B2B E-Commerce:
Why it business should incorporate e-commerce

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E-commerce is a broad term covering the buying and selling of goods electronically. E-commerce is an extremely fast growing and successful e-market that is being taken advantage of by businesses, consumers, and governments alike. However, business-to-business transactions in particular hold a majority of the market in e-commerce transactions. Since business to business e-commerce has a high volume of sales in e-commerce we decided focus our paper on the business to business side of ecommerce. The following paper is a discussion on the history of e-commerce, web technology and information technology relating to business to business e-commerce, the advantages and disadvantages related to ecommerce, and the future of e-commerce relating to business-to-business e-commerce. This discussion is aimed at better informing a business professional in considering the adoption of business-to-business e-commerce within their business.

E-Commerce is defined as the “buying and selling of goods and services over public and private computer networks,” (Kroenke, pg 231). This definition is restricted to the buying and selling of transactions online. In a brief research of the history of e-commerce the initial term E-Commerce, was used to refer to any system that made available the buying and selling of goods electronically. This term has not changed over the years but the ways e-commerce can be used and the technology have evolved over the years. Business-to-business e-commerce began in 1968 “when what was called Electronic Data Interchange permitted companies to carry out electronic transactions,” (U.S. History Encyclopedia online). Electronic Data Interchanges (EDI) and Electronic Funds Transfers (EFT) in the 1970’s were the earliest electronic information systems
that were included in the term E-Commerce. They allowed for the transfer of purchase orders and invoices electronically, enhancing the distribution of goods and services. “It was not until 1984 that a standardized format (known as ASC X12) provided a dependable means to conduct electronic business,” (U.S. History Encyclopedia online).

As e-commerce grew in popularity there was a growing need for different methods of payment online. In the 1980’s automated teller machines (ATMs) and credit cards were then considered a part of E-Commerce due to the increase in popularity. The 1990’s included enterprise resource planning systems (ERP), data mining, and data warehousing also do to the increase in use of e-commerce. Then with in 1994, as the Internet gained popularity, E-Commerce became more prevalent leading to increase web technologies. In 1994 Netscape introduced a browser program whose “graphical presentation significantly eased the use of computer communication for all kinds of computer activity, including e-commerce.” (U.S. History Encyclopedia online). It took about four years to develop the security protocols and DSL to allow rapid access and a persistent connection to the Internet. The late 1990’s brought with it the establishment of Amazon.com that allowed books and a wide range of other products to be sold over the Internet. Soon after Amazon.com, E-Bay was established, another successful participant in e-commerce. In 1999, E-Commerce accounted for less than half a percent of total retail sales in the United States. In 2007, that statistic grew to over 3.5 percent. Business to business e-commerce, which will be discussed later attributed for over $400 billion dollars in 2000.
E-Commerce can be broken into two categories, merchant companies and non-merchant companies. Merchant companies can be subdivided into three other categories, including business-to-consumer, business-to-business, and business-to-government. In business to consumer companies, consumers enter a web site and are able to manage their own orders. In this case, consumers purchase goods or services themselves. If a person visits a web site to check the weather, no transaction has occurred it has to be a purchase. Business to business e-commerce, which will be discussed in later in greater length, occurs when raw materials and other goods are bought and sold and distributed between companies. When suppliers, distributors, and retailers sell goods to the government, these are business to government transactions. Although all of these merchant companies make up all of e-commerce, we have decided to discuss business to business e-commerce more specifically because according to research these sales are fast out pacing the other merchants in sales.

