biased on the buy-side can have difficulties attracting suppliers. Marketplaces that are biased on the supply-side can have difficulties attracting buyers. In addition, neutral marketplaces face the chicken and egg problem. In order to address this issue I will distinguish buyers from suppliers in my research where necessary.

## **1.5 Focus**

The focus of the electronic marketplace determines the kind of market it services. It can be defined as horizontal or vertical, although combinations exist. Originally most electronic marketplaces did have a clear focus. Since several years, certain electronic marketplaces are offering all-in-one solutions (Kambil et al., 1999)<sup>12</sup>. They offer multiple trading mechanisms as well as additional services that support the transaction. As a result the difference between a horizontal and vertical focus is getting less obvious. I will discuss the two extremes briefly.

### **Vertical**

Vertical marketplaces serve a specific vertical industry, such as chemicals, foods, telecommunications, etc. These electronic marketplaces focus on understanding industry practices and resolving industry constraints, such as inefficiencies that lower margins. They try to automate vertical supply chains in order to make the market more efficient and create strategic advantage for its participants. Vertical marketplaces are being called 'industry focused'.

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<sup>11</sup> Kaplan S., Sawhney M. 2000. E-Hubs: The New BtoB Marketplace. Harvard Business Review.: 97-103

<sup>12</sup> Kambil A, Nunes P.F, Wilson D. 1999. Transforming the Marketspace with All-in-One Markets. International Journal of Electronic Commerce 3(4): 11-28

### **Horizontal**

Horizontal marketplaces provide e-commerce capabilities that are common to many industries, such as maintenance, repair, operations procurement, web-based sales and marketing, human resource services, etc. Often, they seek to make these processes more efficient, approaching participants from different industries by using extension of ERP or other existing software tools. These marketplaces are also being called 'product focused'.

It is likely that the dependency relation between trading partners is different with regard to horizontal or vertical marketplaces. Trading partners in a vertical supply chain are often highly dependent on each other. As a result external pressure may play an important role in the decision to participate. The kind of services on which horizontal marketplaces focus are less industry specific and as a result more widely available. That could emphasize the importance of motives from an internal point of view, such as anticipated advantages.

## **1.6 Ownership**

Private (closed) marketplaces are owned by a single company. Its goal is to support commercial interactions with its own known suppliers and/or buyers. It is often used to integrate a company's internal systems (such as an ERP system) with its external trading partners. For example in order to streamline the companies' purchasing process. Private marketplaces are often operated by companies that have a dominant position within its value chain, mostly large companies. This type of electronic marketplaces is considered as highly information sharing and collaborative. As a consequence, private marketplaces are only accessible for pre-qualified suppliers. Private marketplaces attain relatively much value on the establishment of coordination flows.

Public (open) marketplaces are owned by industry consortia or independent operators with nonrestricted memberships that are usually open to all companies in the

industry. (Zhu, 2002)<sup>13</sup> Security and authenticity are very necessary for public markets. The market itself is categorized by a low degree of information sharing and collaboration. The major focus of public marketplaces is on bridging market inefficiencies by facilitating the interactions of many buyers and many suppliers (Emarketservices 2003). Sometimes several companies join forces and form a consortium. Their advantages are a guaranteed source of transaction volume, financial strength, and an ability to develop standards. Primary focus of public marketplaces is on market mechanisms.

With regard to participation it is interesting to note that there are differences between public and private marketplaces. The level of dependency as well as the power balance between trading partners can influence a motivation to participate. It is likely that this differs between private and public marketplaces collaborative. As a consequence, private marketplaces are only accessible for pre-qualified suppliers. Private marketplaces attain relatively much value on the establishment of coordination flows.

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<sup>13</sup> Zhu, Kevin (2002) .Information Transparency in Electronic Marketplaces: Why Data Transparency May Hinder the Adoption of B2B Exchanges. *Electronic Markets*. 12(2): 92-99

## 1.7 Examples

Table 2.1 shows an overview with examples of different kinds of marketplaces.

Categorization	Electronic marketplace examples		
Focus	<i>Vertical</i> Chemconnect.com, Eutilia, Covisint.com	<i>Horizontal</i> Freemarkets, Grainger.com, Techsmart.com	
Stakeholder	<i>Buy-side</i> Covisint, World Wide Retail Exchange	<i>Neutral</i> Chemconnect.com, Zonetrader	<i>Supply-side</i> Transora
Market mechanism	<i>Auctions</i> Chemconnet.com, Eutilia, MetroChemNet	<i>Exchanges</i> Chemconnect.com, OFX.com	<i>Catalogues</i> Papersite.com Neofarma.com Eutilia
Ownership	<i>Public (open)</i> Chemconnect.com, Paperdeals Eutilia	<i>Private (closed)</i> Envera, Eastmanmarketplace.com	

Source: Adapted from Skjøtt-Larsen et al. 2003

## 2. Three robust e- market models<sup>14</sup>

Despite well-publicized eMarket failures, Accenture believes online B2B commerce is a permanent fixture on the business landscape. Three robust models have emerged - the public independent trading exchange, the industry-sponsored marketplace and the private exchange - and they will change the way business is conducted. Most companies will adopt a portfolio approach to eMarket participation, using different models for different business requirements.

### 2.1 Public Independent Trading Exchanges

In recent decades, few business phenomena became media darlings—or captured investors' interest—as quickly and completely as independent trading exchanges. These exchanges generally were established to serve a particular industry or product group. The

<sup>14</sup> Copacino W., Dik R. 2001. Supply Chain Management . Why B2B eMarkets Are Here to Stay. Supply Chain Management Review.

value proposition included the discovery of trading partners worldwide, a single venue for conducting business, virtual management of business relationships and visibility to prices around the globe.

Despite the significant venture capital invested in independent trading exchanges and the thousands of companies formed, real success stories are hard to find. In October 2000, for instance, Commerx, the parent company of PlasticsNet and MetalClick, announced the resignation of its two cofounders and CEOs, and it withdrew a planned IPO. PaperExchange and BuildNet also withdrew IPOs last year, while Fleetscape.com, a truck-parts exchange, and Chemdex, a well-known chemicals exchange, went out of business. A rapid consolidation among such exchanges is now under way.

### **2.1.1. New Strategies Needed**

In general, independent trading exchanges ran into trouble because their business models misjudged how much, and for which services, customers were willing to pay. This issue often was compounded by management teams comprised of industry outsiders who lacked expertise in the markets they were trying to serve.

More fundamentally, basic economics worked against these exchanges. Where low barriers to entry exist, many participants will enter. The result: extreme competition and low margins. The original idea of an electronic marketplace for the chemicals industry was innovative, for example, but so easy to implement that 30 such eMarkets emerged—among them CheMatch, eChemicals, ChemB2B.com, ChemCross, OneChem, ChemicalDesk, ChemRound and Chemdex. No single exchange was able to capture a dominant share of transactions, resulting in most entrants either redefining their business strategy, merging with competitors or simply going out of business.

For long-term survival, independent trading exchanges need more differentiated, hard-to-replicate capabilities that serve a particular vertical or horizontal niche—which is more easily accomplished in highly fragmented industries. Take BuildNet in the construction industry. This exchange now goes beyond merely trading products to providing specialized solutions for such industry-specific problems as job-lot scheduling and materials planning.

Other independent trading exchanges will find that their most favorable roles focus on low-risk trading activities, such as purchasing materials for maintenance, repair and operations, or on functional niches, such as disposing of surplus materials. Still others will partner with the major industry-sponsored marketplaces to bring focused, specific services to an industry. For example, ingredient marketplaces Novopoint and Foodtrader.com deliver specialized capabilities through their relationship with Transora, the packaged food and beverage industry-sponsored marketplace.

Strategically well-positioned independent trading exchanges will continue to play an important role in a company's portfolio of eMarkets, but they won't be the dominant model predicted during the dot-com revolution.

## **2.2 Industry-Sponsored Marketplaces**

Industry-sponsored marketplaces were one mechanism for traditional companies to fight back against dot-coms with their own eCommerce strategies. These marketplaces offered major industry players the opportunity to capture directly the online benefits and control of the B2B services provided to participants.

Founders of industry-sponsored marketplaces typically represent a substantial portion of a given industry's trading volume, thus marginalizing potential competitors. Consider Quadrem, an electronic marketplace for mining, minerals and metals companies. Its 21 founding members represent almost two-thirds of the industry's total market capitalization and more than one-quarter of its buying power. Covisint and Exostar sought to harness similarly powerful industry participants in the automotive and aerospace industries, respectively.

### **2.2.1. Speed and Agility**

Despite high-powered founding members, many industry-sponsored marketplaces are struggling with their own set of problems. Establishing a marketplace that can serve the needs of its many founders, as well as meet the specific requirements of any



individual member, is inherently challenging. Online commerce demands speed and agility, yet the sheer number of powerful owners can make decision making slow and cumbersome.

Many industry-sponsored marketplaces also have struggled with governance issues. It is not surprising that for many, the build-out of capabilities is proceeding more slowly than members anticipated.

It has also proven difficult to find industry participants—particularly leaders with a history of strong supply chain management capabilities—that are willing to publicize business information considered sensitive and proprietary. And like their independent trading exchange counterparts, many industry-sponsored marketplaces are finding that building their supplier base is taking longer than expected.

Industry-sponsored marketplaces will endure; however, their role likely will emphasize standard setting, indirect procurement and, over time, the creation of robust capabilities for direct materials procurement. They will also have a clear advantage in providing community content—industry news, education, job postings—and specialized services for their industry.

