

**B2B E-Commerce:
Business Models and Revenue Generating Activities**

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Abstract

The connectivity offered by the Internet has opened up the possibility of frictionless interaction between businesses. This article reviews the current state of the art in business to business (B2B) electronic commerce business models. Transactions on these B2B platforms take a variety of forms, and this article also reviews the current transaction platforms for these activities. The article concludes with a review of current revenue generating activities that occur on B2B websites.

B2B E-Commerce: Business Models and Revenue Generating Activities

Business to business (B2B) transactions over the Internet have risen sharply. From the \$100+ billion level in 1999, B2B E-commerce transactions are anticipated to top \$1.3 trillion by 2003 (Weller, 2000). One reason for this explosive growth is that the Internet infrastructure represents a common platform for all business, and the foundation for this common infrastructure is largely in place (Phillips & Meeker, 2000). The result for business has not necessarily been a smooth transition. The potential for the global economy to be streamlined, disintermediated and then reintermediated (Austrian, et. al., 2000) has placed a tremendous strain on established business practices. “While the common belief was that the Internet would do away with many intermediaries, the exact opposite is occurring, as a new crop of intermediaries is emerging” (Weller, 2000, p. 4).

A number of arguments have been articulated to justify the shift to an electronically intermediated model of business. The first is operational efficiency for the business (Trepp, 2000). Several analysts have argued that the reduced transactions costs and improved operational efficiencies alone justify the move to electronically mediated transactions (Lessons from the Past, 1999; Austrian, et. al., 2000; Weller, 2000). While study of the impact on transactions cost is ongoing, one study has reported large reductions in the time that organizational members must spend to complete a typical procurement transaction (Gebauer & Buxman, 2000).

The next is information liquidity (Teflian, 1999). Although it is difficult to identify and quantitatively measure, one analyst argues that information is the currency of the new economy. Teflian (1999) identifies information liquidity as the ability to acquire, understand and make use of information when it is needed, where it is needed and in the appropriate context of content and

meaning (p.1). While difficult to measure, Teflian (1999) argues that the increased information liquidity of transactions on the Internet increases value tremendously on both sides of a transaction. In support of this argument, analysts have pointed out that the increased transparency of electronically mediated transactions has in some cases dramatically reduced procurement costs for buyers (Phillips & Meeker, 2000).

Finally, there is the possibility of network effects (Trepp, 2000). Given the explosive growth of B2B transactions on the Internet, the distinct possibility of several dominant players in the B2B transaction space looms. Given such a scenario, it is quite likely that these major market makers could exploit the B2B space as the technology becomes more widely adopted. Following Metcalfe's Law (Trepp, 2000; Austrian, et. al., 2000) the utility of a network is the square of the number of participants. "Simply stated, any business that does not eventually join in will cut itself off from the network, and will over time call into question its own ongoing existence (Trepp, 2000, p. 3). New entrants and dominant players in the electronic B2B have the potential to competitively disrupt traditional supply chains, forcing companies to enter the B2B E-commerce arena.

This article reviews the business models of the B2B transaction space. It begins with a review of the current business models for Internet B2B transactions. Next, the article conducts a brief review of the different types of transactions that occur on B2B websites. Finally, the article examines the potential revenue sources that are possible from these B2B models, and briefly discusses the current state of their usage and efficacy.

The expected growth in electronic interchanges is expected to be significantly in the next several years. The type of marketplace that evolves in any particular vertical market will likely depend on the current concentration within that industry and the relative power of buyers and

suppliers (Weller, 2000). In addition, highly specialized and fragmented markets appear attractive future prospects for electronic intermediation.

B2B E-Commerce Models

Buyer Driven. Large buyers have been migrating to electronic commerce for some time. A direct precursor to Internet driven B2B transactions is the electronic data interchange (Weller, 2000). Wal-Mart, for example, has driven many of their largest suppliers into their proprietary electronic network, communicating purchase orders and detail as fine as individual store sales in order to increase throughput, efficiency and to lower purchasing costs. Proctor & Gamble has a production facility dedicated to fulfilling Wal-Mart proprietary electronic ordering.