Although we will be discussing business to business e-commerce it is important to identify all other portions of e-commerce so that there is a complete understanding of e-commerce. Non-merchant companies include auction houses and clearing houses. An auction house is basically an online version of an auction. The web-site matches buyers and sellers over the internet. Sellers put up their products at a minimum bid price, for a specific period of time, or a buyout-price. Buyers can bid for the product, and win when time expires. The winner is determined by who the highest bidder was once time expired. A good example of an auction house is E-Bay. A clearing house is a non-merchant company that provides goods and services, at a specific price, arranges for the
delivery of the goods, but never takes the title of the goods. An electronic exchange occurs when a seller puts up a good for sale on a web site at a specific price, and buyers offer to buy. This type of clearing house is more similar to a stock exchange, where supply and demand affects the prices of goods, but there is no bidding like an auction house.

As was mentioned before business to business e-commerce has been growing substantially since the inception of e-commerce. The following sections will describe in detail what business to business e-commerce truly is. First the term business-to-business originated to describe the electronic communications between businesses or enterprises in order to distinguish it from the communications between businesses and consumers. Business-to-Business (B2B) e-commerce occurs when a business sells products and services to customers who are other businesses and also, incorporates transactions within the industry value chain. The products and services included are direct materials and MRO materials. Direct materials are products that are used to produce the actual product sold. MRO materials, which stand for maintenance, repair, and operations, are products or services that are necessary, but are not part of the particular product. An example of a business that uses these operations would be Starbucks. Direct materials used for this coffee shop franchise would be the coffee beans used to make coffee. On the other hand, the coffee machines used to make the coffee would be an example of an MRO material used.

Business-to-business E-Commerce is the most significant type of transaction conducted. “B2B e-commerce is where all the money is right now, accounting for
approximately 97 percent of all e-commerce revenues,” (Haag, Cummings). There is a higher volume of business-to-business transactions due to the longer supply chain. This is in comparison to the supply chain related with business to consumer e-commerce. This also means a higher dollar amount for transactions through business-to-business transactions. Also, corporate buyers and sellers are looking for ways to streamline product distributions through cutting costs and increasing transaction volumes. Through business-to-business e-commerce, buyers and sellers can get specific prices, shipping dates and other information easily and quickly. It allows businesses to get the most relevant information in a timely, efficient manner. There cannot be business to consumer e-commerce without the existence of business to business; therefore it is essential to analyze B2B e-commerce extensively. It is the fastest rising form of business conducted, and will ultimately eliminate the use of all outdated methods that underwent reoccurring setbacks. The efficiency and potential savings from incorporating B2B e-commerce have enlightened organizations at the highest level. By utilizing the web traditional barriers such as time, location, language, and currency have little effect on transactions between all businesses.

When businesses are acting as customers to other businesses, they are entering into an electronic marketplace, or e-marketplace. It is a virtual marketplace in which businesses buy and sell products, share information, and perform other important activities. Vertical and horizontal e-marketplaces are the two prevalent forms that exist in B2B e-commerce. A vertical e-marketplace connects buyers and sellers in a specific industry. Examples for this would be oil and gas, textiles, or retail products such as
clothing. Chevron and Texaco enter a vertical marketplace as Texaco supplies Chevron with gas and oil that is sold to the public. A horizontal e-marketplace connects buyers and sellers across many industries, primarily for MRO materials commerce. Further examples of MRO materials and services include office supplies and financial services. Google enters a horizontal e-marketplace with its suppliers for computers, printers, and any other material used to conduct business. Business to business e-marketplaces represents one of the fastest growing trends in e-commerce. The trend ultimately forces and aids businesses in constantly creating chain management systems, driving out excess costs, and collaborating with other businesses on new products or services.

In comparison to business to consumer e-commerce, business to business e-commerce purchases are much different in that businesses do not use financial cybermediaries such as PayPal to receive payment. Instead businesses will pay using financial EDI, which is an IT process used in B2B e-commerce, and these companies will often purchase large amounts of direct and MRO materials. When large purchases are made, businesses form relationships that allow them to engage and further activity outside of e-commerce. These relationships are what make up the marketing mix for business-to-business e-commerce.

