Beyond the e-Christmas Rush:

Electronic Commerce Issues for Senior Management

e-Christmas came on schedule December 25th, and with it came unprecedented growth in electronic commerce. Final figures aren't in yet, but between $5-10 billion worth of apparel, toys, books, CDs, electronics and other items, more than double last year's level, were ordered this holiday season. Suppliers of this and other merchandise had already seen dramatic increases in their orders in the past few months in preparation for the holiday season. Logistics providers expanded their capacity to handle this additional volume and were braced for a major surge in shipments. By now most every retailer, manufacturer, or service provider of consequence has had at least some involvement in electronic commerce — and experienced firsthand the benefits and challenges of the digital revolution.

Summary

- Supply chain management — how you handle the product and get it to the customer — is critical for business-to-consumer e-commerce success.
- In business-to-business e-commerce, the deployment of a range of emerging information technology tools is critical to meeting your customers' expectations.
- Achieving improvements requires senior management attention to a number of strategic, tactical, and — perhaps most important — operational issues.
- Reviewing and reengineering the wide range of your day-to-day supply chain processes in handling merchandise and information, both inbound and outbound, is needed to prepare yourself for dramatic future e-commerce growth.

This is just the beginning. Even with this year's remarkable growth, electronic commerce represents only a few percentage points of total consumer spending. Within the next 4 years, online consumer purchases are forecast to increase to $100 billion or more, with perhaps $75 billion during the Christmas season: 7 to 10 times this year's level.

But business-to-business electronic commerce, while receiving far less media attention, dwarfs Internet consumer spending. Today, over $100 billion in purchases for raw materials, machine parts, Original Equipment Manufacturer (OEM) components and products, and related goods and services is transacted through the Internet, with growth projections exceeding the $1 trillion dollar mark by about 2003.

Over the next several years, we are likely to see innovations and enhancements in e-commerce that we probably cannot even imagine today, in both consumer and business sectors. Three years from now, Christmas 1999 may well seem like just a novelty, as electronic commerce becomes a major aspect of our everyday business and personal lives.

So now that the e-Christmas rush has passed, what are the issues that senior management needs to address in order to be prepared for this continued e-commerce explosion — and, more important, for you to profit from it in 2000 and beyond?

This article briefly discusses key issues related to supply chain management — an important and often overlooked aspect of e-commerce success. We'll look at the unique issues affecting both business-to-consumer transactions and business-to-business relationships. We'll also look at actionable steps you can take to overcome the different challenges presented by each of these e-channels.

Business-to-consumer issue: Inventory and shipping the actual product

On the business-to-consumer side, supply chain management is a key aspect of electronic commerce that many people seem to forget, or at least take for granted. Unless you're a "pure play" Internet start-up focused solely on developing new methods of attracting customers and generating orders that are filled by others, you need to face the reality that supply chain management is a big part of electronic commerce. Beyond the esoteric aspects of website design, content development and marketing partnerships, somebody's got to pick, pack, and ship the millions of packages that get sent.

How well you execute the down-and-dirty processes of inventory management, order fulfillment, shipping, and other supply chain-related activities can be a critical factor in determining your success in electronic commerce. It's not just how many people visit your website; it's how you handle the multitude of cartons leaving your shipping dock.

Top line impact. To begin with, if you don't do a good job filling the orders, you may never see the consumer again. Had a bad experience with an Internet retailer? The merchandise didn't come at all or came in three separate shipments, some wrong items were included, or they were damaged and you had to repackage and return them at your expense? Bet it's not on your list of bookmarked sites, and you probably will never go back there again.

Having a good customer experience all the way through to the delivery of product to your door "is the difference between dot com and dot toast," says one e-commerce consultant.

According to Jupiter Communications, consumer satisfaction with Internet shopping dropped dramatically during the 1998 Christmas season, from 88% earlier in

the year to 74% in the fourth quarter. With an estimated 10 million new online shoppers this year, initial impressions of price, selection, ease of use, and particularly fulfillment will be critical to building an ongoing customer base.

