



The Value of **Electronic Marketplaces** for Business to Business Trading

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Summary

There is a change in the way that businesses trade that is having enormous consequences on the economies of many countries. Electronic marketplaces are changing the way of doing business, leading to real cost savings. The infrastructure is now in place and collaboration between businesses through marketplaces is being driven from the boardroom. This collaboration is increasing the speed of business and simplifying supply chain management processes.

Fundamental changes to business organisation have happened before

In the second half of the 19th Century developments in manufacturing machinery and the development of excellent and cheap transportation networks, the railways and steam shipping lines, led to sweeping changes in the structure of economies. Mass production led to large volumes of goods being created in concentrated locations. Mass transportation enabled materials to be brought to these locations and finished products to be delivered to markets across continents. The creation of large volumes of product required the development of marketing techniques to stimulate demand. Thus, the modern industrial economy was formed.

We are now facing an equivalent change as we move into the 21st Century. The role of information in production and trade has grown and is now beginning to transform industry once more. Flexible manufacturing systems driven by specific orders are beginning to deliver mass customisation, where each product is made to order and once produced can be shipped more



or less immediately to the customer. Enterprise Resource Planning systems can manage corporate information order by order.

Specific sales orders can now provide the information necessary to generate purchase orders for raw materials or components directly, leading to just in time delivery of materials with the consequential reduction in inventory and associated costs. Such integration can occur in a single link in a supply chain, but gives real additional benefit if it occurs across all links in the chain. We shall see how electronic marketplaces can provide that integration across the whole supply chain.

The electronic marketplace provides a new way of trading

Commerce One defines an electronic marketplace as a destination on the Internet built on a commerce platform that brings diverse companies together to conduct electronic commerce. An electronic marketplace brings together buyers, suppliers, trade financing organisations, logistics companies, taxation authorities and regulators. An electronic marketplace enables businesses to collaborate with one another in the design, development, production and distribution of final products of the supply chain. It does this by enabling the exchange of information between all trading parties.

Electronic marketplaces have evolved rapidly in their short life. They started in the 1980s with electronic document interchange (EDI) services that were closed, expensive and batch oriented. They moved, with the invention of the world wide web into brochureware web sites that publicised online but sold offline, into one way electronic commerce where an individual buyer linked to a small number of sellers or a single seller sold to multiple buyers. We are now at the point where many buyers and many suppliers come together in a marketplace. At the marketplace, the buyers can readily access information about individual suppliers and their goods and services, sellers can advertise and promote their goods and services, and both can trade, either through catalogues, through auctions or via spot markets. They can then arrange payments, obtain other trade related financial services, arrange transport for the traded goods through the same marketplaces. Finally both buyers and suppliers can use productivity applications provided at the marketplace to improve the performance of their own organisations.

Just around the corner is the availability of collaborative supply chain management via the electronic marketplace.

Commerce One and others are working with major industry players and start up companies to build electronic marketplaces world wide. Key partners in these ventures include:

- Telcos, banks and industrial combines that are developing horizontal marketplaces covering individual countries (British Telecom, Trade & Dominion Bank of Canada, Endesa of Spain)
- Industrial consortia building marketplaces to improve the efficiency of a supply chain (COVISINT and Exostar)

Direct materials and MRO goods trading have different characteristics

Purchases made by organisations can be broadly categorised as goods purchased as part of the production process, so called 'direct materials, and goods purchased for Maintenance, Repair or Operations, so called MRO or 'indirect goods'.



Direct materials include, for example, the component parts of an automobile; lights, alternator, fuel pump, etc, that are used directly in production. Direct materials can also include raw materials that are purchased in bulk. Direct materials are all components represented on a Bill of Material (BOM) and are used in the production of finished goods. Direct materials roll-up in value along with direct labour and overhead to make up Cost of Goods Sold (COGS).

The volume of direct materials is proportional to the volume of final output. Direct materials purchases can be scheduled precisely and in a timely manner to meet demand, provided sufficient information about demand is available and sources of materials are secure and reliable. The earlier the information is available, the more readily can production be scheduled, so early forecasts with frequent updates to maintain and increase accuracy of forecasting is essential to efficient supply. The production and distribution of direct goods is termed supply chain management. Many computer applications have been developed for supply chain and production management. These applications typically automate ordering of supplies based on forecasts of demand, given corporate procurement policy.

