

e-BUSINESS AND THE SUPPLY CHAIN MANAGEMENT

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Abstract

With an increased competition in the marketplace, one can observe an increase in product offerings in the market. This should lead to shorter product life cycles. It has therefore become essential for retail firms to better manage their supply chain process so that they can better control the supply and demand aspects of their product portfolio.

It is, however, interesting to note that with the advancement of information technology, the trends in determining demand and supply forecasts are changing. Experts have now successfully identified the best practices developed and maintained by some of the leading retailing firms. They have utilized this particular information to develop more effective solutions for supply chain management. In order to bring future improvements to the supply chain management of an organization, it is essential to develop an information system of the highest quality, operated and maintained by well-qualified and trained professionals. Developing a supply chain, which is responsive enough to the changing business environment, will benefit from the new developments in the market and will be able to effectively manage the inventory according to the demand and supply trends of the market.

INTRODUCTION

1.1 Purpose of the Study

The Internet era has revolutionized not only the way we conduct business but also the methods adopted with the management of the supply chain, such as the way businesses communicate with each other and how each member in the supply chain is impacted. The purpose of the study is to analyze how e-Business has influenced the supply chain management with reference to its past trends, present operations and future techniques.

1.2 Importance of the Study

The rise of the Internet, and attendant information technologies and their application to business, has engendered a great deal of hype. Commentators have, among other things, heralded the arrival of a new economy and foretold the total transformation of the way people conduct business through online shopping. It has also completely altered in the methods used in the demand and supply chain process.

e-Business has focused on new information products and networks. e-Business has emphasized the cost saving significance of the Internet and the attendant technologies when doing business, this effects the costs of transactions, internal management, and marketing of products. Reactions to the opportunities and challenges of the Internet have embraced every detail of the business environment.

1.3 Rationale of Study

This paper will discuss about the changes that e-Business has brought into

the supply chain management's field concisely. This will cover the whole gamete of management and operation methods. This paper will not only focus on the recognition of the technological breakthroughs, but also the changes that have taken place with the industry after the introduction of e-Business concepts into supply chain management.

1.4 Overview of the study

From an economics' point of view, we can explain that e-Business is a significant new way of conducting business. It raises cost issues regarding existing transactions. It also impacts traditional internal and external supply chain management issues.

Industries have begun to modernize by embracing new management themes in order to accommodate the necessity for face-to-face interaction, resulting in fast shipping time and reduced warehousing costs. This paper will also discuss the current trend of supply chain management styles as well as what benefits the industry can gain by conducting supply chain management electronically. This paper will also discuss what can be done in the future in order to increase competitiveness in the market.

In the current competitive markets, the increased level of globalization and expansion of industries operations to a global scale has facilitated the ability for consumers to easily gain price comparisons.

This has become increasingly important to companies. Manufacturers must fully integrate their overall operations so that they can develop a competitive edge in terms of timely delivery, efficient customer service, and improved performance.

The new technologies adopted have made the task of supply chain management

more effective and easier. It is interesting to take a look at how Information Technologies systems functionally helps enterprises in planning and managing all these supply chain and inventory management activities.

These supply chain management issues are significant to all kinds of firms, especially for retailers and manufacturers; supply chain management could even be the most important part of the business. If they manage their supply chain systems better than their competitors, they can gain bigger market power.

Therefore, in order to face competition and challenges, industries must build an efficient electronic system to meet both internal and external wants and needs.

LITERATURE REVIEW

2.1 What is Supply Chain Management?

Supply Chain management is the process of managing the movement of goods from suppliers to buyers.

Supply Chain Management (SCM), also known as supply chain integration or supply chain optimization, is the process of optimizing a company's internal practices in interacting with suppliers and customers in order to bring products to market more efficiently.

SCM functions encompass demand forecasting, sourcing and procurement, inventory and warehouse management, distribution logistics, and other disciplines.