In select markets (such as aerospace and defense) that require the coordination of engineering efforts across many companies, industry-sponsored marketplaces will facilitate improved design collaboration among members. From its outset, Exostar, the global aerospace and defense exchange, emphasized that buying and selling would be only one part of a more comprehensive, collaborative environment. Soon participants will be able to engage in real-time product collaboration while ensuring that proprietary and sensitive information is kept private from other members.

### **2.3. Private Exchanges**

To varying degrees, each B2B eMarket model can complement and extend traditional ERP capabilities; however, private exchanges will enable the deepest integration between a company and its trading partners. Private exchanges leverage existing enterprise systems to enable supply chain collaboration and visibility. It is no accident that many early adopters of private exchanges were supply chain leaders who saw private exchanges as a way to extend their competitive advantage.

Another strength of the private exchange is its ability to support a company's unique strategy and requirements. Dell, Cisco, Motorola, Wal-Mart and others use private exchanges to provide a level of intimacy with their trading partners that is not achievable currently in a public marketplace. Consider these examples:

At Taiwan Semiconductor Manufacturing Co., private exchange technology makes it possible for geographically dispersed engineers to collaborate on chip-design projects. The system is secure: Users cannot copy or download the layout, and the database on which the design resides is protected by TSMC's corporate firewall. Engineers with access along TSMC's supply chain can view part or all of a given design simultaneously, isolate and mark individual circuits or lines, trace circuits and provide comments for all to see.

Cisco's private exchange allows customers to configure, place and check the status of orders independently and online. More than 90 percent of Cisco's orders come in through the exchange. Order cycle time has been slashed from as long as eight weeks to as short as one week.

Customer satisfaction ratings are up at the systems maker. Because changes in demand go directly and instantaneously through the supply chain, suppliers can adjust their inventory levels and production schedules accordingly.

The exchange has also helped Cisco reduce materials costs by more than \$170 million and labor costs by about \$108 million, cut inventory nearly in half and double inventory turns. Its suppliers' engineers can assemble in minutes document packages that used to take a day or two to put together. As a result, one stage of the new-product prototype phase has been eliminated and, on average, the remaining four stages have been shortened by more than one week. The resulting improvement in time to volume and scalability has brought an additional \$338 million into Cisco's revenue line.

In response to customer feedback, in December 2000 Bayer launched an expanded and improved version of BayerOne, which links customers of all five of the company's polymers and chemicals divisions. This lets customers customize their own account reports to include as much or as little of the available information as they want, as well as have their reports compiled and e-mailed to them automatically, as often as they want. In the future, BayerOne may be expanded to include features such as inventory management and direct B2B transactions.

### 2.3.1. Adaptability

One of the most impressive advantages of the private exchange is its adaptability: Companies can tailor the basic concept to fit their own strategic needs or operating idiosyncrasies, although most are either buyer- or seller-based.

**Buyer-Based** private exchanges aim to make supply chain management functions more efficient and effective. At the most elementary level they allow for online ordering, confirmation, shipment notification and invoicing. More sophisticated exchanges provide for collaboration with suppliers on forecasts, supply planning, product design, exception management and other functions. For example, Wal-Mart makes a two-year history of customer transaction data available to suppliers through its private exchange. In return, suppliers analyze sales-trend data and make recommendations about store assortments, market segmentation and inventory management.

**Seller-Based** private exchanges add value for key customers. They may remind customers to order certain regularly purchased items, or even allow the seller to examine the customer's inventory and replenish it automatically. Customers may also be empowered to collaborate on product design, track orders and otherwise join forces with the seller. Cisco's private exchange is one of the most ambitious and comprehensive seller-based exchanges.

## 2.4. Value Propositions

While the breakthrough collaborative capabilities of the private exchange ensure its dominant position in the coming months, a private exchange is not for all companies.

In industries where the supply chain is simple and straightforward, there may not be enough supply chain inefficiency to justify building a private exchange. Industry-sponsored marketplaces or independent trading exchanges may serve those companies better.

When the supply chain is complex, small companies will have to weigh the startup costs carefully against benefits. One approach that has proven successful is for the channel master to build out the private exchange infrastructure and allow participating companies to leverage its capabilities. In this instance, smaller businesses receive

advanced capabilities for minimal cost and the channel master receives significant improvements in supply chain efficiency. Over time, additional low-cost options will become available for firms as technology standards develop, startup costs fall and private exchange hosting services evolve.

Even larger companies with complex, unpredictable supply chains should take a close look before investing in a private exchange infrastructure. When the product cycle is long, the number of suppliers or customers small, outsourcing infrequent and engineering rather simple, it may not make sense to build a private exchange. Lower-cost alternatives could deliver equivalent results.

For example, most industry-sponsored marketplaces recognize that their participants are interested in private exchanges, and many are identifying ways to provide participants with hosted private exchange rooms and collaborative tools. Under this arrangement, the marketplace benefits as both public and private transactions continue to be conducted in its forum, while the participants have access to basic collaborative capabilities at a lower cost than they would have if they had built out their own infrastructure.

More tailored private exchange capabilities often may be a necessity for companies in engineering-intensive industries with unique design and production requirements, high degrees of supply chain collaboration, rapid cycles, and volatile supply and demand.

Dell's extraordinarily short cycle time, for example, is an important competitive advantage. Joining an industry-sponsored marketplace would bring Dell's capabilities to its competitors, so Dell relies on its own private exchange to outpace competitors while keeping its proprietary supply chain management practices secret.

Companies with a dominant position in their industries, or world-class supply chain management capabilities, sometimes will choose to build their own private exchanges. In these instances, the capabilities available in an industry-sponsored marketplace fall far short of their specific business requirements and supply chain management processes.

Wal-Mart already has done an outstanding job of aggregating and leveraging its purchasing power. Any benefits Wal-Mart might receive from joining an industry-sponsored marketplace are outweighed by the advantages of an emarket that's tailored to its own needs. Moreover, its dominant market position ensures that key suppliers will

participate in Wal-Mart's B2B eMarket initiatives. So a private exchange is eminently sensible.

## **2.5 Managed Portfolios**

Each online B2B model seeks to make one or more of these necessary functions more efficient: supplier discovery, price visibility, product tracking, logistics, product development, procurement, supply chain planning and collaboration, and services management.

Yet no one eMarket model can deliver all the above benefits. For a company to have a full host of capabilities it will need to have a strategically and dynamically managed portfolio approach that aligns eMarket types and capabilities with business need.

For example, Dow Chemical is involved in almost 10 different online marketplaces to best meet its diverse needs. Dow's customers can use the private exchange MyAccount@Dow to buy from the company. Dow also participates in the industry-sponsored marketplaces Omnexus and Elemica to sell plastics and chemicals, respectively. In addition, the company uses ChemConnect (an independent exchange in which it has an equity stake) for auctioning direct materials as well as for finding new suppliers.

Accenture expects the effective management of an eMarket portfolio to be an important sign of industry leadership in the coming decade. Companies already are using independent trading exchanges and industry-sponsored marketplaces to more effectively buy, sell and exchange information. Moving forward, eMarkets, led first by the private exchange, should enable the next wave of supply chain management synchronization and collaboration gains.

As B2B eCommerce continues to evolve, remaining on the sidelines could be a costly mistake. There already is a growing gap between the supply chain capabilities of an industry leader and those of its average competitors. Those companies that fail to recognize that eMarkets entail more than buying and selling goods risk losing even more ground to their competition.

### **3. The competitiveness of e-marketplace operators<sup>15</sup>**

B2B e-commerce can be defined as an enterprise conducting business with another enterprise over the Internet. If this is done on an individual basis, there is no marketplace involved. However, if many enterprises go to one website to do business with one another, then the website acts just like a marketplace. E-marketplaces may be classified into the following categories based on different characteristics of the operators:

#### **3.1. E-marketplace of a single enterprise**

A very large enterprise that buys from many suppliers is in a good position to operate an e-marketplace on its own website. For example, General Motors buys a variety of products and components for a large amount of money from many suppliers. GM announces the products it wants to buy, the volume it needs, the specifications, and the delivery requirements on its website. Vendors throughout the world respond to the request for proposals by sending their responses to GM's website.

Then GM can pick the most appropriate vendors through this on-line vendor selection mechanism. Both GM and the vendors benefit from this Internet e-marketplace because no paperwork is prepared, no express mail delivery is required, less manpower is needed to compare bids, and numerous other advantages. Decisions can be made in a relatively short time, and the GM purchasing department saves millions of dollars.

A very large enterprise that sells to many customers is also in a good position to operate an e-marketplace on its own website. For example, China Steel is the top supplier of various steel products in Taiwan. China Steel can list all its products on its website and ask buyers to e-mail their purchase orders. China Steel can vary its prices instantly to reflect the latest supply and demand situation. China Steel can even ask buyers to bid for its products at times when demand exceeds supply. China Steel can also make adjustments to its production schedules based on knowledge of demand for its products. Since China Steel is the largest supplier of steel products in Taiwan, all of the

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<sup>15</sup> H.- C. Yu , C.-S.Hsu, K. -H His. 2002 . Setting up an e- marketplace: a three-stage approach. *Tecnology in Society* 24 473-482

downstream vendors have no choice but to cooperate with China Steel's e-marketplace selling mechanism.

