E-COMMERCE AND SUPPLY CHAIN STRATEGIES

Understanding Supply Chain Management

William T. Walker, CFPIM, CIRM, and Karen L. Abner, CFPIM

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About the time you were positioning it against logistics management or materials management, his or her eyes probably glazed over. When asked to skip the definition and just explain the benefit, you then got tangled up in the repetitive twang of ERP, DRP, MRP, and CRP.

The truth is, a two-minute sound bite cannot convey the whole message. But to help you out the next time you need to explain the essentials, here’s an overview of the four broad principles that guide supply chain management. Though the concept may never be easy to grasp in water-cooler conversations, it will make better sense and be easier to implement when you look at it in these terms.
A Few Easy Definitions

Let’s start with a quick glossary. First things first: A *supply chain* is the global network used to deliver products and services from raw materials to end customers through an engineered flow of information, physical distribution, and cash.

To expand on this definition, let’s call a single company the *firm*, and let’s call the firm’s main line of business the *enterprise*. Most business enterprises today depend on the collective efforts of a group of trading partners to stretch a supply chain around the world, from the raw material supplier to the end customer. A *trading partner* is any organization outside the firm that plays an integral role within the enterprise and whose business fortunes depend on the success of the enterprise. Examples of trading partners are suppliers, contract manufacturers, subassembly plants, factories, distribution centers, wholesalers, retailers, carriers, freight forwarders, customs broker services, international procurement organizations, and value-added-network services.

*Supply chain management* oversees the enterprise relationships in order to get the information necessary to run the business, to get product delivered through the business, and to get the cash that generates profits for the business. Supply chain management looks at the enterprise as a whole. It includes not only relationships with other functions within the firm but also with all trading partner relationships outside the firm.

The objective of competitive supply chain design is to weave each of the trading partners into a seamless fabric of information flow, physical distribution flow, and cash flow for the benefit of the end customer. The trading partners achieve their profit, or loss, through their ability to work together while recognizing that each organization is largely dependent on the other. By leveraging the resources of its trading partners, the firm can gain access to a larger market, and win a larger market share, with a smaller investment of its own assets. Supply chain management increases customer service while increasing return on investment.

Even though companies have been in supply chain relationships for years, they have not formalized a set of principles to make the optimum profit across the entire enterprise. (One possible explanation: It’s only recently that computer hardware and software of the type needed to run enterprise resource planning [ERP] have become powerful enough to extend beyond the boundaries of a single firm.)

But having such principles can do much to clarify how to turn concept into reality. Thus, you can use the following four principles to guide your firm’s supply chain management.
Principle A: Build a Competitive Infrastructure

Here we’re using the word *infrastructure* to mean the set of business processes that define ordering, delivery, inventory replenishment, returns, accounts payable, and accounts receivable.

How do you make such processes competitive? By focusing on the customer. Every customer interacts with a supply chain in terms of ordering a product, taking delivery of the product, returning a defective or unwanted product, and paying for the product.

A process map is a useful device for describing the customer-to-customer closed loop that defines each type of interaction. For example, customer ordering information might flow to an order-processing organization, where it is matched with finished-goods-picking information for the warehouse.

The warehouse organization might then arrange a logistics connection to forward the physical product to the customer. As the goods are picked in distribution, a replenishment order is sent to the factory to make more product. The customer might be asked for a credit card number at the time of the order. The revenue cash flow originating from the customer’s MasterCard or Visa account might then be directed as a payment cash flow to the supplier of the raw materials.

A firm makes its infrastructure more competitive when it simplifies business processes, reduces the number of parties who touch a process, and speeds up the velocity of information. For example, the personal computer industry sat complacently on two tiers of wholesale and reseller distribution until Dell Computer created the virtual store, complete with direct Internet ordering, door-to-door delivery, and personal credit card payment. The change rocked the industry and, in the process, made computer sales and distribution much more competitive.

Keep in mind, though, that when trading partners first connect into a supply chain network, their infrastructure performance will be limited by the least common denominator of hardware technology and of applications software. For example, customers who want to order books through Amazon.com must not only have an Internet connection but also Netscape or Explorer Web browser software. Without these basic requirements, customers cannot easily do business with Amazon.com.