The descendent of these proprietary electronic exchanges is the Internet model. Large buyers, using their bargaining leverage, have continued the shift to electronic exchange:

In the Internet world, large buyers again have become primary drivers of eMarketplaces. For example, GM, Ford and Daimler Chrysler were forming their own eMarketplaces but decided to join together to form a single, mega-exchange for the auto industry. It is not surprising to us that the auto manufacturers are working together, as they have been attempting to do this for several years...

(Weller, 2000, p.8)

These new buyer-driven interchanges are being created as independent entities, albeit with very close ties to their parent company or companies.

Insert Figure One About Here

Supplier Driven. While buyer-driven E-commerce solutions have been the primary drivers of growth in B2B E-commerce, supplier-led solutions have also emerged. The motive for this push by suppliers has some elements of an offensive strategy, but the push for supplier solutions has primarily been defensive.

The problem from a supplier perspective comes down to profit margin. The increased price transparency offered through electronic networks represents the opportunity for customers to arbitrage across suppliers, forcing prices down. Buyer-driven websites may also charge suppliers a transaction fee for using their services, translating into even lower margins for the supplier (Phillips & Meeker, 2000). Suppliers, anticipating this shift in bargaining power, have responded by introducing supplier-driven websites, often in an attempt to circumvent incursions by buyer-driven websites (Weller, 2000).

The motive on the part of suppliers is not purely defensive, however. Many suppliers, eager to capitalize on lower customer acquisition costs through electronic exchange, have aggressively pursued online collaboration. “As we have seen time and time again, a vendor is less likely to be replaced the further entrenched it is with its client” (Lessons from the Past, 1999, p.28). Supplier companies have then taken a “land grab” approach to online transactions in order to acquire and maintain a significant customer base before the electronic realm has fully matured and customer loyalty is entrenched. “A business is more likely to remain a customer for a long time than a consumer” (Lessons from the Past, 1999, p.28). An example of a supplier-driven exchange from the health care industry includes the recent collaboration of Abbott Laboratories, Johnson & Johnson, GE Medical Systems, Baxter International and Medtronic (Weller, 2000).

Insert Figure Two About Here

Third-Party Driven. Third-Party exchanges are neutral electronic intermediaries that mediate the exchange between buyer and seller. These types type of exchanges tends to be venture-backed and were among the earliest of the dotcom innovators (Phillips & Meeker, 2000). Third-Party exchanges tend to be formed by individuals that have a strong background in a particular industry and its business processes (Weller, 2000). Examples of this type of intermediary include Ventro, Instill and Healthon/WebMD.

While initially neutral to the buyer-seller transaction, many of these intermediaries have begun looking to align themselves with major players in their particular markets (Weller, 2000). This approach carries significant risks as well as potential rewards. On the positive side, alignment with a major industry player brings immediate name recognition and potentially substantial trading volumes. However, once a major participant aligns with the Third-Party exchange, the neutrality of the exchange becomes questionable. This creates risks regarding the ability of the exchange to recruit other industry participants and may result in loss of control and neutrality of operations in the particular market niche. This risk is also present in Third-Party exchanges that are owned and/or operated by participants (buyer or seller) in the industry.

Insert Figure Three About Here

Procurement Solutions. US companies spend \$1.4 trillion per year on non-production goods and services (Austrian, et. al., 2000). However, for most companies, the internal

procurement process is cumbersome, time consuming and oftentimes arbitrary. Electronic procurement solutions are now becoming available that will impart a degree of control and rationality to corporate procurement, as well as reducing the length of the ordering process. Companies such as Ariba, Commerce One and Clarus are beginning to provide browser-interface solutions to companies that support the procurement process. Many of these solutions are ERP compatible (Austrian, et. al., 2000). These E-Procurement solutions represent the confluence of a number of processes described in the previous E-commerce models.