As consumers and as business customers, we have become accustomed to having a wide variety of product choices, customizing them to our individual needs, and getting them delivered seamlessly and quickly from anywhere to anywhere. And when we don't get the service we expect, we've been trained to "vote with our feet" and go elsewhere.

Electronic commerce makes this so much easier — and scarier — of course. Consumers don't even have to walk out of the store, get back in the car and go across the street to the competition. Instead, they can simply "vote with a mouse" and instantly click over to other sites. Recently, websites such as Shopper.com have taken this technology a step further. They enable you to get, in one place, all the relevant information on a given item from various suppliers, including price, availability, and shipping information. Want to buy a Palm III personal digital assistant? The Internet can provide you with 48 different sources in a matter of about 2 seconds. Great for consumers, but what does this mean for manufacturers and retailers?

Bottom-line impact. Strong supply chain execution is important for providing a good customer experience. But superior supply chain execution has a significant direct effect on the profit and loss statement.

Consider a typical e-tailing business model, using some round numbers for illustration. For example, it costs the mythical E-stuff.com $100 to acquire a typical customer through advertising and marketing programs – a significant investment designed to develop brand recognition, customer loyalty, and a stream of future revenues in this hotly contested new e-business channel. Also assume that, over time, this typical customer's purchases will generate total gross profits of $85 for E-stuff, given future projected spending patterns, typical margins, and normal customer "churn" or fall-off rates — and given the supply chain-related costs discussed above — for a net loss of $15, not an unusual picture today.

What would it take to change this loss into a profit? By reducing fulfillment and distribution-related costs by only 2 percentage points, from 10% to 8%, E-stuff.com would yield a $4 net profit from this customer's spending, a dramatic turnaround. And if superior supply chain execution also provided just a 10% reduction in customer churn, E-stuff's profit level would soar to $10 — a level that is well above the average for the traditional retailing industry.

	Today	With Supply Chain Improvements	
		More efficient fulfillment and distribution	Efficiency gains plus lower customer "churn"
Fulfillment/ distribution costs (% of sales)	10%	8%	8%
Customer "churn" rates (% annual fall off in transactions with a given customer)	20%	20%	18%
Profit/(loss) from present and future customer transactions (% of initial acquisition costs)	(15%)	4%	10%

Notes: Based on $100 initial "acquisition" costs /customer, average $25 purchase per customer transaction, average of 10 transactions/customer (initial year), 20% gross margin, and 10% discount rate. Source: CCMI e-tailing model.

Achieving these improvements is a major challenge, since traditional supply chain roles and responsibilities have been turned upside down by the advent of e-commerce.

In the old days, consumers — at their time and expense — came to the retail store to locate, pick, assemble, and otherwise process their individual orders, while retailers and their suppliers used high-volume, bulk warehouses to replenish sold inventory. These full pallet and full truckload quantities of merchandise could be handled at relatively low cost, and often with time to spare. No wonder big-box category killers such as Staples, PETsMART, Linens'n Things and others have proliferated: their supply chains are relatively simple and efficient to operate while providing added value and lower prices for consumers.

In today's new e-commerce world, retailers are taking on the individual consumer's traditional role, with new responsibilities for picking, packing, and shipping the single, one-time orders of John and Jane Doe and all the rest of us — and typically on an overnight basis. This year, more than ever before, there were *lots* of orders placed on December 23 for next day delivery — putting a major strain on most companies' distribution systems.

As a result, the requirements for warehousing, order fulfillment, and shipping are dramatically different: more labor to run up and down aisles, more distribution space to make merchandise readily accessible, different material handling equipment and procedures, much more packaging, and so forth. With many orders using overnight shipping, distribution center activities need to be closely coordinated with evening pick-up times. Perhaps the distribution center network should even be relocated to better align with outbound transportation needs and permit operations later into the evening.

Less infrastructure, or more? Originally, most observers expected that electronic commerce would reduce the need for warehousing and other infrastructure costs associated with traditional retailing. But in fact, these changes in distribution requirements are driving substantial new construction and realignment of facilities. For example, in 1999 alone, Amazon.com acquired five new distribution centers. The dot com retailer now has more than 3.5 million square feet of space at eight distribution centers nationwide - more than 10 times the distribution center floor space the company had in 1998. While the additional space enables Amazon.com to increase the number of books, CDs and other products kept on hand for immediate shipment to customers, and to get those products to customers in areas near the distribution centers much faster, it's a long way from the pure e-business model that seems to envision no bricks and mortar.