The marketing mix in B2B is not similar to the generic strategies of B2C. In fact, the marketing occurs in the context of an e-marketplace, and usually establishes a business relationship within the two parties. Relationships among businesses in B2B are very important. These relationships are characterized by trust, continuity, and the integration of information technology (IT) systems used to conduct transactions.
Companies must provide the levels of integration of their IT systems. The goal is to use the IT streamline for the ordering processes for connecting each other’s supply chain management systems and drive out costs so both companies’ IT systems work closely together. Relationships such as these give bargaining power to negotiate prices, specifications, and delivery time. Unlike the lack of relationship established in B2C e-commerce, organizations engaging in B2B e-commerce usually establish long-term relationships with their suppliers.

Business to business e-commerce is proving to be fastest growing trend in this technological savvy world. Businesses from all industries and countries can gather to perform e-commerce functions, share critical information, and ultimately undergo some sort of action to complete the process.

Before adopting this system into one’s organization, it is important to analyze all aspects of business-to-business e-commerce. These include the web technology, such as the GXS, used to conduct transactions, security methods, such as encryption and Secure Sock Layers, to ensure company protection, and the potential harmful risks that may be involved when conducting e-commerce between businesses.

Web technology is an essential part of e-commerce. It is also important for the business-to-business portion of e-commerce. Without a website there is no e-commerce. Websites use Hypertext Markup Language, HTML, which is what determines the structure of the web page. With business to business the use of CXML, which is Commerce Extensible Markup Language is vital for communicating information about the product or service, which standardizes the exchange of catalog
content between the e-market place and the commerce websites. Also within the website there are hyperlinks, which are pointers to websites or pointers to other portions of the particular website being viewed. Basically a hyperlink is what is clicked on in the web page that sends you where you want to go on that web page, or will send you to another website that is linked to what you are looking at. These hyperlinks contain the URL of the web page, which essentially is the web address of the hyperlink.

Another web technology that is used in business-to-business e-commerce is called the GXS Trading Grid. The GXS Trading Grid is the, “leading global provider of B2B e-commerce solutions that simplify and enhance business process integration, synchronization and collaboration among trading partners,” (GXS website). The GXS Trading Grid has many technology components, which enables cost savings, reliability, reduced risks and productivity improvements. Some of the technology involved is the high throughput blade processor which enables more processing power which then lowers the cost. The high performance operating system is a Linux based operating system that is cost effective and enables concurrent access by different computers worldwide. The GXS Trading Grid is a vital part of business-to-business e-commerce due to the allowance of many companies being able to communicate with other companies effectively and efficiently. The GXS Trading grid is not the only technology that allows integration of multiple companies; there are many other smaller websites, or portals, in other countries that support international trade partners via the web.

Still another web technology that is beneficial to business-to-business e-commerce is Vortals or vertical portals. Web vortals is an industry focused website
which offers industry information, allows members to access a wider variety of suppliers and also allows them to sell their products or services to a larger audience. This web technology is beneficial for businesses in order for them to compete with other businesses. The intranet is another web technology that is a market place where suppliers within networks can buy and sell from each other.

With more and more businesses shopping other businesses on the web, new technologies are being developed all of the time. These new technologies are developing due to competition on the Web. One of the new technologies is iPix’s 360-degree images, which gives greater dimension to images available online. Ajax technology, another new technology, “pulls relevant data forward seamlessly, providing shoppers with a smooth, consistent view and sense of interaction, rather than the experience of clicking on or through multiple pages to accomplish a task,” (Fry, 2007). The use of these new technologies can make all the difference in competing against other online shopping sites.