### **3.2. E-marketplace operated by a third party outside the industry**

The previous section describes an e-marketplace operated by a large seller or buyer doing business with a large group of its business partners. This section describes a large group of vendors that need to do business with one another. Here the opportunity exists for a third party to operate a website e-marketplace that enables vendors to conduct business among themselves and allows their customers to do business with them. The incentives for vendors to join such an e-marketplace include:

- Most vendors do not have the technical expertise or capital to set up an e-commerce transaction system, nor does sufficient business exist to justify their individual investment or to cover recurring maintenance expenses.
- An e-marketplace can generate a clustering effect by attracting more vendors and clients, which translates into higher visibility and more business for all participating vendors.
- The independent third party offers a useful service and poses no threat to the vendors.

The following conditions must also be true if the third party is going to play the role of an e-marketplace operator:

- No vendor in the industry is big enough to form an e-marketplace.
- There are big vendors, but they are not interested in operating an e-marketplace.
- There are big vendors, and some of them are interested in operating an e-marketplace.

Since the big vendors are competitors in the same market against the small vendors, the small vendors cannot trust that the big vendor's e-marketplace will treat them fairly. Therefore, an independent third party may be preferred to offer the e-marketplace service.

The outside third party could be an Application Service Provider (ASP) that is experienced in developing front-desk and back-office e-commerce operations. Instead of helping individual companies set up e-commerce websites, the ASP could develop a custom e-marketplace for all vendors in an industry. The e-marketplace can be thought of

like a shopping mall, which provides air conditioning, parking, security, etc., and in return expects shop owners to lease a space there. Similarly, an ASP could develop an e-commerce platform that includes an inquiry system, order system, transaction system, and payment system, with the expectation that vendors will set up e-shops in the e-marketplace. The mall owner collects monthly rent from shop owners. The mall may also charge a commission based on a percentage of each shop's revenues. An e-marketplace could institute a similar charging structure.

### **3.3. E-marketplace organized by several vendors in the same industry**

Several big vendors of similar size may sponsor an e-marketplace. Since none of them is in a dominant position, there is a balance of market strengths. They may realize that by joining efforts to form an e-marketplace, there will be lower operating costs and more profit for all of them.

### **3.4. E-marketplace operated by a competing vendor in the same industry**

A large vendor with brand name visibility and e-commerce capability on its website may want to expand its role and try to take the lead in becoming an e-marketplace.

This large vendor may only invite other vendors to join this e-marketplace whose products/services are complementary to its own. The goal of this e-marketplace is to become a total-solution provider so customers can enjoy "one-stop shopping."

The strategy of such an e-marketplace is to increase competitiveness for vendors within this e-marketplace and compete against vendors outside of this e-marketplace. This big vendor's e-marketplace will compete directly with any other e-marketplaces in the same industry. Similar to competition in the bricks-and-mortar world, the size of the market ultimately determines how many e-marketplaces can co-exist.



### **3.5. E-marketplace operated by a complementary vendor in the same industry**

If the products or services provided by an institution are complementary to the products and services of other vendors, then this institution can set up an e-marketplace because it poses no threat to the other vendors. Some unique services, such as R&D, technical support, and consulting, are needed by other vendors. This institution may be a candidate that will attract the participation of vendors in this market.

## **4. B2B e-markets Space: Understanding the Developmental Phases**

How many of the 500 or so e-markets that currently exist, or the 10,000 e-markets that Gartner, Inc. projects will be created in the next several years, will survive? Are there really 10,000 viable market spaces? Or are there, as AMR Research predicted, only enough to support two or three e-markets per industry, for a total of only 50 to 100 vertical e-markets? Other analysts are predicting similar shakeouts; the question seems not to be whether most e-markets will fail, but when.

In this environment, how can you best manage your e-markets involvement? Our thinking is that activity within the B2B e-markets space will go through four general phases over time: **proliferation, expansion, consolidation and collaboration.**<sup>16</sup>

While we see these phases as the general developmental pattern for e-marketss, the speed with which any given industry traverses the phases and the exact configuration of e-marketss within each phase will vary according to such factors as industry characteristics, e.g., degree of fragmentation or whether the types of goods traded are simple or complex. With an awareness of these developmental phases, e-markets executives can choose strategies that will be successful in the present and in the future. A similar awareness can help participating companies gauge their points of entry and degrees of involvement in e-marketss.

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<sup>16</sup> Brooks J., Cantrell S. 2001. B2B e-markets Space: Understanding the Developmental Phases. Outlook Point of View

## 4.1. Proliferation

The first phase of B2B eMarket development, proliferation, is characterized by an explosion in the number of new e-markets in a huge, unclaimed economic space. This phase has been occurring over the past year or so, as entrepreneurs, software providers, and content providers all rushed to create e-markets.

In addition to a general "land rush" mentality, the furious pace of eMarket creation has been driven by the assumption that an early-mover advantage could be easily parlayed into a critical mass of buyers and sellers that would lock the early e-markets into a dominant position via the network effect. The network effect is a self-sustaining feedback loop in which, once a critical trading volume is achieved, that volume makes a market more attractive to potential participants, who then trade through the market and increase the trading volume even further. For most of the early movers, however, early entrance often failed to yield the desired result as they struggled with the classic "chicken-and-egg" problem of attracting participants to any new market: without ongoing robust trading, e-marketss offer little immediate reward for new participants who join. In addition, powerful players, such as large buyers or sellers or industry consortia, often declined to participate fully in independent e-markets, preferring the slower process of forming their own e-markets but assuring critical mass by leveraging their established market power.

The general result of the proliferation phase is a large number of relatively simple e-marketss that vary widely in terms of **functionality**, such as transaction mechanisms, and types of services provided; and focus, such as industry, position in value chain, number and type of goods traded, and type of participant. Despite the great variety, though, most markets in the proliferation stage have two things in common: low transaction volumes and relatively few active participants.

## 4.2. Expansion

As the number of sparsely occupied market spaces dwindles, the pace of new e-markets creation slows, and the B2B eMarket space shifts into the **expansion** phase. The fight for participants and critical mass continues, but the reliance on early-mover

advantage gives way to strategies to attract participants or achieve economies of scale by expanding their individual market's functionality, services, and/or focus.

The result of e-markets expansion is a set of e-marketss with relatively similar functionality and services that are either competing directly for the same potential participants or are pushing outwards to compete for overlapping participants with neighboring e-marketss. Because much of the functionality is enabled by application providers, and because eServices are increasingly being outsourced to companies or other networks, whatever e-markets differentiation there is based on functionality and services can rapidly erode. As functionality expands and as participants grow more comfortable with e-marketss, we expect the gravitational force of e-marketss to become even stronger, pulling participants to the largest market as the network effect finally takes hold.

### **4.3. Consolidation**

As various e-markets achieve critical mass, the B2B eSpace will shift into a period of **consolidation**, the shake-out period analysts predict. Once an e-markets achieves critical mass, it consolidates market power by siphoning participants from the e-marketss that compete directly with it. While this fortunate eMmarket will likely continue to follow its successful expansion strategy, its competitors will need to shift their strategies toward partnering or merging to pool trading volume and avoid being acquired or dying from lack of cash. In addition, these smaller e-marketss may be able to differentiate themselves through unique business processes or conditions, such as "business method" patents or regulatory environments that support defensible market boundaries.

### **4.4. Collaboration**

Finally, as e-marketss consolidate, the boundaries between successful e-markets are reinforced by the network effect and become increasingly stable, moving the B2B eSpace into the **collaboration** phase. Smaller e-marketss that survived through

partnerships will already be collaborating, and dominant e-marketss in one industry will find that they cannot unseat their entrenched neighbors. Although there will still be some jockeying between neighboring e-marketss, and the occasional creation of an e-market in a newly recognized niche, most of the activity at this point will focus on how to collaborate between markets to increase the efficiency and flexibility of participants across market boundaries.

#### **4.5. Impact of Technological Advances, Other Changes**

The four phases outlined above are based on a logical extension of the early and current states of the B2B e-markets space, but technological advances may radically accelerate or alter this developmental path. Other ways of integrating e-marketss might also arise, such as "meta-markets" that aggregate markets, or personalized market front ends companies might use to connect to and integrate with any other company online. Such developments may appear to be a long way off, but we have learned not to be surprised at the speed at which the future of e-markets becomes the present. But, for now, the four phases of proliferation, expansion, consolidation, and collaboration, provide a basis for analyzing the impact and potential of e-markets on your business.

### **5. Three stages of service in an e-marketplace**

To help accomplish its strategic objectives, the following services will be offered in three stages of e-marketplace development. Different competitive strengths, built at different stages of the e-marketplace, will win acceptance from a variety of suppliers/buyers in a target market.<sup>17</sup>

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<sup>17</sup> H.- C. Yu , C.-S.Hsu, K. -H His. 2002 . Setting up an e- marketplace: a three-stage approach. Technology in Society 24 : 473-482

## 5.1. Stage one

The most challenging objective of an e-marketplace at its early stage is to increase awareness and win acceptance. The e-marketplace must provide value to equipment suppliers, service providers, and buyers. Suppliers must not feel threatened or become suspicious, so they will willingly support and participate in the e-marketplace.

The following services would help position an e-marketplace in a role that is perceived to be supportive to all potential participants:

**Information content:** The key contribution of a website is its ability to effectively distribute information of value to whomever needs it. The following public information could be made available on an e-marketplace website: product specifications, technical standards, government regulations, news releases, reference articles, updates of the latest technological improvements, activity announcements such as conferences, seminars, and new product releases. Some information content may be free of charge only to e-marketplace members, or usage charges may be levied based on the type and volume of information retrieved. Examples include: technical specifications and guidelines, standard operations procedures, design rules and methodologies, technical or marketing reports, design software, etc.