E-Procurement software is normally hosted by the organization that is doing the buying, though supplier or third party hosting is also possible. The procurement software simplifies the interaction between the employee that requisitions supplies, the buying organization for whom the employee works, the supplier and a payment authority, such as Visa or MasterCard.

A general model for E-Procurement is shown in Figure Four. Although simplified, the model captures the essential elements of the E-Procurement process.

Insert Figure Four About Here

The steps in the E-Procurement process are as follows:

- (1) The requisitioner uses a web browser to access the E-Procurement application on their company server.
- (2) The server returns an authentication token and a list of approved suppliers to the requisitioner.
- (3) The requisitioner accesses supplier content to browse the available merchandise (Note: The supplier content could be buyer, supplier or third-party hosted, depending on the nature of the procurement relationship with the purchasing organization.)
- (4) After one or more items are selected, the completed order is transferred to the buyer's server.
- (5) The order is routed to management for approval.

- (6) The approved order is routed to the supplier for processing and fulfillment.
- (7) The supplier ships the approved merchandise directly to the buying organization.
- (8) The buying organization arranges for payment through a corporate purchasing card.
- (9) The payment authority transfers funds to the supplier, completing the transaction.

(Austrian, et. al., 2000)

The essential advantage that the E-Procurement process provides is streamlining. Internet exchange of essential transactions in the procurement process aids in reducing time, increasing accessibility, lowering costs, as well as increasing scalability and buying leverage.

Transactions Models

B2B transactions are different from B2C transactions. B2B transactions have: a much higher value to the parties involved, require a great deal more information, must integrate with existing workflows, and are quite frequently unique with respect to quantities, delivery requirements and pricing (Lessons from the Past, 1999). As such, B2B transactions models have evolved to cope with the need for a high degree of flexibility.

Many B2B Internet websites have begun offering a variety of trading platforms (Trepp, 2000). For example, the site may host both an auction platform as well as a Request for Quotes (RFQ) platform. This section describes the various types of transactions models currently in use.

Exchange Model. A “many-to-many” exchange links many buy-side and sell-side participants together simultaneously, with dynamic, real-time bid-ask pricing and intelligent buy-sell order matching (Trepp, 2000, p.5). Basically a stock market exchange model, these exchanges enhance liquidity and lower transaction costs for buyers and sellers in the exchange

(Phillips & Meeker, 2000). In its purest form, the exchange functions in a manner similar to the NASDAQ stock exchange. The exchange model can most easily be applied, therefore, to industries and products that are commodities in nature, rather than requiring a great deal of additional information regarding the exchange (Trepp, 2000).

An interesting implication of this “pure” exchange model is the likely possibility of a derivatives market in the near future for numerous products, such as cars and refrigerators.

Auction Model. In a one-to-many, seller-centric auction model, one seller engages several buyers in a bidding process to determine the winner of the item. There are literally thousands of websites that conduct some type of online auction (Beam & Segev, 1998). Trading in this manner benefits the seller in that it helps to secure the highest bid possible for the good or service (Trepp, 2000).

While a number of variations on the auction rules are used, the English auction is currently the most popular. Beam & Segev (2000) found that 85% of the online auctions that they studied used the English auction format. Academic research generally supports the English auction or First Price Sealed Bid as the most efficient auction formats (Cramton, 1998). The auction format is especially suited for spot purchases and short-term contracting (Trepp, 2000). A description of current online auction types, a brief description of their rules and a number of online companies that use these various auction models is found in Table One.

 Insert Table One about Here

Reverse Auction Model. The reverse auction, in contrast to the traditional auction format, is buyer centered. The buyer solicits bids from several qualified buyers to compete for

the right to supply a good or service to the buyer, using dynamic downward pricing. This auction format benefits the buyer in that it allows them to purchase goods or services at the lowest possible bid (Trepp, 2000). An example of a website that uses this transaction format is FreeMarkets.