Technology, as was mentioned, is an important part of e-commerce. Another factor that is essential for e-commerce is information systems because it is an effective tool in the competitive strategy of e-commerce. According to ecommercetimes.com, “the line between traditional B2B and B2C is blurring,” (Burger, 2006), which is leading to an increase in use of information systems. With this fact, and the increased use of business to business e-commerce, many companies want a more business to consumer way of shopping. This means that, “B2B e-commerce initiatives are now including features more typical of B2C offerings, such as ratings, reviews and
promotions." (Burger, 2006). By using information systems companies can find out which company is visiting their Website, and what they are purchasing. Not only are the companies finding out who is visiting the Website, but also they are measuring how long customers remain on the site. Also with information systems, customers can now leave reviews and comments on the site for new customers to view. The use of information systems can, “help create online brand immersion, increase customer loyalty and drive repeat sales,” (Fry, 2007). Also used in e-commerce is RFM analysis. RFM analysis is a way of ranking customers by their purchasing patterns to determine which customers are: recent shoppers, frequent shoppers and how much they spend. By using this analysis in B2B e-commerce, businesses can determine which business they need to market to in order to keep them shopping with their business.

Another technology that is essential to business-to-business e-commerce is information technology. Information technology involves an enormous part of the interactions between businesses, by using a broad range of networks and databases. Information technology is defined as “the development, implementation, and maintenance of computer hardware and software systems to organize and communicate information electronically.”(Webopedia). Today, information technology can be traced to everything from simply placing orders to receiving faxes. One of the central types of groups who use information technology is between businesses. Electronic Data Interchange (EDI), electronic fund transfer (EFT), and secure socket layer (SSL) are the three types of information technology which businesses use. EDI deals with the implementation and types of information shared between businesses. Electronic fund
transfer refers to the way payments and funds are collected, while secure socket layer is the way the information is kept secure and private between businesses. All of these are important for business to business e-commerce and its success.

Electronic data interchange is useful for businesses to use between each other because it is more cost efficient, saves time, and reduces labor. EDI provides computer-to-computer exchange of information much faster than paper documents, and faster transaction means better efficiency. Without using paper, inventory levels will become more up to date, meaning that the company will have less out-of-stock items in their warehouse. The process of using EDI does require some software and external necessities.

Another form of information technology is the use of VANs. When a business wants to purchase an order from another business, the order is securely transmitted through a “VAN” or through the Internet. VAN stands for “Value Added Network” and is a hosting service that operates as an intermediary between two businesses. In other words, a VAN is like a personal post office that connects one businesses VAN to a different businesses VAN. The VANs then make sure that the messages or transactions are sent and received between the two. Since many businesses interact worldwide, many VANs require global footprint with capabilities that extend worldwide. Security is a big part in the process of EDI, and passwords, user ids, and encryption are established in order to prevent fraud and retain important information.

Using a technology called electronic fund transfer, or EFT completes electronic payments and collections between businesses. EFT eliminates the process of using
paper check payments and collections between businesses. It is a much more efficient way of providing payments, while at the same time can be safer and secure. There are many different types of EFTs, such as; electronic wire transfers, ATM transactions, direct deposit of payroll, business-to-business payments, and tax payments. However, when evaluating B2B commerce, electronic wire transfers, and business-to-business payments would be the only two types of EFTs used. Wire transfers are used to transfer or “wire” funds from the bank account of one business to the bank account of another business. It was first developed to transfer money from one business to another. Banks use this method most commonly, in order to make accounting adjustments between different branches or other banks. This type of transaction makes sure both accounts have positive identifications, making it so it is more secure and less prone to fraud.

Transactions are an important part of business to business e-commerce and despite the type of transactions, most of them are taken through an automated clearing house (ACH) operator. The ACH operator is a central clearing facility that is ran by a Federal Reserve Bank or private organization. “The ACH network is a nationwide system for inter-bank transfers of electronic funds. It serves a network of regional Federal Reserve banks processing the distribution and settlement of electronic credits and debits among financial institutions.”(Patiwat, 46). The ACH transactions are saved as an ASCII file format in order to meet the ACH specifications. Each ACH transaction carries several electronic transactions that either have a credit or debit value. The National Automated Clearing House Association, who is responsible for making the rules, regulates the ACH network.
Secure sockets layer, another information system technology, is a type of protocol created by Netscape, in order to transmit confidential and private documents over the Internet. Its intention was to securely transmit data by routing it through HTTP, LDAP or POP3 application layers. Making use of the TCP by using it as a communication layer created SSL. This is so that it can offer a connection between two points over a network, as well as making it authenticated and secure. Below is a diagram illustrating SSL between application protocols and TCP/IP.