**Website hosting service:** An e-marketplace could lease storage space to host vendors' websites and presents their products and services. The operator of an e-marketplace could serve as an ASP to help design, implement, and maintain websites for vendors. The e-marketplace could also take advertising from vendors.

**Request for proposals:** Designated areas for specific product categories in the emarketplace would enable buyers to focus their requests for proposals. They would reach a large group of potential suppliers quickly, and suppliers become aware of more business opportunities.

**Search capability:** There will be keyword search capability to locate information on the e-marketplace. Buyers can search for product information, suppliers can identify potential buyers, and all technical, regulatory, and market information can be located at users' request.

**Directory service:** The e-marketplace lists the names, addresses, areas of expertise, products and services, and other relevant information for all suppliers and providers in the market.

**Forums for user groups:** Forums on a variety of subjects and special-interest user groups will be available, allowing people to raise questions or concerns and ask for advice. Those seeking partners for joint venture opportunities might also participate in these forums. Each user group will be a small community, and they will become the loyal buyers and suppliers in this e-marketplace.

## **5.2. Stage two**

When most market suppliers participate in this e-marketplace, when most buyers are aware of the e-marketplace, and when they all utilize information from it the e-marketplace is ready to evolve into the second stage. Now the e-marketplace can begin offering more value-added services, and it does not need to be as cautious as it was in Stage One about causing resentment from suppliers. The services that can be offered in the second stage are described below:

**Evaluation service:** The e-marketplace operator needs to establish its image by assuring the quality of the products and services it offers. Even though the content on a vendor's website is its own responsibility, the e-marketplace can do like Consumer Reports: perform impartial testing, verification, evaluation, or provide ratings on the features and performances of vendor-provided equipment and services, as well as conduct client satisfaction surveys and make the responses available on the website for future reference by buyers.

**Price bargaining:** The e-marketplace can promote its value to buyers by consolidating their purchases to gain more bargaining power. Products and materials commonly used by a large group of users can be purchased at a bulk-rate discount from the e-marketplace. It also provides an on-line mechanism for buyers of any product to consolidate their purchase orders and bargain for lower prices.

**Expand globally:** The e-marketplace can expand its reach to foreign suppliers and industrial purchasers, thus taking full advantage of the worldwide connectivity of the Internet. However, language barriers will be an issue, so the e-marketplace must hire staff who speak other languages and can translate domestic buyers' needs to foreign suppliers and translate foreign buyers' request for proposals to domestic suppliers. This e-

marketplace would certainly serve as a bridge to bring a domestic industry into the global market, while global suppliers also meet domestic buyers' needs.

### **5.3. Stage three**

Most small vendors still may not have a company website or use the Internet to conduct business. In the third stage, the e-marketplace operator should expand its reach to these small and medium-size companies, bring them onboard, give them a presence in the e-marketplace, and distribute technical information and business opportunities to them. A large group of medium-size participants could bolster the value of an e-marketplace and strengthen its ability to deal with larger vendors.

Generally, the internal operations of most small and medium vendors are computerized on a small scale, and they are not ready for on-line B2B transactions. This provides an e-marketplace operator with additional business opportunities for helping to set up the requisite internal e-commerce operating system for vendors. At the same time, the e-marketplace should develop a secure on-line electronic payment platform.

## **6. Benefits of electronic markets**

B2B electronic markets function as digital intermediaries that focus on specific business functions and set up virtual marketplaces where firms participate in buying and selling activities after they obtain membership. Marketplaces create value by bringing buyers and sellers together to create transactional immediacy and supply liquidity, and by supporting the exchange of demand and supply information. E-procurement is defined as utilizing electronic media, including the Internet, to streamline as many steps in the procurement process as possible. The major benefits of adopting e-procurement systems are reduced operating costs and searching costs, which lead to high returns on investments.

This paper discusses the application of a supply chain optimization tool to the purchase of rebar. The rebar market is very suitable for this study given its applicability for both commodity and differentiated marketplaces. Most of the times, rebar is bid and purchased based on price-per-ton competition among suppliers, typical of a commodity marketplace. On the other hand, based on the design demands or unique project characteristics, a differentiated marketplace appears with heterogeneous consumer needs and a variety of product offerings aimed to fulfil those needs (e.g., high tensile strength rebar).

The preliminary stages of rebar procurement feature long periods of quantity takeoff revisions, cost estimation, quality assurance and procurement. These delays translate into expensive activities for construction companies and rebar suppliers, and into time overspent for activities that could be automated. E-procurement should reduce uncertainties by enabling the ordering, at a convenient price, of the precise types and quantities of materials needed to install on the subsequent workday, resulting in higher quality of the implementation of the just-in-time concept. Moreover, contractors may find the way of tracking the status of critical orders, thus knowing instantly when a supplier has run out of an already ordered item. Contractors want the purchase-related information to be entered just once, flowing easily throughout the life cycle of their projects, from the estimate and bid to the purchase order, and then into home office systems such as job costing and accounting. The steel industry made an attempt to create an interactive global marketplace named e-Steel, which provided an interactive online marketplace enabling both buyers and sellers to initiate a transaction, specify product details, target offers or inquiries to specific members, and negotiate and close contracts.<sup>18</sup>

## **7. Web-based B2B procurement systems**

A significant proportion of organizational resources are devoted to managing interorganizational processes, such as procurement of goods and services from other companies, collaboration for product development, and financial transactions between companies. Among these, the procurement of goods and services, called business to

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<sup>18</sup> Castro – Lacouture D. , Medaglia A.L. Skibniewski M. 2006 . Supply chain optimization tool for purchasing decisions in B2B construction marketplaces. Automation in construction xxxxx-xxx



business (B2B) procurement, involves the largest cost for an enterprise, with many organizations spending 50% to 60% of their revenues on goods and services. Yet, information technology applications have focused mostly on more structured processes, such as manufacturing, leaving most procurement processes inefficient and ineffective. Procurement usually covers two types of purchases – direct and indirect. Direct purchases involve materials, such as raw materials and components, which go into the finished products sold to the customer. Indirect purchases, on the other hand, involve goods and services that are not part of the finished product, but support the internal business activities. Examples of such items are computers, office equipment, operating supplies and office supplies. Indirect procurement involves a wide variety of items of different complexities, and caters to a range of internal needs and preferences. In addition, unlike direct items which are managed through company-wide standards and controls, indirect purchases are highly decentralized and have multiple and, in many cases, incompatible applications within the same organization. Thus, managing indirect procurement through traditional IT systems has been a major challenge to IS professionals.

The use of the Internet for procurement has generated great excitement among organizations because of its potential to reduce procurement costs and improve strategic sourcing. The availability of electronic markets and industry specific B2B exchanges has added to the choices available for organizations to manage their procurement. However, from the point of view of B2B procurement, we have identified four models of Web-based procurement systems (figure 1). These models reflect the different ways that a buyer or supplier can choose to execute a B2B transaction. Each model creates value for the buyer and seller in unique ways and organizations typically use more than one, if not all, models. We discuss briefly the four procurement models.

***Buy-side procurement system:*** This form of procurement system is developed and implemented by large buyer organizations to Web-enable their purchases with selected suppliers. The entire procurement cycle, covering product development, transactions and procurement management are Web-enabled and integrated. This actually creates a virtually integrated IOS between the buyer and the seller, like the EDI system, but with greater scope and capabilities. The two major areas of emphasis of this system are transaction efficiency and process control.<sup>19</sup>

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<sup>19</sup> Subramaniam C., Shaw M.J.2002 . A study on the Value and Impact of B2B E-commerce : The case of Web-based Procurement. University of Illinois at Urbana-Champaign

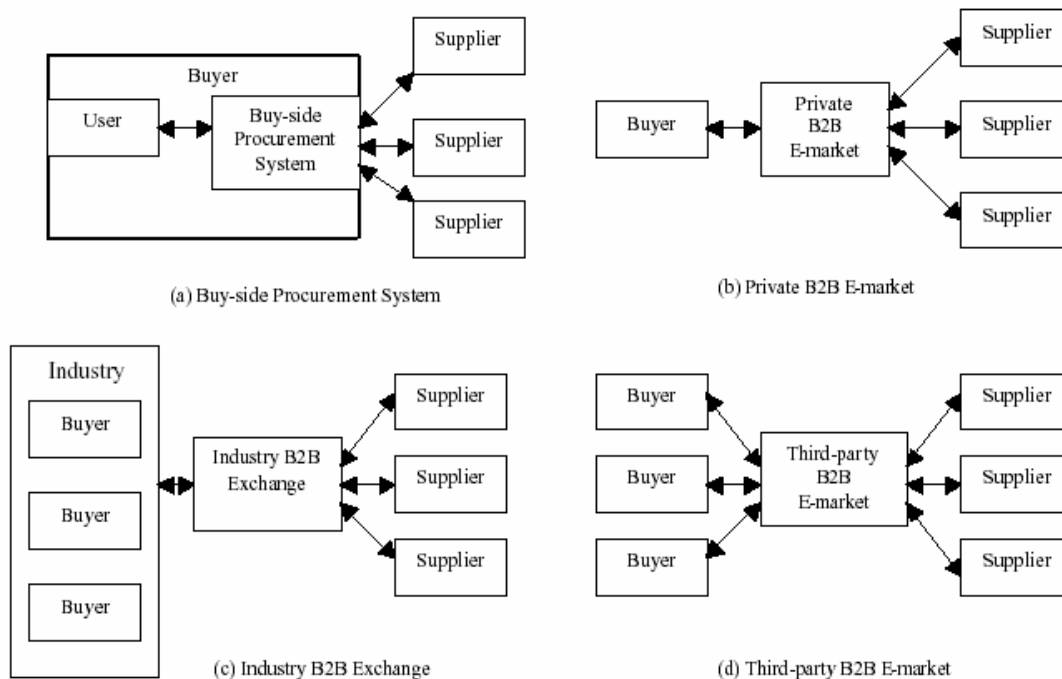


Figure 1. Web-based procurement models

**Private marketplace:** Some organizations form their own electronic markets to aggregate their suppliers to get competitive price for products. The suppliers are limited to those who wish to trade with the buyer-owned private e-market, which limits the extent of liquidity and competition possible. The emphasis of private electronic markets is on reducing the procurement price of the items, but the organization forming the market place has control over how the market operates. Private e-markets also reduce search costs for locating sellers and serve as exchange mechanisms for proprietary knowledge of the enterprise. Examples of such marketplaces are Walmart’s RetailLink and GE’s Global Exchange.