Indirect goods include goods and services used in the operation of an organisation. These will include capital goods and other goods that are purchased to meet specific internal needs. They represent the overheads of the business, excluding staff remuneration and related costs. Examples include spare parts for machinery, office supplies, protective clothing, travel services, logistics services. MRO goods tend to be purchased as needed with small inventories to take account of the intermittent nature of supply. Demand for MRO goods is not easily forecast, and requisitioning is done locally to meet specific requirements. Generally orders are small in value for non-capital goods and orders are frequent. Expenditure on MRO goods is difficult to control and generally purchasing costs are high in comparison with the value of the goods. Purchasing departments therefore put in place a number of instruments that both facilitate sensible purchasing and restrict other purchasing.

Direct material procurement relationships and practices are very different from indirect or MRO procurement practices. In particular, there are variations in:

- Procurement as a percentage of revenue
 - Direct materials: 35% to 90% of revenues
 - Indirect materials: 8% to 30% of revenues
- Procurement source
 - Direct materials: fixed during design cycle, typically requires qualification
 - Indirect materials: variable, usually based on cost
- Procurement decision
 - Direct materials: driven by design requirements and executed to regular planning cycles
 - Indirect materials: based on maintenance, repair or operational requirements

The role of the marketplace in procurement of MRO goods

Purchasing systems are only part of the story

An increasing number of purchasing departments are implementing purchasing systems. These systems typically provide workflow from requisition to order, associated in some cases, with supplier catalogues held within the purchasing department from where requisitioners or



purchasing managers can select goods. Such buyer centred electronic procurement provides significant benefit to buyers working with their major suppliers in terms of controlling expenditure and rationalising purchasing through the organisation.

However, such applications only give part of the benefit. There are some elements that these systems do not touch and indeed the introduction of a purchasing system may lead to duplication in processes.

- Catalogue management is complex and expensive since each supplier has to deliver regular updates to its catalogues within buyer organisations. This process is not scaleable to many buyers or suppliers.
- The interaction between the buyer and the seller's process are not improved. The cost of this interaction is just more than 50% of the total cost of procuring - \$41 out of a total cost of \$79.
- Duplicate processes are needed because only a small number of suppliers can be supported.
- A catalogue delivered by one supplier has no consistency with those delivered by other suppliers.

Seller centred electronic commerce is not the whole story either

Seller centred electronic commerce provides advantages to the seller, but does not give support for buyers' processes. For example, there is little reduction in rogue buying (buying outside the control of the purchasing department), no integration with backend processes, and no consistency in catalogue data or user interface for the buyers.

Buyer centred and seller centred ebusiness is satisfactory for small numbers of buyers and suppliers, but it will not scale. Above a small number of suppliers, direct one to one linkages become difficult to manage. A separate interface needs to be defined for each supplier, and each supplier has to manage a separate interface to each of its buyers. With a large company, there may be hundreds or thousands of suppliers, or in the case of a supplier, hundreds or thousands of customers. Each supplier may have thousands of catalogue items. There will be equivalent goods from alternative suppliers that need to be described consistently to simplify sourcing decisions. Such volume and complexity becomes impossible to manage.

A marketplace can enable both supplier benefits and buyer benefits to be achieved. The marketplace becomes the natural place for product catalogues, information services and other business services, such as payment services, trade financing services, logistics services and so on. Exchange based product catalogues enable huge scale economies in catalogue management, since there is only one catalogue to manage, rather than a catalogue in every buyer and supplier organisation. Catalogue content and format can be normalised to assist buyers in their product comparison. Catalogues can be updated daily or more frequently with little overhead. The exchange enables processes, such as price and availability checks and daily content changes, that would otherwise be impractical in a many to many environment where buyers' catalogues were updated over a network from a supplier. The exchange enables a buyer to be connected to all its hundreds or thousands of suppliers through a single exchange connection. Similarly, a supplier can be connected to all its hundreds or thousands of buyers through a single exchange connection.

The provision of other services at the exchange benefits buyers and suppliers by providing the information, eg regulatory information, supplier information that enables the market to



function, and improves functioning over the equivalent manual exchange. Business services ensure that all the ancillary activities associated with the market are performed.