The SCM procedure repeatedly succeeds where Enterprise Resource Planning (ERP) fails. In order to correctly forecast inventory levels, the supply chain management system needs ERP's database cooperation (Laudon & Laudon, 2002). A powerful SCM includes the systematization and optimization of

operational and strategic information and methods within and between enterprises.

SCM is connected with optimizing business processes and business value in every nook of the outspread enterprise, from the supplier's supplier to the customer's customer.

SCM can utilize e-business concepts and Web technologies to bring the organization upstream and downstream. It is the strategic approach that combines all steps in the business cycle, from the beginning of the product design and the acquisition of raw materials for production to shipping, distribution, and warehousing, until a finished product is sold to the customer (Laudon & Laudon, 2002).

2.2 What is e-Business?

Laudon and Traver have defined e-Business as "the digital enablement of transactions and processes within a firm, involving information systems under the control of the firm, which doesn't include the company's revenue" (2001, p.7). For example, a company's inventory management system and warehousing do not affect its revenue directly, such as its sales strategies and models. It comes under the domain of e-Business. However e-commerce does affect revenue.

By these points of view, it seems that a firm's e-Business system can also support e-Commerce for external value exchange. Although e-Business has been defined as an electronic information management system for a company's internal needs, some people still think the scope of e-Business transactions should cover e-Commerce. e-Business is used to manage a firm's internal information. However, in order to be effective e-Business also needs to be supported by huge amounts of external information. In this instance, a manufacture's inventory management

needs to know from its suppliers the time-line for putting the materials on the production line. On the other hand, the production time-line relates to the products' shipment date. Then those solutions extend to the customers and customers' customers and complete the business. By this theory, e-Commerce could be seen as the rear end of e-Business. Given this point of view, it does not only make e-Commerce's field smaller, it makes e-Commerce a part of e-Business.

People are still arguing about the definition of e-Business and e-Commerce, but from each of their incidence, it seems that e-Business is bigger than e-Commerce. This paper would support the view that e-Commerce is part of wider e-Business applications.

2.3 The Major types of e-Business

There are several types of business methods in today's e-business scopes, such as "Business-to Consumer (B2C), Business-to-Business (B2B), Consumer-to-Consumer (C2C), Peer-to-Peer and Mobile, or m-Commerce" (Laudon & Traver, 2001, p.13).

2.3.1 Business-to Consumer (B2C)

The B2C model can be easily seen from many web sites because it sells the products, information and service to consumers and gains the revenue. The B2C model involves a business selling directly to consumers via a web site. This direct selling is the main reason that companies create these web sites. Also from these web sites' revenue models, online businesses can be sorted into five different categories such as "advertising revenue model, transaction fee revenue model, subscription revenue model, sales

revenue model and affiliate revenue model" (Laudon & Traver, 2001, p.61).

Advertising is the most familiar way for a web site to make profits. It means a web company provides the service for other companies or web companies to put the advertisements on its web site and receives payment from those companies. For example, Yahoo.com has an ad on the top of its home page. Other web sites utilizing advertising revenues allow businesses to place listings on the site for a fee. This is an advertising revenue model. Advertising revenue models also often works in conjunction with other models. For example, web sites with a subscription revenue model may primarily sell subscriptions. At the same time, they also often sell advertising space. Major retail sites with a sales revenue model also often include an advertising revenue model as part of their retail model. Amazon.com is a good example, where they are primarily a retail site with a sales revenue model. However, Amazon also allows companies to advertise their products by paying to be listed as featured products. This generates advertising revenue, making Amazon part sales revenue model and part advertising revenue model.

When using the subscription revenue model, a company provides its customers the service to reach information such as consumer reports, online newspapers, and online magazines. Subscription revenue models also include web sites that provide customers with access to work opportunities. For example, elance.com provides access to work opportunities via the companies or individuals that list projects with the web site. Elance.com customers subscribe to have the opportunity to bid on these projects. Another type of subscription web site is the consumer information web site. This

includes house rental web sites and job searching web sites. At these sites, consumers choose to pay different amounts of money in order to access different levels of the service and reach the information.