**Industry B2B exchange:** Each organization building a private e-market limits the liquidity of each market and forces suppliers to work with multiple markets. Hence, organizations in some industries form consortiums and build industry-specific B2B exchanges. This model aggregates buyers and sellers in the specific industry. As this is an industry-wide effort, it is easy to build liquidity with suppliers wanting to participate where most of the industry purchases are going to be. The emphasis of industry-wide exchanges is to increase transparency of the process and force competition among

suppliers, which results in lower prices for buyers. This model also reduces the search costs for both buyers and sellers. Examples are Covisint in the auto industry and Transora in the consumer goods industry.

**Third-party marketplace:** These marketplaces are created by companies called market-makers, (or infomediaries), who have both technological and domain expertise. Third-party marketplaces can be horizontal or vertical. Horizontal marketplaces aggregate buyers and sellers across a particular function across multiple industries. Fob.com is an example of such horizontal marketplace. Vertical marketplaces aggregate buyers and sellers across a particular industry across multiple functions. VerticalNet is an example of a vertical marketplace. Third-party marketplace is suitable in fragmented markets (buy side or sell side), where locating the buyer or seller is very expensive and in standard and commodity products, where price and availability are the major purchase criteria. Third-party markets provide value by lowering the product price for the buyers, and lowering the search costs for both buyers and sellers.<sup>20</sup>

Table 1. Value created by different forms of Web-based procurement

Form of Web-based procurement	Factors that create the value	Factors that affect realized value
Buy-side procurement system	Reduced transaction costs Higher process quality Increased system responsiveness Lower development costs Increased control	Process characteristics Degree of centralization Degree of integration with the enterprise systems Bargaining power of the buyer
Private B2B e-market	Reduced product price Knowledge creation and dissemination Lower search costs to locate sellers	Product characteristics Rate of innovation in the industry Supplier fragmentation Bargaining power of the buyer
Industry B2B exchange	Reduced product price Increased utilization of surplus assets Lower search costs to locate sellers or buyers	Product characteristics Size of industry Industry fragmentation Power of buyers and sellers Coordination among the buyers
Third-party B2B e-market	Lower product price for buyers Lower search costs for both buyers and sellers Service quality	Industry fragmentation Liquidity Industry participation

<sup>20</sup> Mudambi S., Aggarwal R. 2003. Industrial distributors can they survive in the economy?. Industrial Marketing Managements 32: 317-325

Table 1 summarizes the factors that create value and factors that affect the value in each form of B2B procurement system. Even though researchers have predicted a significant shift towards more electronic market based transactions, each Webbased model creates value in a different way and B2B managers have to evaluate the role of each model in their enterprise. But, it is clear that organizations, buyers or sellers, can derive competitive advantage from any of these systems in the form of economic benefits and increased business opportunities. However, our interactions with B2B managers of a large manufacturing organization showed that there are still doubts about the real benefits of the Web. For those organization that already have some form of IOS, such as electronic data interchange (EDI), there is uncertainty if the Web is an improvement over the existing system. Also, the different players in the B2B procurement process, such as user, business units, central procurement managers and the suppliers, each have their own expectations from the system, which are often at conflict with the expectations of other players. Hence, all the players may not perceive the same value from implementing a B2B system and their perception is critical for successful adoption of the system.

## **8. Business problem**

In an e-business marketplace environment, a purchasing agent is faced with the problem of defining an advantageous offer. For instance, suppose that in a rebar net market, an agent needs to bid on rebar to be used in a construction project. Before submitting the bid to the exchange, the agent needs to fully understand the possible tradeoffs between quantity, delivery time, price to be paid, and features (i.e., grade, surface, shape, etc), among others. Through the use of the supply chain optimization tool, the agent is expected to solve the following situations<sup>21</sup>:

- . Initial price to be offered in the bid
- . Quantity of material for an efficient offer
- . Tradeoffs between bid price, lead time and material quantity
- . Competitiveness of bid price
- . Sensitivity of bid price to product requirements

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<sup>21</sup> Castro – Lacouture D. , Medaglia A.L. Skibniewski M. 2006 . Supply chain optimizatino tool fo purchasing decisions in B2B construction marketplaces. Automation in construction xxxxx-xxx

By offering an initial price for a certain weight of rebar, efficiency in the transaction can be understood as a generalized ratio between outputs and inputs. In other words, a purchase transaction is efficient if it gets more outputs (e.g., quantity and number of features) for fewer inputs (e.g., lead time and price).

## **9. Optimization of business practices**

In order to obtain better results in terms of cash flow, working capital turnover cost reduction or quality, businesses are continuously searching for new tools. In recent years, online reverse auctions have emerged as popular means for reducing the price of purchased materials used in the production of durable goods. This dynamic bidding process typically results in significantly lower prices than the buyer has historically paid. However, net savings may also be lower due to various factors such as buyer not selecting the lowest bid, changes in price through post-online auction negotiation or buyer purchasing neither all nor any of the line items. This situation, coupled with the lack of knowledge of market prices and their behaviour and especially the local optimization of product design at the expense of optimizing the performance of the entire enterprise, makes businesses prone to unfavourable outcomes.

With the use of the proposed supply chain optimization tool, the analytical capabilities of three different entities in the transaction environment (i.e., sellers, buyers and marketplace) can be enhanced. The ownership of the supply chain optimization tool determines the application and treatment of the information to be entered in the transaction.<sup>22</sup>

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<sup>22</sup> Castro – Lacouture D. , Medaglia A.L. Skibniewski M. 2006 . Supply chain optimizatino tool fo purchasing decisions in B2B construction marketplaces. Automation in construction xxxxx-xxx

## **10. The supply chain**

The supply chain optimization tool uses quantitative data from previous transactions. This information is valuable for sellers and buyers and helps them make decisions regarding purchases or sales over the marketplace.

### **10.1. Supply chain relationships**

A rich body of research exists in the area of relationships within the supply chain. The relationship firms have with their suppliers has been posited as an important source of competitive advantage. Manufacturers may also gain competitive advantage if their distributors are cooperative, satisfied, and productive. Researchers have described supply chain relationships using a variety of terminology, including relational marketing, relationship marketing, partnering, relational exchanges, and CRM. These are similar names for the same basic concept, namely, the increasing importance of business relationships. Relationship building and reputation building are closely related. Many companies are moving away from simply selling products, to finding broader approaches to reduce the cost structures of their suppliers and customers, and to help them grow.

Considerable research builds on Webster's continuum of marketing relationships, which includes: discrete transactions, repeated transactions, long-term relationships, buyer-seller partnerships, strategic alliances, network organizations, and vertical integration. Fontenot and Wilson reviewed four important models of relational exchanges and concluded that essential to any model of relationships are the roles of trust, communication, and functional conflict.<sup>23</sup>

Overall, the nature of business competition is changing to emphasize value chains rather than supply chains. Supply chains are being deconstructed based on the value-added at each stage. Value chain management emphasizes the richness of links between suppliers and customers to create an extended, seamless, and agile enterprise that transcends the boundaries of a single organization or a single country. Lancioni

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<sup>23</sup> Mudambi S., Aggarwal R. 2003. Industrial distributors can they survive in the economy?. *Industrial Marketing Managements* 32: 317-325

described this as evolution from an intrafunctional approach, to an interfunctional approach, to an interorganizational approach with focus on coordinating product flows across multiple organizations. Knowledge management (KM) recognizes the importance of these value chains, and the specific knowledge inherent in each aspect of business operations.

Advances in information technology and lean manufacturing (Make to Order) has revolutionized sourcing, logistics, distribution, and the management of supply chains. Technology-driven approaches such as EDI, Enterprise Resource Planning (ERP), and the more recent plethora of activity in web-based CRM systems require large TSAs. Other web-based entrants such as Freemarkets.com and MRO.com attract customers and marketer via low TSA web sites. As transaction costs fall, businesses are questioning whether substantial transaction specific investments are wise and worthwhile. Electronic technology facilitates efforts to outsource, reduce the number of suppliers, adopt just-in-time procedures, and raise quality and service standards for their suppliers. These investments indicate that the Internet will continue to play a key role in supply chain management.