![SSL Diagram](image)

There are three key components that help make the encryption safe when ordering, or transferring information privately between two businesses. The first is that it requires the client and the server to be authenticated. The second component ensures data integrity; meaning data cannot be tampered intentionally or unintentionally during a session. The last part is the fact that the data is secure while in transit between the client and the server, and enabling only the intended recipient to read the transferred data fulfills this.

Using Secure Sockets Layer’s become a vital part in information technology by creating a safe, reliable way to communicate between two businesses. The Secure Sockets Layer enables businesses to give out account numbers, ordering information,
and other private information without the worry of someone else seeing the information communicated. Electronic Fund Transfer helps the business-to-business commerce by allowing businesses to operate in a faster, reliable, and cost efficient manner by transferring funds electronically instead of using paper. Electronic data interchange allows businesses to function in a better, more organized method by transferring data electronically between one another. EDI allows businesses to interact with one another more efficiently because they will save money, time, and labor. Overall, electronic data interchange; electronic funds transfer, and secure sockets layer are the three key elements that form information technology in business-to-business E-commerce. All of which help in the increased success of business to business e-commerce.

All of the new web technology and information system technology supporting e-commerce brings with it both advantages and disadvantages. This is true for most any new technology. Business-to-business e-commerce in particular is a fast growing sector, which already holds almost 2/3 of the e-commerce business today. That is why it is important to closely examine both the advantages and disadvantages of business-to-business e-commerce before choosing to participate in it.

Some of the advantages of incorporating business to business e-commerce is it will provide a business with the opportunity to operate within open-networks and increase sales. These open-networks are “built around the open standards and communication infrastructures of the Internet,” Dai, 112). With these open-networks in place, technology requirements for a supplier to participate in a market are greatly decreased. This allows for easier access to the market for the supplier, and enables the
buyer to add more suppliers at a decreased cost. These potentially larger pools of business then provide more buyers for each supplier, and more choices among suppliers for each buyer. This advantage will help with the increase in business that businesses will get by implementing e-commerce.

Two functionalities of business-to-business e-commerce that have helped to increase its effectiveness are e-catalogs, reverse auctions and forward auctions. E-catalogs improve the effectiveness of business by aggregating product information, (Dai, 110). An e-catalog is far superior to a print catalog in that it provides much more information in one space. E-catalogs can also enable a user to continually refine searches, narrowing and broadening them as needed. This also offers the user a timelier means of conducting business. The availability of reverse auctions and forward auctions improves business by matching supply and demand. Through enhanced information sharing between businesses, they now have access to an abundance of information allowing suppliers to better schedule production in line with the demand of buyers.

More broadly e-commerce improves market efficiency, but these aspects still significantly impact business-to-business efficiencies specifically. “E-commerce improves market efficiency by disintermediation, improved flow of price information, and knowledge of price elasticity obtained directly from the customer,” (Kroenke, 254). Disintermediation is the elimination of middle layers in the supply chain (Kroenke, 232). Therefore businesses are able to buy products and services without having to pay extra fees for the use of a distributor or retailer. E-commerce improves the flow of
price information by allowing users to search any number of websites enabling them to better compare prices. Users can also avoid paying extra money for shipping fees and sales tax by comparing different businesses price information in one search. Finally, e-commerce improves market efficiency through knowledge of price elasticity obtained directly from the customer. “Price elasticity measures the amount the amount that demand rises and falls with changes in price,” (Kroenke, 234). When a company uses on-line auctions, they are able to record all the bids at what prices for a product, allowing improved measurement of price elasticity.