When using the sales revenue model, a company makes its revenue by selling products, services, or information to the customers. Examples of this type of company web site model are Wal-Mart.com, Amazon.com, and Towerhabby.com. Companies utilizing the sales revenue model can be divided into two major types, commonly referred to as click-and-click retailers and brick-and-click retailers. Click-and-click retailers are those companies that sell products only via the web site. Amazon.com is a good example, where the company was created specifically to sell products via the Internet. The second type is brick-and-click retailers. Brick-and-click retailers are those companies that sell products via a web site and via a physical store. Wal-Mart is an example of this, where Wal-Mart was a physical store that expanded to create a web presence so they could also sell via a web site. Toys 'R' Us is another example, where Toys 'R' Us have formed an agreement with Amazon, who now sell their products via the amazon.com web site. The sales revenue model of brick-and-click retailers can actually take two forms. The first is the same as for click-and-click retailers, with the web site designed to create revenues by selling products. The second involves the web site supporting the retail store, such as by providing resources and information or by promoting the products that sell via the retail store. A good example is the motor vehicle web sites such as Toyota.com and Honda.com. These web sites are not designed for the

actual sale of vehicles, since few people are likely to make such a major purchase over the Internet. However, these sites are designed to provide the resources and information that potential customers are looking for. By providing this information, these web sites support the sales revenue model, while the actual purchase is made via the retail store. Other brick-and-click retailers have web sites that promote both web sales and sales via physical stores. Nike.com is a good example, where individuals can purchase products directly from the web site. Nike.com also promotes the products and provides information to support sales via retail stores.

When using the transaction fee revenue model, a company makes its revenue by offering customers a place to complete a business transaction and the web site charges both the seller and buyer, or only the seller a transaction fee. An example is paypal.com, a service that allows easy transfer of money between any two individuals or businesses with an e-mail address. Paypal.com makes its revenue by charging a transaction fee when any account holder withdraws money from the paypal account.

When using an affiliated revenue model, a company drives its users to other web sites where the user may make a purchase. The original web-based company may receive a percentage of the sales from the web sites to which the customers were referred. An example of a company using the affiliated revenue model is Suite101.com. Suite 101.com attracts consumers by providing articles on various topics. These articles are then accompanied by links to related products, especially books provided by Barnes & Noble. When consumers purchase the

products from Barnes & Noble, Suite 101 receives a percentage of the sale.

After a history of web company failures in e-Business phase I, web sites began to use more than one revenue model in order to increase their revenue and also expand the business into different markets. For example, Kimo.com.tw was an online portal and made its revenue simply through the advertising revenue model. Unfortunately, through the advertising revenue model Kimo.com could not make enough money during e-Business phase I and had to sell to Yahoo.com as Yahoo-Kimo.com.

In order to make Yahoo-Kimo.com's business profitable; Yahoo-Kimo.com, they went into the technology goods market in 2001 and started the Internet online auction marketing place before e-bay.tw did in Taiwan in 2002. Yahoo-Kimo.com offers its users a fully personalized web environment. Users can add more services on their web pages, such as online stock trading, a bigger email account, and sending text messages to cell phones by paying extra fees.

Finally the strategy of using the diversified revenue model allowed Yahoo-Kimo.com to become the most profitable online company in the 2nd quarter of the year 2003 in Taiwan.

Amazon is another example of a company using a diversified revenue model. Amazon.com was initially based on a sales revenue model, where book sales provided revenue. Amazon.com now also includes an advertising revenue model, where companies can pay to have their products advertised as featured products. Amazon.com now also includes a subscription revenue model, where it sells magazine subscriptions. Finally, Amazon.com now also includes an affiliate revenue model, where it partners

with companies producing various products such as electronics and clothing, creates sales of those products, and receives a percentage of sales.