Research on sourcing strategy highlights differences in sourcing objectives. US companies emphasize global sourcing as a means of cost reduction and process efficiency, while Japanese companies have focused more on effectiveness in satisfying customers through quality, reliability, and faster product development. Sourcing and procurement are strategically important to business, yet can be difficult, and a low priority for management.

## **10.2. Manufacturer–distributor relationships**

Researchers have examined a wide range of issues involving manufacturer–distributor relationships. One area concerns what distributors expect and want from manufacturers. This includes quality products, discounts for distributors, and support services such as expedited delivery, sales training, and technical assistance. Distributors seek reasonable manufacturer policies on inventory return, credit, and the number of

franchised distributors in a trade area, and expect manufacturers to communicate with them regarding unanticipated changes in price, product, or delivery.

What manufacturers want and expect from distributors also needs to be examined. Some meeting of the minds is necessary over the distributor's role, as Webster recognized. Frazier called for more research examining which functions are best shared between channel members. All too often, manufacturers and distributors hold conflicting perceptions of the distributor's role, leading to a range of management problems. Case studies illustrate the reality of manufacturer–distributor relationships, and provide insights on dependence, trust, commitment, communication, cooperation, and equity, and other important issues (see the special 1997 case study issue of the *Journal of Business Research*).

Distributors gained power and influence in the 1980s, as they functioned as the manufacturer's sales arm, and as manufacturers increasingly relied on distributors to transfer to them knowledge of customer needs and market trends. Perhaps in partial reaction to this, manufacturers began in the 1990s to embrace the Internet as a means of reaching out to their customers, and for hearing back from them directly. Another way of describing this strategic change is as a move away from a push strategy, in which the manufacturer utilizes the distributor to market its goods, and towards a pull strategy, in which the manufacturer communicates directly to the customer. Using traditional advertising methods of the past, the pull strategy was inefficient and prohibitively expensive. The Internet is changing these and other assumptions of the past. Evidence of this change can be found through a simple review of manufacturer web sites. Most sites do not mention the word “distributor,” much less describe the strategic importance of a strong manufacturer–distributor relationship.

### **10.3. Distributor–customer relationships**

The distributor's relationship with the customer is also changing. Key account management recognizes that not all customers are equally important. Distributors can



help customers reduce costs through flexible, customized solutions.<sup>24</sup> Yet, distributors need an expectation of an ongoing relationship before making a substantial investment of time, effort, and infrastructure. Companies would prefer compatibility with a range of suppliers, rather than expensive, customized, high-TSA systems for each relationship.

Buyers can work closely with suppliers to improve specific areas of production and operational performance leading to savings in lead time reduction, quality inspection costs, better integration of design efforts, increased stability of supply, reduction in paperwork and administrative costs, and improved quantity discounts due to economies of scale. Relationship investments serve to improve the quality of information and communication available to buyers and suppliers, thereby reducing working capital and inventory. Trade credit and financing are also widely available from a variety of sources.

Buyers are beginning to treat vendors' technical expertise as a strategic resource and added value. The ability to offer cutting edge technical assistance can be an important competitive advantage for manufacturers and distributors. Specialized process knowledge and specific knowledge of the business are especially relevant to distributors. Market knowledge is also important, including knowledge of the major trends in the environment, knowledge of customer needs and past behavior, and knowledge of competitor strategy and activity, especially in technological areas.

#### **10.4. Trust and communication**

An extensive literature has developed focusing on issues of trust and communication across the range of business relationships. Trust incorporates dimensions of perceived credibility and perceived benevolence and enables buyers and suppliers to focus on the more long-term benefits of the relationship. Trust is a key factor affecting commitment to the business relationship, especially in international partnerships.

Traditionally, trust has a human face. Interpersonal factors influence many purchase decisions, and personalities can make or break a deal. Personal rapport between the manufacturer's sales representatives and the distributor can play a key role. Strong

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<sup>24</sup> Mudambi S., Aggarwal R. 2003. Industrial distributors can they survive in the economy?. *Industrial Marketing Managements* 32: 317-325

personal links or friendships can be the motivating force for initiating a business relationship, and for continuing the relationship long after other more objectively sound alternatives become available. The nature of trust in an individual may differ from that of trust in an organization, although trust of the salesperson can have a positive effect on the trust of the selling firm, and vice versa.

Technology-driven links and networks using the Internet seem to downplay the role of interpersonal trust and directly affect the traditional role of the industrial salesperson. Instead, web-based links emphasize impersonal efficiency and raise questions regarding the relative importance of efficiency and trust in future reseller relationships. Yet, this is not all new. Catalogs have long played an important role in industrial sales. Web-based companies have placed a high priority for the personalization of their sites and their relationships with customers, with the addition of chat rooms, discussion groups, and a range of customized features. Getting customers and suppliers to trust in a technologybased link remains a challenge for most. This further complicates distributors' efforts to remain viable in a dynamic marketplace.

## **11. A model of distributor viability**

The question of distributor value and viability drives the development of the conceptual model. If distributors are to survive in the new economy, they need to add value for their suppliers (the manufacturers), and also for their customers. These added values need to reflect their role as a source of cost reduction and as an impetus for business growth. Both manufacturers and customers expect the distributor to play a role to help them grow their business. To the manufacturer, this may take the form of increasing the customer base. To the customer, this may take the form of providing appropriate inputs to improve the competitiveness of the customer's goods and services. Fig. 4 illustrates the main process of adding value, which the manufacturers and customers translate as cost reduction and business growth.

The decision to utilize a distributor depends to some degree on the expectation of cost reduction, both in the short term and the long term, and the expected impact on business growth. Decision making is also shaped by past experience, expectations,

reputation, and the level of trust between the parties in the exchange. To tip the decision scales in their direction, distributors need to communicate how they add value to what superficially may appear to be a straightforward low-bid purchasing situation.

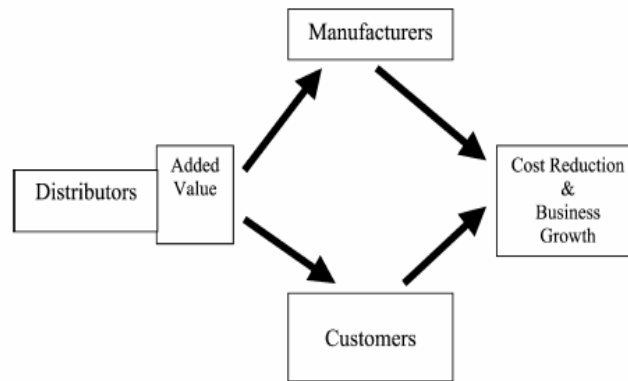


Fig. 4. The process of distributor added value.

Distributor viability depends on their ability to develop sources of added value. Just as important, distributors need to communicate how they add value and build a strong case as to why businesses should trust and rely on them. Thirdly, distributors need to find ways to protect their value-adding investments in these relationships.

Fig. 5 illustrates the model of distributor viability. The model depicts how industrial distributors have the potential to add value for manufacturers and for customers. Three sources of added value exist, namely, CRM, production and operations management (POM), and KM. These sources of value need to be developed, communicated, and protected.

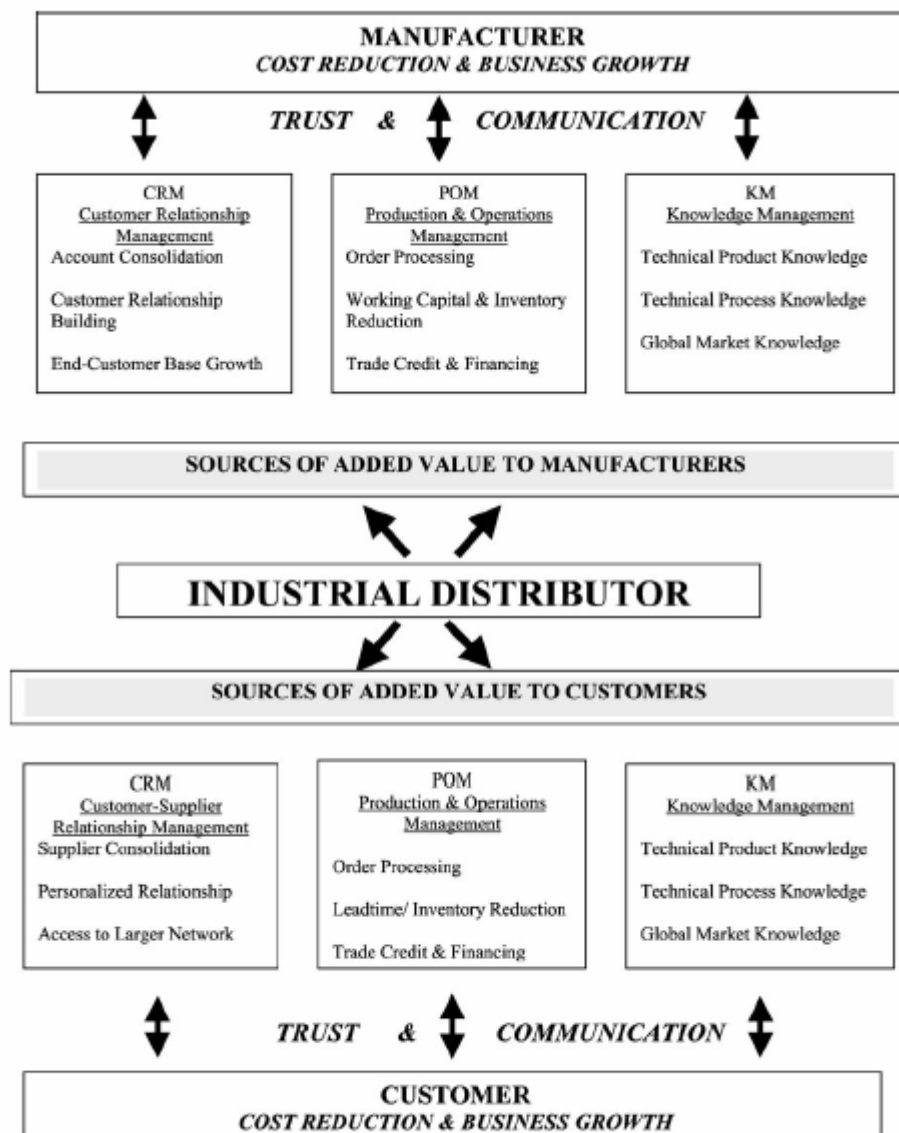


Fig. 5. Model of distributor value and viability.