Some of these business services may be application services made available to buyers or suppliers. Application services may include:

- a workflow procurement engine
- a supplier order processing application
- an auctioning application used to initiate Requests for Proposals or to sell through an English or Dutch auction
- collaborative working applications such as those provided by eRoom for processes jointly executed across a number of organisations
- sell side ecommerce applications directly linked to the catalogue which provide an open shop window to the world
- configurator tools linked to specific catalogue entries that enable buyers to specify a purchase in detail before ordering

These rented applications are a low cost way of providing sophisticated applications to organisations that would otherwise have difficulty in justifying their purchase, for scale, technical or other reasons, or because they are best located at a neutral point in a network. They are a critical value element in an exchange.

The benefits that arise from such collaboration are huge. British Telecom reports 90% reduction in administrative costs, 10 - 15% reduction in the price of goods purchased, and an overall reduction in the cost of a purchase order from \$80 to \$8, with fulfillment timescales reduced from weeks to days.

The role of the electronic marketplace in supply chain management

In the direct material environment, companies have automated their back-end planning processes through implementation of enterprise resource planning (ERP) and advanced planning and scheduling (APS) systems. However, the automation of the supply chain stops at the output of these internal systems, causing an information bottleneck in the supply chain. The subsequent execution of direct material procurement signals (output of ERP/APS systems) is, at worst, completely manual with long cycle times or, at best, semiautomatic using batched, point-to-point electronic data interchange (EDI) solutions. The need for a secure service, and the limited flexibility of interchange formats, has kept adoption of EDI to a few select industries (e.g., automotive) and extremely large companies.

Lack of real-time supply and demand information from supply-chain partners results in inputs to the planning and procurement systems being based on demand/supply assumptions and planning factors, and not real demand or inventories. For example, materials requirements planning (MRP) is based on assumed lead times of components, manually entered when a component is first defined and never maintained. Planning based on inaccurate lead-time assumptions can only lead to component shortages or excessive inventories.

An increasing number of organisations are realising the benefits associated with supply chain management via an exchange. The automotive industry, the oil industry and aerospace have organised on a global basis for supply chain management using Commerce One applications. Others have done so on a national basis.



In most industries there are many parallel suppliers required to create a final product. Each of these suppliers has its own set of suppliers. Each organisation in this network creates a delay as it accepts an order, plans the production, orders any necessary components or raw materials, produces the goods and delivers them. Even a week's delay at each tier in a four tier supply chain results in a month's delay overall. Such delay is expensive in terms of work in progress, inventory, and delay in payment.

Electronic marketplaces enable an alternative to this linear approach to supply chain management. The electronic marketplace is a vehicle for sharing information across the supply chain. Now, an order entering the top of the chain can be used immediately to stimulate orders at each element of the chain, with the intention of just in time supply, just in time production and delivery. Production planning can take place in parallel, and storage of inventory and work in progress minimised. Such marketplaces can go a stage further. They can undertake collaborative planning across the supply chain, and migrate to collaborative design and sourcing. With overnight delivery between each tier, and such collaborative planning, elapsed timescales can be reduced from weeks to the equivalent number of days. This feeds through to lower costs because less capital is tied up in work in progress and parts inventory.

Applications such as the Commerce One Direct Material Solution™ addresses the manual, assumption-based communication in the supply chain, with:

- improved visibility throughout the supply chain - visibility of supply and demand data (e.g. inventory, forecasts) across trading partners, improving supply-chain planning, inventory management and reducing inventory investments
- increased speed of communication - automated execution of direct material purchases between trading partners will eliminate manual processes, resulting in increased reliability and speed of communication
- reduced costs - supply-chain management costs are reduced through faster communication and lower overhead. In selected cases, material cost can also be reduced through greater purchasing leverage and increased strategic sourcing

The benefits arising from this have been estimated, for a three tier supply chain, as between 4% and 7% of the costs of the goods sold. This is a significant competitive advantage in any market, and arises from a 20% to 30% reduction in supply chain management costs.

The car industry is adopting direct goods emarketplaces

COVISINT is the automotive exchange set up by General Motors, Ford, Chrysler, Renault, Nissan and others to manage their global supply chain.