2.3.2 Business-to-Business (B2B)

*“Before the Internet, business-to-business transactions were referred to simply as trade or the procurement process. The term **total inter-firm trade** refers to the total flow of value among firms. Today we use the term **B2B Commerce** to describe all types of computer-enabled inter-firm trade such as the use of the Internet and other networking technologies to exchange value across organizational boundaries”* (Laudon & Traver, 2001, P654).

Companies have been using electronic technologies such as Automated Order Entry System B2B commerce since the mid-1970s. In the first stage of B2B e-business, companies could use telephone modems to send orders or requests to suppliers to reach the goal of time to market and also reduce the cost of inventories. These systems really benefited customers, resulting in cheaper product prices.

By the late 1970s, **Electronic Data Interchange** (EDI) entered into B2B commerce. In this stage of B2B e-Business, companies could share the database with each other through invoices, purchase orders, shipping bills, product stocking numbers (SKUs), and settlement information among a small number of firms. Industries could exchange information and make B2B commerce from seller-side solutions become buyer-side solutions. Because sellers could receive more information from their suppliers, it not only helped their customers but also helped sellers reduce the cost of serving their customers.

In the mid-1990s, web technologies broke into B2B commerce. Many companies have since built up their B2B commerce web site for their customers. A B2B commerce web site looks very much like the B2C commerce web site such as, Wal-mart.com, Amazon.com, and Towerhabby.com. The B2B web sites are not for the public as are B2C web site; it is only available to business partners or suppliers and companies. Because these web sites help industry reduce the costs of managing their orders and use less employees to take care of customers, Laudon & Traver (2001) believe that there will be significant growth of B2B commerce from the year 2001 to 2006 and that this type of commerce will grow from about 4% to about 36% of total inter-firm trade in the United States.

B2B commerce also extends to organizations that operate with the various departments of the company existing as separate companies. This is commonly referred to as a network structure. With the aid of information technology, the various companies interact to complete the various transactions necessary for overall functioning of the network.

A similar type of B2B commerce occurs with virtual organizations, where a virtual organization is defined as "an organization that coordinates economic activity to deliver value to customers using resources outside the traditional boundaries of the organization" (Ball & McCulloch, 1999, p. 609). A virtual organization has one central office that coordinates the activities of the various functions necessary for the operation of the business. These various functions are performed by various companies that act as contractors. For example, a virtual organization may contract one company to manufacture a product, another to

distribute the product, another to market the product, and another to manage the financial affairs related to the product. This gives the virtual organization the opportunity to be flexible, as none of the companies are actually owned by the central office. This aspect also means that it is a way to operate a business with low risk and with a low input cost. With the business world changing rapidly and not showing any signs of slowing down, the virtual business may become a popular form in the future. In addition, the Internet and computer-enabled communication make the virtual business more and more feasible.

2.3.3 Consumer-to- Consumer (C2C)

C2C commerce helps consumers find and sell goods to each other as an online market provider. For example, the online auction web site, ebay.com provides a web space for both buyers and sellers (consumers and consumers). Sellers can post the goods that they want to sell on ebay's web page and ebay charges sellers a percentage on the prices of goods sold. As an online marketplace provider, ebay does not need to take too much control of these goods on its web pages and allows users to communicate to each other. Most of these types of online marketplace providers don't provide any payment system for their users because if the company built a high security payment system this could be very expensive. Users need to make a payment by sending a money order or personal check, or through other payment systems from third parties.

2.3.4 Peer-to-Peer (P2P) or Mobile Commerce

P2P commerce provides its users the software to install in the users' pc and allows the P2P provider to use the pc along with the company pc as a super computer. Some of P2P software could work together for science research while the users are not using their computers and users will have free access to use the web site's resource online. Using another type of P2P commerce, users can search whatever kind of entertainment resource they are interested in through the P2P software's search engine and download music, pictures, movies, and documents from other people's computers that also have the same P2P software installed.

Mobile commerce refers to the use of small mobile devices to send and receive information. This includes devices such as cell phones, pagers, PDAs, and game players. This is closely linked to P2P commerce, as P2P is the major method by which such devices send and receive information.

