Impact of IT in Supply Chain Management

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ABSTRACT
The new millennium is in the midst of explosive change witnessing intense competition amongst the domestic as well as the international players. Little wonder then, e-Enabled Supply Chain Management is fast emerging as a core strategy that organizations worldwide are adopting for sustainable business advantage. In this era of Information a firm’s supply chain should operate at speed of thought and this is possible only by enhanced e-speed communications and information sharing with their critical partners. Internet and associated technologies promise to revolutionize inter-enterprise business processes by enabling seamless information exchange between business partners. High volumes of data can be transferred at low cost, and even minor business partners can exchange information in an economical manner. Keeping the role of IT in mind, an attempt is made to examine the Impact of IT in SCM.

Introduction
Supply chain management consists of the coordination of demand and supply of products and services between a suppliers’ supplier and a customers’ customer. It involves the flow of product, information, and money between the ‘trading partners’ of a company’s ‘supply chain’. To define “Supply Chain Management” we have to pull apart the parts of that term. SUPPLY - Providing Goods, Services and knowledge CHAIN - Across several entities that are linked MANAGEMENT - Infers “Pro-activity” The Proactive act of improving the efficiency and effectiveness of the flow of goods, services and knowledge across all stake holders with the goal of reducing total cost and obtaining a competitive advantage for all parties.

The Internet wave and emergence of e-business has highly influenced traditional supply chains by enhancing Coordination and Communication between the partners. The enabling technologies like EDI, Intranet, Extranet, Electronic Market Places, ERP, DRP, Warehouse management system, CRM, CPFR etc has tremendously improved the integration among the buyers and sellers. The wonder letter ‘e’ has removed the roadblocks of information sharing making the firm smarter everyday. Rapid evolution of the digital marketplaces or hubs which allows buyers and sellers to transact in a single intelligent, multidimensional marketplace that connects multiple trading exchanges and making the sharing of information at a wink of an eyelid.

Importance Of IT In Supply Chain Management
E-business has enhanced both Supply Chain efficiency and responsiveness by sharing real time information regarding inventory, shipment status and other key information like product design, product availability and demand between the partners. The e-Supply Chain will have customers and suppliers seamlessly linked together, throughout the world, exchanging information almost instantly. As a result of e-speed information sharing the companies are adopting pull strategy instead of push strategy. Fast access to relevant supply chain information can pay-off handsomely in lower product acquisition costs, lower procurement transaction, less inventory, higher quality decision-making, shorter cycle times, profitable means of disposing unused excess inventory and better customer service.

Today’s managers must make decisions in “real time,” an organization is exposed to higher risk and may suffer penalties, such as losing a valuable customer or mission-critical supplier, if decisions are wrong. Therefore, it is imperative that they have all the information they need—quickly and accurately. Information and communications technologies are revolutionizing the scope and scale of e-supply chain infrastructures. Online data exchange is transforming business practices, allowing managers to capture and track complex data more effectively. Orders and various products related to that order can easily be traced. It is also possible to exchange information among entities within the value chain, thus greatly improving customer-provider relationships.

Effective supply chain management can impact and improve upon virtually all business processes, such as data accuracy, operational complexity reduction,
supplier selection, purchasing, and warehousing and distribution. Other benefits include:

- Quicker customer response and fulfillment rates,
- Greater productivity and lower costs,
- Reduced inventory throughout the chain,
- Improved forecasting precision,
- Fewer suppliers and shorter planning cycles,
- Improved quality and products that are more technologically advanced,
- Enhanced inter-operational communications and cooperation,
- Shortened repair times and enhanced equipment readiness, and
- More reliable financial information.

It is important that systems be designed to enhance open and rapid communication and sharing of information across the supply chain and within the organization. Intelligent application of information technology can also eliminate duplicative data entry, provide real-time status information, and help organizations move past a myopic view of their processes to view themselves within the context of larger missions and goals.

What does supply chain management software do?
Supply chain management software is possibly the most fractured group of software applications on the planet. Each of the five major supply chain steps previously outlined composes dozens of specific tasks, many of which have their own specific software. Some vendors have assembled many of these different chunks of software together under a single roof, but no one has a complete package that is right for every company. For example, most companies need to track demand, supply, manufacturing status, logistics (i.e. where things are in the supply chain), and distribution. They also need to share data with supply chain partners at an ever increasing rate. While products from large ERP vendors like SAP’s Advanced Planner and Optimizer (APO) can perform many or all of these tasks, because each industry’s supply chain has a unique set of challenges, many companies decide to go with targeted best of breed products instead, even if some integration is an inevitable consequence.

It’s worth mentioning that the old adage about systems only being as good as the information that they contain applies doubly so to SCM. If the information entered into a demand forecasting application is not accurate then you will get an inaccurate forecast. Similarly, if employees bypass the supply chain systems and try to manage things manually, then even the most expensive systems will provide an incomplete picture of what is happening in a company’s supply chain.