For industrial real estate developers and managers, proximity of properties to airports and major consumer centers is increasingly an important component of their portfolios. AMB Property Corporation, a major real estate investment trust, for example, is aggressively developing and investing in distribution facilities — e-Space — specifically to support electronic commerce and the quick cycle time requirements of new supply chains. Historians tell us that in the Klondike Gold Rush, it was the providers of tents, pickaxes, food, and other infrastructure who made most of the money, not the gold miners. Perhaps the lesson to be learned is that there is money to be made on all sides of any historic opportunity.

And now that Christmas is over, those products you shipped last month are going to start coming back as returns — in many cases returning directly to manufacturers rather than to retail stores where they had historically been absorbed through markdown programs. Is there a process in place for accepting and handling these returns? Is there even space in the warehouse? What are you going to do with them all?

The skill sets needed to execute these new requirements are often outside of traditional retailing core competencies, adding recruiting to the list of challenges posed by e-commerce. No surprise then, perhaps, that Amazon.com has recently hired executives from Wal*Mart and Allied Signal to drive its supply chain operations.

This may also help explain the phenomenal growth of third-party logistics, a $50 billion industry growing at 20% per year. No wonder. These third-party logistics firms (3PLs, as they're now popularly known) give companies instant competencies in complex areas without overwhelming the contracting company's current personnel, leaving those

employees free to do what they do best. By providing operational know-how, systems, and assets to meet a wide range of order processing, inventory management, and shipping activities on an outsourcing contract basis, 3PLs shorten a company's e-commerce learning curve.

Business-to-business issue: Using IT to meet your customers' e-commerce needs

E-commerce as a business tool is not new for industrial shippers and their customers, as orders have been placed and received using Electronic Data Interchange (EDI) and related methods for years.

However, the World Wide Web and simple, easy-to-use Internet browser software are nonetheless changing the game dramatically in the business-to-business sector as well. Suppliers of chemicals, auto parts, food ingredients, retail merchandise, electronic components, and all the other materials that feed the engines of commerce need to dramatically improve their Information Technology (IT) systems to better meet their customers' expectations.

In effect, the story from customers goes like this: "We now can easily share with you — on a real-time, electronic basis, in excruciating detail — our current material consumption and inventory levels, our production schedules and plans, our future forecasts of end-customer demand, and just about anything else we know. So we will now expect you to fully use the information and provide us with better, faster, and cheaper service. What's more, we'll be checking, thanks to online tracking and status tools that have been developed by transportation carriers and third-party logistics providers. And also, we don't care that you're a small supplier without a big IT budget, since all you really need is a personal computer and access to the Web."

It's not so simple, of course, and a range of additional information technology support is typically needed to respond effectively to this customer challenge.

Recent developments in information technology do help companies dramatically improve their supply chain performance. With the new procurement management systems, supply chain optimization applications, and transportation and distribution optimization systems now available, there is a wealth of applications that can be used to both drive and enable electronic commerce. Partnerships between software companies and logistics/transportation service providers are also increasing, making information more seamless and valuable to everyone involved in the supply chain.

Success stories. Results of the 1999-2000 Supply-Chain Management Benchmarking Series from The Performance Measurement Group, a subsidiary of management consultants PRTM, show that leading companies have cut their total supply-chain management costs to between 4% and 5% of sales. These leading companies, in the

chemical and pharmaceuticals, computers and electronic equipment, defense and industrial, telecommunications equipment, and consumer packaged goods sectors, spend 5%-6% less on supply-chain management as a percentage of sales than median performers. The difference in this performance means that a best-in-class company with $500 million in sales per year has a $25 - $30 million cost advantage every year.