Negotiation Model. The negotiation model facilitates single buyer-single seller negotiations on price, quantity and other parameters of the transaction. Negotiation is “one-to-one” and may include intricate details regarding the contract and its terms. The negotiation model is useful between known parties to the transaction that have an ongoing buyer-seller relationship (Trepp, 2000).

The negotiation model is the traditional method of handling the procurement process, and has been traditionally conducted via telephone, fax or personal contact. It is particularly favorable when the contracting is of a long-term nature (Trepp, 2000). It may be added as an option or a feature to a multiple platform website.

One concern about this method of negotiation from the website point of view, however, is the lack of website “stickiness” (Lessons from the Past, 1999) for this type of transaction. Operationally, a purchaser may identify a supplier on the website and then consummate the transaction offline. Additionally, because contracting via this method is of a long-term nature, it may also prove a barrier to moving established business partnerships and contracting online.

Catalog Aggregation Model. This model is a relatively simple, buyer-centered model that aggregates seller catalogs of products and services on one website. Pricing for the most part is static; that is, sellers post prices for their goods and buyers choose to buy or not buy on the

basis of the posted price. Buyers identify suppliers from the website database and then consummate the transaction on or offline. If the transaction is online, then the website is a marketplace and collects revenues from some aspect of the transaction (see revenue sources section below). If the transaction is consummated offline, then the website is a bulletin board or community portal (Trepp, 2000).

“Stickiness” is again an issue for this transaction model (Lessons from the Past, 1999). Catalog aggregation sites often feature “sticky” content or other features that attempt to retain the purchaser at the website (Trepp, 2000). “Sticky” features that could be introduced include members-only content, chat, or up to the minute industry news.

Request for Quotes Model. In the traditional procurement process, a buyer sends out a Request for Quotes (RFQ) or Request for Proposals (RFP) to potential suppliers. These RFQs have detailed specifications and instructions regarding the type and quantity of the products requested, as well as other terms of sale. After suppliers submit competing offers, the buyer selects the winning offer (often, but not always) based on the lowest price and sends a purchase order to the winning vendor (Trepp, 2000). Many of these buyer-supplier relationships are long established. However, in the case of new procurement contracts, the acquisition of new suppliers is an expensive and time-consuming process.

In an Internet enabled RFQ process, the sourcing procedure is greatly enhanced. Using an Internet enabled RFQ platform, buyers can achieve a much wider reach, achieve more efficiency and lower the cost of supplier acquisition (Trepp, 2000). In addition, the Internet RFQ bidding process allows for reverse auction competitive bidding, thus lowering procurement costs for buyers. Competitive price discovery by suppliers during the RFQ bidding process could also potentially enhance this benefit to buyers.

Revenue Generating Activities

Transaction Fees. Transaction fees have become a primary revenue stream for many B2B websites (Weller, 2000). Transaction fees are a charge on a percentage of the gross amount of each buy-sell transaction that the website intermediates (Trepp, 2000). Transaction fees generally range from 0.5% on the transaction to 8% or more on more complex transactions (Phillips & Meeker, 2000). A majority of websites are currently charging suppliers, rather than buyers, the transaction cost for transactions. Table Two presents several representative B2B websites and the types of transaction fees that they charge.

Insert Table Two About Here

Transactions fees are coming under increasing scrutiny regarding their potential a major revenue source for B2B websites in the long-term (Trepp, 2000). Competition among Internet websites will quite likely drive down the transactions fees that they can charge. At least one analyst believes that it is possible that commission percentages will decline over time to absolute zero (p. 31). In this scenario, the necessity for B2B websites to increase their “stickiness” (Lessons from the Past, 2000) through other value-added activities and services is imperative.