2.4 What are the Effects of e-Business on the Supply Chain Management?

A huge Gross Domestic Product (GDP) deficit between America and Third World countries has been evident since the early 1970's. As the result, many American companies have decided to either close their production lines in America or move their factories to lower cost countries or they have bought products from Asian manufactures based in Japan, Korea, and Taiwan. This enabled them to gain bigger marketing power by gaining access to a cheaper production price. The supply chain has lengthened from a few hundred

miles to at least ten thousand miles but the product prices, in addition to shipping costs, are still cheaper than before they made this change.

In the 1970s, finding a manufacturer, or starting a new company, in another country is not easy, especially when facing cultural differences and legal issues. Also, bringing the products across the Pacific Ocean back to the United States can be very difficult because more third parties are involved in the supply chain. Information from Asia is not easy to find and much of the secondary information could be deemed useless or incorrect. These difficulties had brought some new jobs into the business (supply chain environment), such as brokers and agencies. In the first stage of business globalization, during 1970 to 1980, brokers and agencies had done a good job with helping companies on both sides of the Pacific Ocean. They provided the manufacture's information to American companies and brought American business to Asian manufactories.

Though this new pattern of the supply chain dealing with brokers and agencies had satisfied the demand from consumers in the United States and also brought huge revenue to Asian manufacturers. Marketing is about competition such as price, promotion, product, and placement. In the 1980s, the growing GDP in Asia had raised price of products cast a subsegment decline in companies' profits. Once again, in mid-1980s, some companies decided to move their orders to other undeveloped countries such as China, the Philippines, and Vietnam. The second move seemed enough to keep the products' prices as low as consumers demanded at the time. However in the 1990's, the usage of the Internet gave the

consumers huge leverage to compare prices from different sources.

The Internet did not only give consumers more power to compare products' prices, but also allowed companies to find more distributors easily. Also, American companies and Asian manufactures could easily reach each other without the necessity to pay commissions to agencies and brokers. This change has shaken up the whole supply chain environment because the Internet has collected huge amounts of information together for every one of us. Some industries have started to build up their internal information systems to connect the external web base delivery levels of need and to reach the goal of customization and personalization. The web-based applications have impacted brokers and agencies heavily and, as a result, forced some of them to go out of business. If web based applications can provide information to everyone in the market, the next stage of the supply chain in e-Business will concentrate on reducing the length of transaction process, and more distributors and retailers will face challenges. In the following chapter, a closer look at some examples will be presented and the mode of the current trend of supply chain management in e-Business will be better securitized.

METHODOLOGY

3.1 Stage I: The Chain Reaction of e-SCM System

After the first and second chapter, the concepts of e-business and SCM have been presented. Now, it is time to take a look at an example. As the topic of the paper, the influence of supply chain management should not affect only

distributors, but also every one that has a role in the supply chain environment.

3.1.1 Case study

Levi Strauss is a company that was once highly successful and highly competitive in the denim jeans market. Like many companies, as times changed, Levi Strauss found that its success levels were rapidly declining. In 1996 Levi's sales reached their peak at \$7.1 billion. In 2002, their sales had declined to a low of \$4.1 billion (Girard, 2003). The company's market share followed the same trend decreasing from 18.7 percent in 1987 to 12 percent in 2002 (Girard, 2003). This decline in the market is not unlike what has happened to many other companies that have not adapted as times have changed. This is especially related to the increase in competition in the market. This gives consumers more choices and unless a company can provide a certain benefit more effectively and at a lower cost than the competition, business is almost certain to begin to decline.

Levi Strauss recognized their problems and began to take action. The first step involved responding to market needs and providing a less expensive product in a more convenient location. Based on this idea, Levi Strauss introduced their Signature jeans line, a new line with a more basic jean product for a lower price. The new product also required a change in distribution, with Levi Strauss recognizing that the product had to be more accessible and more suited to the way the target market shops. Based on this, Levi Strauss teamed up with Wal-Mart, who will stock their product to provide customers with easy access to the product, while providing Levi Strauss with the volume of customers they need.