### 11.1. Sources of value

CRM takes on different forms for the manufacturer and for the customer. From the manufacturer's perspective, the distributor adds value through account consolidation, reducing the number of contacts the manufacturers must make with the end customers. This frees the manufacturer to focus on key account management. In addition to handling the accounts, the distributor adds value through customer relationship building with customers the manufacturer might otherwise ignore. The distributor can build a

meaningful business relationship with many customers more effectively and efficiently than the manufacturer can. This enables future growth through end-customer base growth. Distributors can more effectively cold-call on end customers, as well as follow up on leads generated by the manufacturers at trade shows or through the manufacturer's web site.

From the customer's perspective, CRM takes the form of managing the customer-supplier relationship. Customers value the supplier consolidation enabled by the distributor, which reduces the number of suppliers the customer has to manage. A distributor can cut down on the number of purchase transactions the customer makes, thereby saving the customer the costs of handling the purchase order, as well as the search and monitoring efforts. In some cases, supplier consolidation may take the form of vendor managed inventory. Customers also value the more personalized relationship that they receive from distributors, who better understand their needs and are more willing and able to be responsive. Unless the customer and its order are of sufficient size, the manufacturer does not know them, rarely and will make the effort to do so. A distributor is in a better position to understand the customer's particular needs, and to build a personalized, more effective business relationship with them. Customers also gain access to a larger network of suppliers, which opens the possibility of better choice and value. The distributor is a central player in a host of relationships with other customers, distributors, and manufacturers, a network that is less accessible to a smaller customer.

Distributors also offer value through POM. Distributors add value to manufacturers and customers through their order processing activities. These include order taking, order fulfillment, and managing the logistics and transportation involved in the physical movement of the products. Order processing also may involve services such as invoice reconciliation and the monitoring of shipping and delivery service quality levels. Distributors also add value through working capital and inventory reduction. The distributor reduces the working capital of the manufacturer or customer through the consolidation of cash and receivables. With the distributor owning and holding inventory, this reduces the amount of inventory manufacturers and customers need to hold, and improves their own forecasting. This results in leadtime reduction for the customers, and a more effective production process. Especially for a small order, ordering from the distributor may save days, weeks, or months over ordering direct from the manufacturer. Distributors also add value through their trade credit and financing activities. They can

offer manufacturers and customers allowances and lending opportunities at rates and terms not readily available elsewhere. This is especially beneficial to smaller companies.

For both the manufacturer and the customer, the distributor offers value through KM, or the development and sharing of their expertise. This is arguably the most valuable, and most vulnerable, source of distributor added value, as distributors find it difficult to protect their value-adding investments of knowledge, and even to charge money for their knowledge.

Three main sources of KM provide value. Distributors possess and share technical product knowledge with manufacturers and customers. This includes understanding of the physical capabilities of the product, the relative advantages of one choice over another, and relevant technical choice criteria. Knowing what the products are and what they do is not enough, however. Distributors also offer technical process knowledge, which includes understanding of the reality of how customers actually use the product, and the factors affecting product usage in the field. One key to value is minimizing the gap between knowing what to do, and knowing how to do it. Distributors are valued for their technical support, including product design advice, factory or store layout, and troubleshooting when something unexpected goes wrong.

Finally, the distributor's market knowledge adds value to manufacturers and customers. Distributors possess good information sources on current and future demand, issues affecting demand, and how to best satisfy the customer demand. Distributors understand what customers need, what they do not like, and what affects their decisions. Distributors are also in a good position to evaluate the activity of competitors of the manufacturer and can reach out to alternative sources of supply on behalf of their customers. They know the companies, the people to contact, and the trends and conditions of a number of specialized markets. In new international markets this market knowledge takes on particular strategic significance. For example, in Japan, unique business practices are considered the most important market impediment.

The three main sources of distributor value (CRM, POM, and KM) are important, but they cannot be realized unless the distributor is considered trustworthy and unless the distributor communicates about these sources of value to manufacturers and customers. Trust and communication are interrelated aspects. Building and maintaining trust across international borders and cyberspace is a tough challenge, especially in markets where

word-of-mouth and personal relationships have traditionally played an important role. Trust and good ongoing communication are key aspects of the model.

## **12. A Model for Assessing Performance in Electronic Marketplaces**

### **12.1. Electronic Marketplace Performance**

Klueber et al [2001] state that the rapid adoption of eMarketplaces seems to be very optimistic considering barriers like the lack of trust, knowledge and the high costs of technology investments.

Indeed, in the current business environment business-to-business (B2B) marketplaces are not having the impact that it was envisaged that they would make. E-marketplaces have gained little momentum and in many cases are failing [Gill and Wu, 2001]. Oesterle et al [1999] state that only a few eMarketplaces will survive in each industry and succeed in reaching a critical mass of participants, products and services to cover the industry members needs. Evaluating e-marketplaces is not an easy task. Klueber et al [2001] believe that it is necessary to examine the entire ecosystem/value chain in order to evaluate e-marketplaces.

Optimal performance occurs only if there is a tight fit among the domains of strategy, structure, management processes, individual roles and skills and technology [Scott Morton, 1991]. The idea that fit leads to high performance has been most comprehensively developed around the link between strategy and structure [Chandler, 1962; Chatfield and Yetton, 2000]. Researchers have purported a number of different theories on the sequence which these five domains should be implemented [Mintzberg, 1979; Chatfield and Yetton, 2000], with the dominant view being that changes in business strategy precede structural adoption [Rumelt, 1974], with structural adoption driving a realignment of management processes. IT has an enabling role in strategy formulation both in terms of redesigning the business [Hammer, 1990] and its incorporation into the “strategy-structure fit”. Electronic marketplaces have evolved from Inter Organisational Systems (IOS) [Reimer, 1996].

Therefore, it may be useful to examine existing theories in relation to performance in an IOS. Bensaou and Venkatraman [1994] have proposed a conceptual model in relation to evaluating the performance of a traditional dyadic IOS. They argue that the fit between the information processing needs and information processing capabilities is a strong determinant of performance. The key determinants of information processing needs are environmental, partnership and task uncertainty. The key determinants of information processing capabilities are structure, process and information technology [Bensaou and Venkatraman, 1994]. A number of fundamental differences exist between inter organisational systems and electronic marketplaces.

The information processing needs of a dyadic IOS are different from those of an electronic marketplace. Processing is the only phase conducted electronically; interaction predominately being application to application. In an electronic marketplace, all interaction phases are conducted electronically [Reimer, 1996]. Much of the interaction between firms in a dyadic IOS is conducted in a non-electronic setting, thus alleviating a certain amount of uncertainty. However, because of its structure/architecture, uncertainty is much greater in an electronic marketplace. Information processing capabilities also differ. With the multi-partied nature of an electronic marketplace, the structure of an electronic marketplace is fundamentally different from an IOS. Usually, electronic marketplaces utilise different technologies than an IOS, with differing process mechanisms being the norm.

In an electronic marketplace, the strategy of the parties involved in the value chain will have an effect on the structure of the marketplace both from the buyers, sellers and market makers perspective [Timmers, 1999; Klueber et al, 2001]. Thus, joint economic action [Chatfield and Yetton, 2000] will not only be dependent on the relations between the buyer and the seller, but between all parties involved in the value chain whose complexity is dependent on the structure and interaction patterns of the parties involved.

Non-contractible investments are also crucial in an electronic marketplace [Bakos and Brnjolfsson, 1993]. Commitment and cooperation between the parties involved in the value chain are crucial if the electronic marketplace is to be a success. Rockart and Short [1991] state that in the transition to a more networked approach, increased interpersonal skills were necessary. With the possibility of a diverse value chain, social ties and individual role and skills [Bakos and Nault, 1997; Klueber et al, 2001] play a crucial role



in value creation in an electronic marketplace. Therefore, individual skills and social interaction is crucial if the electronic marketplace is to be a success. Chatfield and Yetton [2000] argue that in an arms length (market) relationship, low embeddedness is found because strategic links or ongoing close people links are absent. With the possibility of many varied structures and interaction patterns between parties involved in electronic marketplaces partnership choice plays a crucial role.<sup>25</sup>

## **12.2. Building the conceptual Model**

From reviewing the characteristics of an IOS and electronic marketplaces, we observe that a number of fundamental differences exist. Thus Bensaou and Venkatraman's [1994] model in relation to performance of an IOS is limited in its applicability to an electronic marketplace.

The main limitation of the model is that it perceives information processing as being the only interaction between parties involved in an IOS. While this may be adequate to explain performance in an IOS as processing is the only phase which is conducted electronically, in an electronic marketplace, all phases of the interaction are conducted electronically [Reimer, 1996]. Thus, information processing in an electronic marketplace is only one aspect which affects performance.