At this point, e-commerce may look great to the business contemplating its use, but first a discussion on some of the disadvantages associated with business-to-business e-commerce is important. One disadvantage to business-to-business e-commerce is that security weaknesses pose a constant threat. The open-networks businesses operate within are always susceptible to “Viruses, security intrusions, and inability to provide services because of volume attacks,” (Business Encyclopedia online). These problems are present in every e-commerce sector and are not going anywhere.

Another security issue faced by businesses conducting e-commerce is that information sharing is limited in some cases due to the openness of e-markets as well as security concerns. Transactional data, which is valuable to suppliers and buyers, would still be available, but information such as buyer inventory levels will be lost. Information on inventory levels and sales data is important as it adds competitive value to a business.
Research has also been conducted concerning the ease in working with user interface components. It has been found that such user interface components as toolbars and keys can be overwhelming and confusing to the user. If a user has trouble using a businesses web page not only is the user’s time lost, but the business may lose a current or potential customer. This disadvantage can be avoided if web pages are structured appropriately, although, there still may be conservative businessmen out there who have no familiarity with e-commerce, let alone working with user interface tools.

Along with this mindset, vendor trustworthiness is sometimes compromised by e-commerce through its anonymity, impersonality, and automation, (Lumsden, 471). Although, in some cases businesses have benefited from e-commerce, in that it enhances relationships between businesses due to improved accessibility. This disadvantage also depends on the businesses that are interacting and their own personalities, or need for in person communication.

No one is sure exactly what the future of business-to-business e-commerce holds, the current advantages and disadvantages may prove to be obsolete in the near future. The future of business-to-business e-commerce is changing. According to ecommercetimes.com business to business e-commerce:

behave much closer to an application, and include packaged components and business logic far beyond the shopping cart," added Mendelsohn. "They can now also natively handle complex catalog structures, merchandising, campaign management, and sophisticated selling scenarios to drive revenue and efficiency. The vendors tap into
their respective core strengths to enhance their commerce platform offerings." (Burger, 2006).

Some critics believe that e-commerce is headed for fall; still others believe that it is not declining but instead is changing into something new. This something new is called m-commerce, which is mobile commerce. M-commerce is a way to achieve commerce using a mobile device, such as a cell phone or a PDA. “M-Commerce gives traditional media (newspapers, magazines, TV) the opportunity to supply different pieces of information to millions of users, and – in the end of the day - to earn money from re-using their content,” (Recklies, 2001). Different new technologies have been developed based on this new trend. One new technology is Amazon.com’s Text BuyIt, which is a new way to shop by text message. Basically you send Amzon.com a text message with the item you are interested in or a UPC code, they then send a return text message with the price. Basically every aspect is done over text message. The word mobile commerce is nothing new, however when the dot.com bubble burst, mobile commerce went away but is steadily making a come back as a new way to shop. The reason for this is “several trends are helping to drive momentum for consumer purchases over mobile phones. They include the growth in mobile data services, advances in handsets and operator networks, consumer acceptance of the Internet as a purchasing and payment vehicle, and growing consumer interest in mobile banking, (Charul, 2008). Not only is it being used in the business to consumer e-commerce but it is also being used for business-to-business e-commerce. According to a study done in March 2001,
the estimated business-to-business e-commerce sales were estimated at $100 billion in 2003, (Recklies, 2001).

E-commerce transactions, especially business to business e-commerce, are taking over the world. Most businesses are finding that the benefits associated with business-to-business e-commerce far outweigh the disadvantages (for most). Through this discussion a potential user of business-to-business e-commerce should see that although e-commerce seems great, it is a sensitive topic that must be researched and instituted appropriately in order for the business to be successful. However, we believe that in order for a business to fully realize its potential it should participate in business to business e-commerce. This is due to the increase in sales that B2B e-commerce is already seeing and due to the fact that so many companies already are participating in e-commerce.
Works Cited


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