Typically, these industry leaders have significantly reengineered their supply chain processes to streamline and speed up responses to changing market needs, and have been early adopters of information technology tools to support their efforts. Whether it's Cisco Systems, Wal*Mart, Ford, or any of a number of other acknowledged leaders, they all have deployed information technology as a key part of their success.

In the food and consumer products industry, a recent study by Stanford University and Andersen Consulting, based on 100 manufacturers and 100 of their retailer customers, brings home the point. The study found a direct link between the level of information sharing between partners and the level of profits that each partner achieved. Companies that used joint planning and replenishment programs were also the companies that achieved above average levels of profitability within their industry.

While the supply chain improvement tools outlined above focus primarily on improving your own internal performance, a whole new wave of applications has emerged. Designed specifically to help achieve improvements between you and your trading partners, they come complete with a new acronym, of course. Collaborative Planning, Forecasting, and Replenishment (CPFR) technology promises to tie together multiple enterprises to optimize joint decision-making between businesses and their suppliers and customers.

Nabisco began using CPFR with some of its grocery store partners, and achieved impressive initial benefits. In one case, by systematically sharing demand histories, sales forecasts, and production plans and adjusting them to optimize overall performance, inventory days of supply decreased by 18 percent, out-of-stock situations were cut by four percent, and both sales levels and gross margins improved significantly.

The amount of data involved in CPFR can be huge and clearly needs strong IT support, both to process it initially and to apply new decision-making models that achieve benefits across the supply chain. If, for example, there are 200 individual products and 200 customer store locations being served from six distribution centers with 26 weeks of rolling forecasts and weekly data on actual sales results, over 13 million individual data items need to be processed each week. Then, the key information within that data needs to be acted upon — including changes in production plans, sales and promotion initiatives, shipping patterns, and other supply chain aspects — by the supplier, the customer, and the third party providers that are often involved in distribution and transportation.

These multi-company efforts are projected to expand dramatically in the 21st century. While computers today can handle this level of data without a major problem,

achieving all available benefits by getting the suppliers, customers and logistics providers aligned to act on CPFR results is the more significant issue.

While these developments have been occurring, where have IT resources in most companies been focused over the past two or three years? Typically not on the supply chain, but rather on all-consuming efforts to achieve Y2K compliance and to implement Enterprise Resource Planning (ERP) systems such as SAP.

Addressing the opportunity. With Y2K behind us, and with ERP systems now in place in many companies, there is an opportunity for you to set a new agenda for information technology. Rather than dealing with old computer glitches and improving accounting transaction standards, you can address the key IT requirements of e-commerce and begin to achieve real benefits in cost reductions, service levels, and speed.

How to proceed in your company is a key issue, and a variety of choices is available. ERP providers are promising to add supply chain components as part of a one-stop shopping approach, but many of these enhancements are still under development. Providers of focused supply chain IT tools are offering "best of breed" solutions but likely require more effort on systems integration. And "middleware" providers have emerged to help bridge the gap and permit ERP systems and supply chain software to talk to each other — though adding another set of players.

Confused about which approaches make the most sense for your business? You're not alone. Major industry conferences this past fall — the Council of Logistics Management, the National Industrial Transportation League, and others — were replete with seminars outlining possible ways to address these critical IT choices. In a nutshell, it comes down to a tradeoff among the following:

- Speed -- how fast you need to move, given the dynamics of your industry
- Functionality -- the level of detail and specialized capability you need
- Cost -- major IT initiatives can be expensive and time-consuming

Most important, you need to determine how quickly the overall situation will change in the future, perhaps rendering current IT initiatives obsolete.

Agenda for action

So what do you need to do to address the e-commerce challenges and opportunities identified above?

If you are a retailer or a merchandise supplier, perhaps you can rely on capturing the customer at a loss and hope to make it up on volume later on. But more likely, developing more effective and efficient supply chain management processes will be a major key to your success.

If you are more involved with business-to-business e-commerce, perhaps you can continue to use EDI and traditional methods of information sharing with your customers. But more likely, your customers are going to require that you adopt information technology to dramatically change and improve how you do business with them. While there is certainly no shortage of work to be done, the critical areas that need to be addressed fall into three primary categories — strategic, tactical, and operational.