In this section, we evolve Bensaou and Venkatraman's (1994) model, developing a model which we believe could more comprehensively explain performance in electronic marketplaces. This analysis has revealed that performance affecting factors can be summarised under the headings of (a) Value Added / Value Supply (b) Ownership / Investment (c) Trust / Security Based Mechanisms.

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<sup>25</sup> O' Reilly P., Finnegan P. 2002.. A Model For Assessing Performance in Electronic Marketplaces. University College Cork

### **12.2.1. Value Added / Value Supplied**

Value Added can be interpreted as the benefit amassing to parties involved in the marketplace. The key determinants of value added are market reach, lower prices for buyers, cutting cost of buyers operations, industry best practices and market value. Value supplied is the value supplied by parties entering the marketplace. The key determinants of value supplied are industry structure and firm strategy. Electronic marketplaces expand everyone's market reach [Bakos, 1998; Kerrigan et al, 2000].

Without B2B marketplaces, buyers may have difficulty finding suppliers with the right parts and prices and suppliers equal difficulty finding motivated buyers. Electronic Marketplaces generate lower prices for buyers. Electronic marketplaces cut the cost of buyers operations. Most electronic marketplaces now provide services that cut the cost of procurement processes which traditionally consume much staff time and effort. Greater efficiency and improved speed and accuracy in purchasing are mentioned as two of the greatest benefits in utilizing an electronic marketplace [Kerrigan et al, 2000]. Electronic marketplaces identify industry best practices. Some e-marketplaces have identified distinctive, high value added content [Kerrigan et al, 2000].

An example of two electronic marketplaces that have identified best practices in their respective industries include Neoforma.com and Sitestuff.com. Capital markets react positively to firm announcements of ecommerce initiatives, leading to a significant enhancement of the firm's market value. This positive effect is observed for both net firms and non-net firms [Subrammi and Walden, 1999]. Interpreting this hypothesis, we presume that entering an electronic marketplace will have a positive effect on a firms market value. These determinants influence the demand for parties to be involved in an electronic marketplace. They represent the value creation for a party entering an electronic marketplace.

On the opposite end of the spectrum from value added is value supplied, the value which a party contributes to an electronic marketplace. The industry structure will impact the value supplied in/by an electronic market place [Porter, 2001]. Commentators [Swatman and Swatman, 1992; Cavaye and Cragg, 1995] noted the impact which SABRE made on the airline industry. In that particular monopolistic scenario, the industry structure played a crucial role in the performance of the system.

However, in a more open environment, the value supplied by a party will be dependent on the number of players within the specified sector [Klueber et al, 2001], the reputation of the party [Kim and Prabhakar, 2000] involved and the knowledge and commitment [Bakos and Brnjolfsson, 1993] of that party to the marketplace. Intermediaries/Marketmakers [Bakos, 1998; Klueber et al, 2001] will also have a key role to play in the structure of the marketplace and indeed the success of the eMarketplace [Klueber et al, 2001]. A firms strategy will have an impact on the value which it will supply to an electronic marketplace [Bakos and Nault, 1997; Porter, 2001]. A parties strategy with regard to competitive advantage, the role they wish to play in a marketplace and the reward which they see emulating from involvement in the marketplace will have an impact on the value supplied [Porter, 2001]

### **12.2.2 Ownership / Investment**

Research [Bakos and Nault, 1997] has demonstrated that a correlation exists between ownership and investment in an electronic marketplace. The more that is invested in an electronic marketplace, the more likely it is to succeed. The key determinant of ownership is market bias. For the purpose of classification we utilise buyer bias, neutral and seller bias. The key determinants of investment are contractible, non-contractible and cooperation.

In recent times, with the evolution of the value chain and architecture, many more potential business models have emerged, adding further complexity to the classification process. Indeed, Timmers [1999] identifies eleven possible business models. Underinvestment [Bakos & Nault, 1997] is particularly problematic in electronic marketplaces and one must remember that contractible investments are crucial. For a marketplace to succeed it needs to generate a strong revenue model [Klueber et al, 2001] and without investment, this may prove extremely difficult.

Non-contractible investments are also crucial in an electronic marketplace [Bakos and Brnjolfsson, 1993]. Firms that are successful in creating superior IT capability in turn enjoy superior financial performance by bolstering firm revenues and/or decreasing firm costs. Firms that incur the costs of IT without developing an IT capability will be at a

comparative disadvantage [Bharadwaj, 2000]. The failure of the parties involved in the electronic marketplace to commit intangible resources [Bakos and Brnjolfsson, 1993] to the marketplace will have a direct effect on whether or not the relationship is successful.

A firm's IT infrastructure, its human IT skills and its ability to leverage IT for intangible benefits serve as firm – specific resources, which in combination create a firm wide IT capability. A key aspect of a firm's intangible resources is its intellectual capital or knowledge assets [Bharadwaj, 2000]. A firm's knowledge capital is widely recognized as a unique, inimitable and valuable resource [Matusik and Hill, 1998; Bharadwaj, 2000]. The relationship between organizational knowledge and competitive advantage is moderated by the firms ability to integrate, transfer and apply knowledge [Matusik and Hill, 1998]. A major contribution of the resource based theory is its explicit recognition of the value of intangible organizational resources [Bharadwaj, 2000].

Several organizational intangibles such as know how [Teece, 1998], corporate culture [Barney, 1991], corporate reputation [Vergin and Qoronfleh, 1998] and environmental orientation [Russo and Fouts, 1997] have been seen as key drivers of superior performance. Firms with strong human IT resources are able to (1) integrate the IT and business planning processes more effectively (2) conceive of and develop reliable and cost effective applications that support the business needs of the firm faster than the competition (3) communicate and work with business units more effectively (4) anticipate future business needs of the firm and innovate valuable new product features before competitors [Bharadwaj, 2000].<sup>26</sup>

### **12.2.3 Trust / Security Based Mechanisms**

The attainment of trust is crucial in an electronic marketplace. The determinants of trust in an electronic marketplace are institutional characteristics, word of mouth referrals, trustor's propensity to trust and the perceived risk of e-commerce. Trust/Security based mechanisms can aid in establishing trust in a marketplace. The determinants of trust/security based mechanisms are legislation, technology and assurance seals.

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<sup>26</sup> O' Reilly P., Finnegan P. 2002.. A Model For Assessing Performance in Electronic Marketplaces. University College Cork

In an electronic marketplace all phases of interaction between parties are conducted electronically [Reimer, 1996]. This leads to a perception by businesses that e-commerce transactions may be both insecure and unreliable. Research [Ratnasingham and Kumar, 2000] suggests that a perceived lack of trust in e-commerce transactions by trading partners using the Internet could be a possible reason for its slow adoption rate. Therefore, trust will play a crucial role in marketplace performance. Kim and Prabhakar [2000] have proposed a research model in relation to the initiation phase (initial trust in the electronic channel). They identify three distinct elements which combined, have a direct influence on whether or not the electronic channel is adopted.

The three elements can be defined as trustor's propensity to trust [Sitkin and Pablo, 1992], word of mouth referrals [Stewart, 1999; Kim and Prabhakar, 2000] and institutional characteristics [Zucker, 1986; Kim and Prabhakar, 2000]. Indeed, research [Noteberg et al, 2000] demonstrated that a correlation exist between institutional characteristics and perceived risk, with consumers believing that the risk is much higher when dealing with an unknown vendor.

Trust and Security based mechanisms are safeguard protective measures. Accordingly, they provide technological, organizational and relationship benefits by ensuring timely, accurate and complete transmission and receipt of transactions, thereby achieving transaction integrity, authentication, confidentiality, non-repudiation and availability [Jamieson, 1996; Ratnasingham and Kumar, 2000].

Instruments would include digital signatures, encryption techniques and industry standards [Panko, 1997; Ratnasingham and Kumar, 2000]. Government legislation plays a key role in gaining trust in an electronic marketplace. Assurance seals added to a website are another method utilised to gain consumer trust, with research [Noteberg et al, 2000] demonstrating that assurance seals do provide an additional effect on the likelihood of purchase. If properly implemented and managed, these instruments should aid in increasing trust in an electronic marketplace.

### **13. Conclusion**

E-marketplaces are becoming important in B2B e-commerce. While industry insiders are racing to enter the markets, start-up Internet companies seem to have an edge in this competition so far. However, it is too soon to determine the real winners of this heated race. As a number of exchanges fight for market share, a shakeout among them is likely to happen in the next few years. To survive in this competitive industry, vertical exchanges should form alliances with functional hubs to offer one-stop shopping conveniences for their customers, and vertical hubs should deepen their industry-specific content in order to serve more specific users' needs.

Users and builders of E-marketplaces should also critically evaluate the market condition, consumer needs, and product characteristics so as to decide whether to join or build an "auction" or "marketplace" type of exchange. For commodity type of products with highly price-sensitive demand, an auction model works better. For consumers with complicated needs who have to choose from a diverse set of manufacturers' offerings, a "marketplace" model seems to be more efficient in helping buyers quickly find the right sellers, or vice versa. Further, in this type of mode, participants' expectations about the value-added services from the exchange are high. Through active brokering of deals and the addition of value-added support services, the digital exchange can help sellers and buyers reduce transaction costs and enhance efficiency. In addition to creating value in areas such as marketing, customer service, and operations, developing new products and services is critical.

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