What is the relationship between ERP and SCM?
Many SCM applications are reliant upon the kind of information that is stored in the most quantity inside ERP software. Theoretically you could assemble the information you need to feed the SCM applications from legacy systems (for most companies this means Excel spreadsheets spread out all over the place), but it can be nightmarish to try to get that information flowing on a fast, reliable basis from all the areas of the company. ERP is the battering ram that integrates all that information together in a single application, and SCM applications benefit from having a single major source to go to for up-to-date information. Most CIOs who have tried to install SCM applications say they are glad they did ERP first. They call the ERP projects “putting your information house in order.” Of course, ERP is expensive and difficult, so you may want to explore ways to feed your SCM applications the information they need without doing ERP first. These days, most ERP vendors have SCM modules so doing an ERP project may be a way to kill two birds with one stone. Companies will need to decide if these products meet their needs or if they need a more specialized system.

Applications that simply automate the logistics aspects of SCM are less dependent upon gathering information from around the company, so they tend to be independent of the ERP decision. But chances are, you’ll need to have these applications communicate with ERP in some fashion. It's important to pay attention to the software's ability to integrate with the Internet and with ERP applications because the Internet will drive demand for integrated information. For example, if you want to build a private website for communicating with your customers and suppliers, you will want to pull information from ERP and supply chain applications together to present updated information about orders, payments, manufacturing status, and delivery.

What is the goal of installing supply chain management software?
Before the Internet came along, the aspirations of supply chain software devotees were limited to improving their ability to predict demand from customers and make their own supply chains run more smoothly. But the cheap, ubiquitous nature of the Internet, along with its simple, universally accepted communication standards have thrown things wide open. Now, you can connect your supply chain with the supply chains of your suppliers and customers together in a single vast network that optimizes costs and opportunities for everyone involved. This was the reason for the
B2B explosion; the idea that everyone you do business with could be connected together into one big happy, cooperative family.

Of course, reality isn’t quite that happy and cooperative, but today most companies share at least some data with their supply chain partners. The goal of these projects is greater supply chain visibility. The supply chain in most industries is like a big card game. The players don't want to show their cards because they don't trust anyone else with the information. But if they showed their hands they could all benefit. Suppliers wouldn't have to guess how many raw materials to order, and manufacturers wouldn't have to order more than they need from suppliers to make sure they have enough on hand if demand for their products unexpectedly goes up. And retailers would have fewer empty shelves if they shared the information they had about sales of a manufacturer's product in all their stores with the manufacturer. The Internet makes showing your hand to others possible, but centuries of distrust and lack of coordination within industries make it difficult.

Over the last few years most companies have gotten over the trust issue. In many cases "gotten over" is a euphemism for "have been bullied into sharing supply chain information from a dominant industry player." Want to sell your goods in Wal-Mart? Better be prepared to share data. The payoff of timely and accurate supply chain information is the ability to make or ship only as much of a product as there is a market for. This is the practice known as just-in-time manufacturing, and it allows companies to reduce the amount of inventory that they keep. This can cut costs substantially, since you no longer need to pay to produce and store excess goods.

**What is supply chain collaboration?**

Let's look at consumer packaged goods for an example of collaboration. If there are two companies that have made supply chain a household word, they are Wal-Mart and Procter & Gamble. Before these two companies started collaborating back in the '80s, retailers shared very little information with manufacturers. But then the two giants built a software system that hooked P&G up to Wal-Mart's distribution centers. When P&G's products run low at the distribution centers, the system sends an automatic alert to P&G to ship more products. In some cases, the system goes all the way to the individual Wal-Mart store. It lets P&G monitor the shelves through real-time satellite link-ups that send messages to the factory whenever a P&G item swoops past a scanner at the register.

With this kind of minute-to-minute information, P&G knows when to make, ship and display more products at the Wal-Mart stores. No need to keep products piled up in warehouses awaiting Wal-Mart's call. Invoicing and payments happen automatically too. The system saves P&G so much in time, reduced inventory and lower order-processing costs that it can afford to give Wal-Mart "low, everyday prices" without putting itself out of business.

**What are the roadblocks to installing supply chain software?**

Supply chain automation is uniquely difficult because its complexity extends beyond your company's walls. Your people will need to change the way they work and so will the people from each supplier that you add to your network. Only the largest and most powerful manufacturers can force such radical changes down suppliers' throats. Most companies have to sell outsiders on the system. Moreover, your goals in installing the system may be threatening to those suppliers, to say the least. For example, Wal-Mart's collaboration with P&G meant that P&G would assume more responsibility for inventory management, something retailers have traditionally done on their own. Wal-Mart had the clout to demand this from P&G, but it also gave P&G something in return—better information about Wal-Mart's product demand, which helped P&G manufacture its products more efficiently. To get your supply chain partners to agree to collaborate with you, you have to be willing to compromise and help them achieve their own goals.

If selling supply chain systems is difficult on the outside, it isn't much easier inside. Operations people are accustomed to dealing with phone calls, faxes and hunches scrawled on paper, and will most likely want to keep it that way. If you can't convince people that using the software will be worth their time, they will easily find ways to work around it. You cannot disconnect the telephones and fax machines just because you have supply chain software in place.