This business decision then had a major impact on Levi Strauss's supply chain. Before the decision to sell their products via Wal-Mart, Levi Strauss stocked via the smaller department stores such as Macy's and J.C. Penney. While there are over 200 Macy's stores and over 1000 J.C. Penney stores, this is small compared to the number of Wal-Mart stores, which is over 3400 (Girard, 2003). The mass market stores such as Wal-Mart also have different requirements than the smaller retail stores, making the supply chain even more essential to Levi Strauss's success.

The focus on the supply chain began with a whole new approach to supply chain management. As Girard (2003) notes, "Being a supplier to Wal-Mart demands a certain level of performance – and cost control. Wal-Mart drives you to work with your supply chain to put the same requirements on your suppliers that Wal-Mart puts on you." This approach was not something Levi Strauss was familiar with and required a major rethinking. Control was one of the major issues. As Girard (2003) notes, "At Levi's, executives couldn't track where its product was moving in the pipeline – how many pairs of jeans were being manufactured in which factories and how many were sitting in trucks or in distribution centers." This represents a major control issue, since a company cannot control the distribution process if it does not have the information required to know what is occurring. This lack of information and control resulted in a poor performance, with only 65 percent of Levi Strauss's products reaching the customers on time (Girard, 2003).

Chief Information Officer, David Bergen addressed these problems, implementing information technology that allowed executives to be provided with the

information they needed to control the distribution process. This included implementing demand replenishment systems and forecasting technology. These systems allowed executives to see at a glance how the products are selling in comparison to competing products, how products are moving in the distribution chain, how many products are available for sale, what the demand is at the stores, and whether the supply of products is meeting demand (Girard 2003). This information technology gave Levi Strauss the information and control they required to manage their operations both for their own benefit, as well as to meet the needs of Wal-Mart. Girard (2003) provides an example of the benefits of the system where it refers to the stocking of Stain Defender pants in the third quarter of 2002. These products were expected to sell around 2 million pairs, but information on sales figures revealed that sales would be much higher. This information allowed Levi Strauss to quickly respond and increase manufacture and distribution of the products. This resulted in two major benefits. Firstly, they were able to take advantage of the increased demand and supply that demand to increase sales. This resulted in Levi Strauss quickly recognizing an opportunity and taking maximum advantage of it. Secondly, they were able to increase supply so that Wal-Mart shelves would remain stocked. This was important in continuing to meet the needs of Wal-Mart.

This is an example of why effective supply chain management is so important in retail businesses. Levi Strauss is relying on its relationship with Wal-Mart as part of its success strategy, as Wal-Mart provides the access to consumers required. Wal-Mart's ability to provide this level of consumers also puts them in a strong

position and means they can make demands of the companies they wish to stock. For Levi Strauss, they are required to meet the needs of Wal-Mart, which will in turn ensure their own success. One of the major requirements of Wal-Mart, and of the many other major retailers, is that their suppliers be reliable so that the shelves are always stocked. This means that Levi Strauss's success depends largely on their ability to manage their supply chain, since an inability to supply their products in a reliable manner would severely limit the likelihood of a continuing relationship with Wal-Mart.

Other changes made by Bergen to improve the supply chain included developing scanning tools for manufacturers to use to check the accuracy of cartons ready to ship and implementing AS2 technology to allow exchange of EDI transactions with Wal-Mart, with this supporting collaborative forecasting. These changes illustrate how technology allows the various companies in the supply chain to interact and work together. Wal-Mart prompted the changes in Levi Strauss and Levi Strauss then prompted changes in their suppliers. This illustrates that technological improvements in regards to the supply chain often have a flow-on effect.