Subscription Fees. Rather than charge customer traffic on a transaction basis, many E-commerce websites offer a flat monthly or annual subscription fee. These fees are most often charged on websites where valuable or proprietary information is offered (Weller, 2000).

Databases on products and suppliers are an example of proprietary information that would generate subscription fees.

Flat fees encourage usage of the website and avoids the usage tax that comes with straight transaction fees (Phillips & Meeker, 2000). The difficulty posed to the website operator is the flat rate revenue stream on their site regardless of transaction volumes. Websites that begin with a subscription fee (in order to encourage use) and attempt to move to transaction fees (in order to capitalize on trading volume) face an uphill battle with consumers. One website that attempted this migration lost half their sellers after attempting to switch (p.40).

One interesting variation on the subscription fee structure is the application service provider (ASP) model, where the ASP charges rental fees for users to access applications that are hosted offsite. Some B2B websites are beginning to imitate the ASP model by charging recurring, monthly subscription fees instead of charging one-time per-user software licensing fees (Trepp, 2000, p.32).

Advertising Revenue. Many B2B websites generate advertising revenue through traditional methods, such as the cost per thousand impression (CPM) method (Weller, 2000). If the website is highly successful at generating a critical mass of buyers and sellers on their website, advertising revenues become increasingly likely (Trepp, 2000). However, at least several analysts are becoming increasingly skeptical regarding the potential of advertising as a long-term revenue generator in B2B e-commerce (Trepp, 2000; Weller, 2000).

One issue that is extremely important in B2B Internet commerce is neutrality (Trepp, 2000). Advertising gives the appearance to customers of bias. This perception of bias may be particularly acute in the instance of B2B e-commerce. Thus, giving the appearance of neutrality,

particularly during startup, may be critical. Large advertising revenues from one company may also unduly influence decision-making at the host website. Advertising revenue in the B2B space is therefore problematic.

Value-Added Services Revenue. Value-Added Services could include credit, purchase order management, escrow, payment settlement and clearing, appraisal and inspection of materials, insurance of in-transit materials, warehousing, logistics, export documentation, letters of credit, and land, sea and air shipping (Trepp, 2000). It is quite likely that these services would not initially be furnished in-house, but would be provided through close affiliations with third-party providers. One example of this type of relationship is the outsourcing of credit and other financing services to a third party with expertise in that area (Trepp, 2000). The website offering these services would of course be a party to revenue sharing or a sourcing fee for offering these services to customers. This type of arrangement has the potential for strong revenue growth (Trepp, 2000).

Monetizing Information and Professional Services. Internet transactions are rich in the level and quantity of detail regarding buyers, sellers and their activities. The accumulation, processing and monetizing of transaction information represents a tremendous asset for B2B website.

Data aggregation will be a very viable, long-term revenue opportunity for exchanges, we believe. An exchange may collect data on every buyer, seller and transaction, then combine and recombine this information in endless standardized and customized ways, for buyers, sellers and others to purchase.

(Trepp, 2000, p.34)

Internet marketplaces, particularly those that sell software, will also typically provide implementation and training services for their customers (Weller, 2000). These services can be provided in-house or outsourced to a third-party. Other intellectual assets that could be monetized include internal intellectual capital, business development and consulting, technology consulting and training (Trepp, 2000). In other words, all of the information assets of the business, both intellectual (human) and transaction based (data) are capable of being leveraged for the organization.

Software Licensing and Sales. Many companies involved in B2B e-commerce, particularly those that are website platform providers, generate a significant amount of revenue from software licensing and sales (Weller, 2000). “Software revenues typically consist of an up-front license fee with a recurring revenue component related to maintenance that is usually between 15% and 20% of the license fee” (p.12). In addition, software vendors that provide marketplace platforms are increasingly structuring their licensing agreements to include a transaction fee from the platform operator based on volume (Trepp, 2000). This arrangement can lead to vastly increased revenues as trading volume in the e-marketplace increases.