This migration from make for stock to make for order is shown in the automobile industry supply chain. This chain is complex and has a number of stages introduced as buffers between manufacturing systems and retailers to overcome inefficiencies in information management, and a linear supply chain that introduces delays between component suppliers and the final manufacturer.

The introduction of make to order eliminates the inefficiencies of batching and enables a parallel supply chain to be created. It relies on real time information flow between dealers and the manufacturers and between the manufacturer and its supply chain. Costs are reduced because surplus and wrong stock is reduced, and payment is accelerated because make to order reduces delay.



The electronic marketplace plays a significant part in this make to order approach. It facilitates the information exchange between all parties in the supply chain. It provides business services to assist in sourcing decisions and supply chain management itself.

Country marketplaces provide an excellent way of delivering country-specific services

Most MRO trade arises within country boundaries. Even for countries like the UK and Japan for whom international trade is particularly important, most trade is within country boundaries. Trading patterns, local language, cultural, tax and legal issues are significant drivers for country specific marketplaces. These marketplaces are typically run by a trusted partner, often a telecommunications operator like Deutsche Telekom or Singapore Telecom or one or more banks. The trusted partner provides a marketplace to host supplier catalogues within a particular country and a transaction engine that enables transactions between buyers and these suppliers. The marketplace also provides auction services, logistics, payment services and other business and information services for the country. Such regional marketplaces already support organisations with some \$600 million in spend.

Global trading needs to be supported too

International trade is important and is growing more rapidly than total trade. Companies source globally particularly for direct goods, and many companies would like to supply globally. Independent country based marketplaces cannot easily support global sourcing and sales. There is a need either for global emarketplaces or a network of marketplaces that can interwork.

The Global Trading Web Association is the world's first commercial, international organization focused on the development and expansion of international business-to-business electronic commerce. The members of the Global Trading Web Association work together to promote national and international trade in goods and services through the creation of electronic commerce alternatives to traditional commerce, and to remove barriers to trade and distribution of goods and services.

The Bylaws signed by these Charter Members create the ability for the Global Trading Web to adopt rules, standards, guidelines and best business practices that will enable and promote the seamless buying and selling of goods and services securely over the Web on a worldwide basis.

The Charter Members of the Global Trading Web Association include: Asia2B (Hong Kong); Banco Nacional de Mexico, S.A. (Artikos) (Mexico); BT MarketSite (UK); Cable & Wireless Optus (Australia); Com2B (Taiwan); Commerce One MarketSite.net; Concert; conextrade (Switzerland); Gate2Biz.com (India); Metique; NTT Com (Japan); Opciona.com by Endesa Marketplace (Spain); PeopleSoft MarketPlace; PT Prime Tradecom (Portugal); PricewaterhouseCoopers; SESAMi.NET (Singapore); Sterling Commerce; TD MarketSite (Canada); and TradeAlliance (Singapore).

The marketplaces owned by the Association members interwork, allowing buyers to source goods across any participating marketplace - searching catalogues and placing orders across the Global Trading Web. The Global Trading Web therefore provides the benefits of country specific marketplaces and global coverage. Typical of the benefits arising from the GTW are:



- global sourcing: products can be sourced from any country with a participating marketplace
- single channel to market, globally, for a supplier
- pre-packaged content libraries, delivered through syndication arrangements via Commerce One's Global Trading Web™ (GTW) - these content libraries can form the basis for catalogues incorporating country specific information as well as generic information
- syndicated business services that can be made available either across the GTW or in each marketplace

By tapping into pre-built content, the solution can offer reduced time-to-market and lower content cost for e-marketplace operators.

Concluding remarks

Successful marketplaces will focus on a specific community, meeting its specific needs, whether they are industry, country or regionally based. They will provide facilities that will encourage repeat visits. These will include information services, business services, trading services for direct or MRO goods and trade facilitation services such as tax, logistics and payment. Successful marketplaces will be trusted by their market - both buyers and suppliers. They will ultimately have significant scale, since there will be huge advantage to marketplaces with the most suppliers and the most buyers. Scale will encourage new buyers or suppliers, and they, in their turn, will increase scale. First mover advantage may or may not be important to successful marketplaces. Like in any other new venture, known brands need not be first movers, however, trusted brands from complimentary industry sectors may exploit their brand to create emarketplaces.

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