The end result for Levi Strauss so far is a much improved supply chain, where control and information issues have been largely improved by the use of information technology. These improvements were significant enough that Wal-Mart and Levi Strauss decided to go ahead with the stocking of the new Signature line of jeans. The end result for Levi Strauss is a long way from being known, but information so far looks promising. Whether or not the partnership with Wal-Mart is successful, it is clear that the

improvement to the supply chain has been significant.

3.2 Stage II: The difficulties of Building an e-SCM System

A web enabled supply chain management system is a positive solution for enhancing supply chain management. It allows the companies in the supply chain to communicate easily and effectively with each other. It also provides easy access to data generated, which can be organized to provide useable information to those that need it. This can reduce the problem of information overload, where individuals are provided with too much information to process, while not being provided with what they really need to know. While these are major benefits, there are also various difficulties involved in building an e-SCM system.

One of the major problems that occurs relates to problems with integrating the technology used by the various parties in the supply chain. Quite often, one company uses a software system that will not integrate easily with supplier technologies. This creates a problem that requires one of the suppliers to change their system to allow integration. In the case where a supplier has one major customer, this may not be so problematic. However, many manufacturers supply to various clients, and some even to hundreds or thousands of clients. The same applies with the company receiving goods from suppliers, where most companies have various suppliers and not just one. This creates a problem as to how companies can adapt to ensure integration with a range of suppliers and retailers.

Another concern relates to issues of safety and privacy. Sharing of information and systems between companies often

create issues with management in regards to securing company information and ensuring safety. This can be a substantial problem for companies who consider themselves at high risk of terrorism, corporate sabotage, or companies who have substantial business secrets. This problem associated with sharing of information means that e-SCM systems often have to be created with protection systems built in.

The final problem is that few e-SCM systems can be created to work effectively initially. The development and the implementation is not generally a quick and simple process, but a long one based on developing and then assessing the system.

This means that the development of e-SCM system often involves a large input of time and money, while not necessarily providing initial benefits.

3.3 Stage III: The Broken Supply Chain by Web Technologies

A broken supply chain occurs when there is a blockage of transactions or goods along the supply chain. This results in inefficiencies, reduces speed to market, and ultimately increases costs. With customers and retailers increasingly requiring goods more quickly, the broken supply chain represents a major challenge for a business. The Levi Strauss case study illustrated that large retail chains expect efficient delivery of products and quick responses. For example, if a product sells quickly and the shelves are empty, a business like Wal-Mart does not want to hear that new products may not be available for weeks. Instead, they want the shelves stocked almost immediately so they can take advantage of demand and make maximum sales, and so they can provide their customers with a reliable

store that always has everything they need. The Levi Strauss case study also showed that companies benefit by being responsive because they are immediately able to take advantage of opportunities.

As the Internet continues to impact on both business-to-business and business-to-consumer transactions, it seems likely that the demand for efficiency will increase. Using the Wal-Mart example, it can be seen that running out of a product such as the Levi Strauss jeans may result in lost opportunity. In the case of retail shopping, consumers may wait for more products to be available. This is far less likely in Internet retailing, where consumers can simply click over to another site in a matter of seconds and purchase the product there. This ease of transferring business to a competitor when shopping via web sites means that efficiency and responsiveness is likely to become even more crucial to a company's success in the future.

One of the major factors that can fix a broken supply chain relates to information technology. A broken supply chain often occurs based on a lack of communication between two links in the supply chain. For example, the supplier may not realize the receiver is waiting for the goods and may elect to allow the goods to accumulate and then send them in bulk. This seems feasible to the supplier only because they are not aware of the needs of the receiver. At the same time, the receiver needs the goods but assumes that the supplier sends them in bulk for some purpose.

This lack of communication between the two parties causes a break in the supply chain. When the parties in the supply chain communicate with those behind them in the chain and those ahead of them in the chain, these problems can be eliminated. Considering this, it can be

suggested that Wal-Mart's focus on placing demands on the supplier next down on the chain will be the way of the future. This action results in communication, with it likely that communication technology will continue to enhance and improve communication between suppliers.

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