Strategic level. To support business-to-consumer e-commerce, your strategy has to provide fast and high-quality delivery, period. Meeting that goal means being willing to share information, to give up some control of process in order to let the supply chain network participant best suited to a task actually perform that task — regardless of traditional roles — and to lead by example by embracing these changes as positive, smart business moves.

The situation is similar on the business-to-business side. E-commerce is rarely a choice. Customers are demanding that you link up with them electronically to reduce costs, response times, and inventory levels. The key issues involve how to get it done. First steps can include analyzing the current state of e-commerce practices in your company. Then, begin benchmarking your company against those companies who have established best practices. Again, realize that your company is a single player in a complex chain that functions best when those best suited to a task take the lead for that specific task — becoming the drivers of that segment — and that internal change alone will take you only so far. In other words, your outlook on supply chains will expand to include issues that range beyond your own company, even beyond your own industry.

Tactical level. The primary issue here is how to design and configure your supply chain network for e-commerce. If direct online consumer orders are really going to grow 7- to 10-fold over the next several years, and if business-to-business e-commerce is really going to surpass a trillion dollars, a comprehensive analysis of both the design of your *physical* network of facilities and the *virtual* network of your information technology tools is needed.

For both business and consumer segments, the number, type, location, capabilities, and operating characteristics of your distribution network for e-commerce need to be determined, as well as its relationship to existing operations for “traditional” channels. Decisions need to be made about outsourcing to third party logistics providers versus owning and operating the distribution system and developing the required skill bases. It is also necessary to determine which information technology architecture will best meet customer and internal needs and provide key benefits. Only then can specific IT suppliers be selected.

Operational level. How well your supply chain processes operate today on a day-to-day basis to meet the needs of electronic commerce may be the most important issue of all.

On the outbound-to-customers side, this includes order entry and processing systems, inventory replenishment rules, pick-pack-and-ship procedures, transportation programs, and the myriad of other specific activities that are performed to fulfill customer orders and provide service. On the inbound-from-suppliers side, this covers planning and information sharing with suppliers, ordering systems, receiving and inventory management procedures, and a host of other aspects that define the overall day-to-day relationship with your supplier base.

Given the importance of these processes to your overall success, a fundamental examination may be needed in each area.

Supply Chain Re-engineering:

- How is it done today?
- What does it cost?
- How fast is it?
- What performance levels does it provide?
- How can it be done better, faster, and cheaper?
- What are others doing that can be replicated or built upon?
- What improvements would provide a competitive advantage in cost, service, or other performance dimensions?

The last word. While these areas are far removed from the glitz and hype of the Internet, dealing with them effectively is an important component of future success, and can help provide significant economic returns to your shareholders whether in business-to-consumer or business-to-business electronic commerce initiatives.

Improving the look and feel of your website is important, no doubt, and your sales successes this holiday season are to be celebrated. But don't overlook or take for granted what's happening on the shipping dock and the production planning office, too. Your profitability and e-commerce viability may well depend on it.

About the Author

Scott Elliff is Founder and President of Capital Consulting & Management, Inc.(CCMI), offering high-quality analysis, practical advice, and fresh perspectives to help clients achieve bottom line improvements in profitability, effectiveness, and market position.

A former principal and partner with Mercer Management Consulting, Mr. Elliff has particular expertise in supply chain management topics, including product

development, forecasting, procurement, scheduling, manufacturing, transportation, logistics, inventory management and customer service.

Prior to his consulting career, Mr. Elliff was on the staff of the Office of Management and Budget in the Executive Office of the President, analyzing the performance of major federal spending programs and helping develop appropriate budgetary, legislative, and regulatory strategies and improvement actions during two administrations.

Mr. Elliff graduated *magna cum laude* from Dartmouth College with a B.A. in mathematics and social science, and received his Master's from the University of Michigan, where he was first in his class in economics and public policy studies. He lives in Alexandria, Virginia with his wife and their six-year-old daughter.

CCMI can be found on the Web at www.CCMIservices.com. Mr. Elliff can be reached at (703) 370-2607 or by email at scott_elliff@CCMIservices.com