It is important to note that the advent of the application service provider model is pushing software vendors away from one-time perpetual license fees toward monthly recurring subscription fees, a trend we view positively as it provides increased visibility into future revenue streams.

(Weller, 2000, p.12)

A current pricing model (Trepp, 2000, p.37) for a dominant technology vendor that provides the transaction software for a B2B e-marketplace is as follows:

License Fee (One Time Payment)	\$300,000
Yearly Maintenance Fee	18% of Above Fee
Revenue Share	3% of Transaction Fees (\$10,000 Monthly Floor)

Conclusion

The structural shift in the US economy that that has been hotly debated recently is for real. This shift is a direct result of a common platform for trade that is now being established. The implications of this shift will probably take the next several decades to be fully realized (Phillips & Meeker, 2000), but the transition is well under way. Just as financial markets impose a brutal discipline on their participants regarding the allocation of capital, so does the transparency of electronic markets begin to impose a new discipline on commerce (Phillips & Meeker, 2000, p.17).

There remains uncertainty regarding the final “equilibrium” business model in this new electronically mediated business environment. For example:

- (1) How disintermediated can our global economy become and what requires reintermediation?
- (2) How flexible can future distribution channels be with these new e-commerce hubs?
- (3) Which supply chains will become obsolete?
- (3) How much decentralization and consolidation remains regarding B2B e-commerce hubs?
- (4) What are the final pricing models that will survive the inevitable shakeout in B2B e-commerce?

One conclusion that can be drawn from this discussion is that the fundamental business models of the previous decades are under siege (Austrian, et. al., 2000). “Fundamental business

maxims utilized for years are falling and the entire global business economy is poised to be streamlined, disintermediated and wholly reintermediated anew over the coming decade” (p.5).

This article has presented a brief introduction to the present state of B2B e-commerce. It began with a brief overview of the current business models for B2B transactions. Next, the article examined of the different types of transactions that occur on B2B websites. Finally, the article examined the current revenue sources for these B2B models. It should be noted that this brief examination has occurred in the context of a turbulent business environment.

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Table One
Auction Types and Examples

Auction Type	Brief Description of Rules	Sample Company
English	Continuous Ascending Auction; bidders can see the high bid and can update their bids during the auction. Winner is the highest bidder and pays the price bid.	Onsale
First Price Sealed Bid	Bidders email in secret bids for an item; bids are opened simultaneously and the highest bid is declared the winner. No chance to update a bid once submitted, and winner pays the price bid.	The Chicago Wine Company; Timeshare Resale International
Dutch	Continuous descending auction; bidders can see current price and must decide if they wish to purchase at that price or wait until it drops. Winner is first bidder at the current price.	Klik-Klok Department Store; Bookbid
Continuous Double Auction	Similar to NASDAQ. Buyers and Sellers continuously view the market and prices, make real time offers, and the transaction clears at the market price.	Auction Depot; NASDAQ
Sealed Double Auction	Buyers and Sellers simultaneously submit sealed offers to buy and sell. Auctioneer opens offers and clears the market. The auction repeats several times to give a continuous market price.	Fastparts
Vickrey	Similar to first price sealed bid auction; winner is the highest bidder. However, winner only pays the price of the second-highest bid.	Antebellum Covers

Source: Beam & Segev, 1998

Table Two
Selected Transaction Fee Models

Company	Who Pays?	Example
Commerce One	Supplier	\$1 transaction fee per Purchase Order on average
VerticalNet	Supplier	5% of total transaction value
e-Steel	Supplier	Approximately 1% fee on total transaction value
MetalSite	Supplier	Approximately 1%-2% fee of total transaction value
PaperExchange	Supplier	3% fee on total transaction value
Chemdex	Buyer	Approximately 5%-6% transaction fee
Oracle	Supplier	Approximately 1%-1.5% of total transaction value

Source: Weller (2000)