There is a diabolical twist to the quest for supply chain software acceptance among your employees. New supply chain systems process data as they are programmed to do, but the technology cannot absorb a company's history and processes in the first few months after an implementation. Forecasters and planners need to understand that the first bits of information they get from a system might need some tweaking. If they are not warned about the system's initial naiveté, they will think it is useless. In one case, just before a large automotive industry supplier installed a new supply chain forecasting application to predict demand for a product, an automaker put in an order for an unusually large number of units. The system responded by predicting huge demand for the
product based largely on one unusual order. Blindingly following the system's numbers could have led to inaccurate orders for materials being sent to suppliers within the chain. The company caught the problem but only after a demand forecaster threw out the system's numbers and used his own. That created another problem: Forecasters stopped trusting the system and worked strictly with their own data. The supplier had to fine-tune the system itself, and then work on reestablishing employees' confidence. Once employees understood that they would be merging their expertise with the system's increasing accuracy, they began to accept and use the new technology.

What is the extended supply chain?
The extended supply chain is a clever way of describing everyone who contributes to a product. So if you make text books, then your extended supply chain would include the factories where the books are printed and bound, but also the company that sells you the paper, the mill where that supplier buys its stock, and so on. It is important to keep track of what is happening in your extended supply chain because with a supplier or a supplier’s supplier could end up having an impact on you (as the old saying goes, a chain is only as strong as its weakest link). For example, a fire in a paper mill might cause the text book manufacturer’s paper supplier to run out of inventory. If the text book company knows what is happening in its extended supply chain it can find another paper vendor.

What is the impact of globalization on the Supply Chain?
Just in time manufacturing isn't the only way companies have used their supply chains to reduce cost. Manufacturing in developing countries is substantially cheaper than in the U.S. because of the low cost of labor. It isn't as easy to set up real-time data sharing with a factory in, say, China as it is with a factory you own in the United States. And the sheer distance that overseas goods need to travel – not to mention the number of vessels they need to travel on – in order to reach the U.S. increases the chance that they will get delayed. The bottom line is that foreign manufacturing brings back a lot of the uncertainty that supply chain systems were designed to eliminate. The good news is that technology capable of tracking shipments throughout the world is getting better. The bad news is that a lot of this technology is still pretty expensive, that some of the places you would want to deploy it don't have the necessary infrastructure in place, and well, there isn't a piece of technology out there that can make up for the whim of a Chinese Customs official. Furthermore, labor costs in some places are so low that IT automation and monitoring projects may add more to costs—in terms of software, hardware and still-precious (and unreliable) bandwidth—than they save in productivity. Hence, some low-tech or commodity products may not be worth monitoring at all until they hit a ship in a foreign port.

In the meantime, the best bet is to use whatever systems you can to gain as much visibility into the global supply chain as possible. It may be impossible to replicate the just in time model on a global scale, but by applying whatever technology you can, and by choosing the supply chain partners who have the capability to share data with you, you can get many of the benefits of just in time while paying low foreign prices.

What are some emerging technologies that will affect the Supply Chain?
The most notable is Radio Frequency Identification, or RFID. RFID tags are essentially barcodes on steroids. Whereas barcodes only identify the product, RFID tags can tell what the product is, where it has been, when it expires, whatever information someone wishes to program it with. RFID technology is going to generate mountains of data about the location of pallets, cases, cartons, totes and individual products in the supply chain. It's going to produce oceans of information about when and where merchandise is manufactured, picked, packed and shipped. It's going to create rivers of numbers telling retailers about the expiration dates of their perishable items—numbers that will have to be stored, transmitted in real-time and shared with warehouse management, inventory management, financial and other enterprise systems. In other words, it is going to have a really big impact. Another benefit of RFIDs is that, unlike barcodes, RFID tags can be read automatically by electronic readers. Imagine a truck carrying a container full of widgets entering a shipping terminal in China. If the container is equipped with an RFID tag, and the terminal has an RFID sensor network, that container’s whereabouts can be automatically sent to Widget Co. without the truck ever slowing down. It has the potential to add a substantial amount of visibility into the extended supply chain.

Supply chain management (SCM) is the process of planning, implementing, and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. Supply chain management spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption. Today's competitive environment is forcing the firms’ shift its focus inevitably outside the corporate walls and collaborate with its trading partners. Increased communications technology has
redefined how businesses work together, raising customer expectations and placing new demands on supply chain performance. The Internet has allowed companies to come up with highly innovative solutions that accelerated the widespread adoption of these core supply chain principles. Companies that make use of e-business to redefine supply chain integration will achieve significant increases in efficiency and gain tremendous competitive edge over their competitors. In the next few years, we will see an explosion of e-enabled supply chain management as visionary companies develop new paradigms of e-business for the future. Hence, the battleground of the next decade is clearly going to be e-enabled supply chain versus e-enabled supply chain instead of battle between firms versus firm.

REFERENCES