Principle B: Leverage the Worldwide Logistics Network

To streamline logistics, you must know where the market demand and the supply base are located geographically. You engineer a supply chain network by connecting all the origins of supply to all the...
destinations of demand, and to each trading partner in between. There is both a forward logistics path and a hidden, reverse logistics path. The reverse path is for product returns, product repairs and calibration, and the environmentally responsible disposal of packaging materials.

**Logistics leverage can provide an important competitive advantage.**

Once you understand the totality of the logistics network, you can analyze freight volumes to determine strategic routings and modes of transportation. Logistics works to optimize cost versus time by developing and managing relationships with a small number of preferred forwarders, carriers, and customs brokers. The total supply chain may involve some import and export if there’s a cost advantage in product manufacturing. In this case, import duty classification, country of origin documentation, and export licensing are essential to maintaining a reliable supply chain.

Logistics leverage can provide an important competitive advantage. Compared to the thin profit margins posted on many income statements, lowering the costs of freight, duty, and warehousing has the potential to offer significant savings. Reducing the total number of supply chain nodes can slash logistics costs by consolidating freight volumes and reducing the total number of routings. Capturing accurate, high-velocity information at the point of sale can replace the need to keep every stock keeping unit (SKU) in inventory at every warehouse.

For example, M&M Mars, the candy manufacturer, invested in sophisticated technology that uses a single bar-coded badge to track the SKU by SKU breakdown of full container loads. The company also employs a satellite with global positioning capabilities to pinpoint the location of tractor-trailers on the move. In effect, the company substitutes information for inventory.

Hewlett-Packard does the same by shipping generic DeskJet printers to regional postponement centers, where the product is completed to order. Workers at these centers customize each printer with a country-specific power supply, power cord, and local language documentation.

**PRINCIPLE C: Synchronize Supply to Demand**

A capable supply chain matches the rate of supply with the rate of demand at each node. It synchronizes the product mix that’s in production with the product mix that customers order. A firm maximizes the end-to-end throughput of a supply chain when each trading partner in the chain adjusts its throughput to match actual market demand. When one link in the chain overproduces
relative to the market demand, inventory is accumulated. But when one link in the chain underproduces, the end-to-end throughput of the whole supply chain suffers. In such a case, one of the trading partners will be the system constraint. The supply chain achieves its best throughput performance when each of the trading partners exactly matches the throughput of this system constraint.

An enterprise-wide supply chain transcends the local department, the cross-functional team, the divisional structure, the corporate business climate, and even the country culture.

Supply chain synchronization is the secret to improving customer service without increasing inventory investment. Production only builds, and the logistics channel only moves, what the firm has sold. Actual customer demand pulls the SKU mix through the channel.

But again, the system depends on the accuracy and velocity of the information every trading partner provides. For example, let’s say Quaker Oats creates promotional packaging tied to a current sporting event. The entire supply chain—including the retail channel distribution center (DC), the wholesaler DC, the Quaker DC, the Quaker plant, and all the logistics connections—must be capable of surge capacity and must be synchronized to match the promotion’s timing. Otherwise, Quaker Oats will experience a surge in hidden supply chain costs for overtime, expedited freight, and premium stocking space. This could result in diminished customer service and lost profits.

**PRINCIPLE D:**

Measure Performance Globally

An enterprise-wide supply chain transcends the local department, the cross-functional team, the divisional structure, the corporate business climate, and even the country culture. Yet, too often, performance measures continue to be strictly defined in terms that optimize local operations and reward individual performance.

Measurement drives behavior. So for a set of trading partners to bring their operations into close alignment for a high-performance supply chain, all parties must agree upon the right global performance measures. This is the Achilles’ heel of supply chain management. It requires that you engender enduring trust among the partners and put forth great effort in relationship management across different company and country cultures.

Earlier programs like Efficient Consumer Response (ECR) in the grocery industry and Quick Response (QR) in the textile and
The textile and apparel industry has also been a leader in efforts to apply the Theory of Constraints to the issue of defining workable supply chain performance measures. More recently, the Supply Chain Council established a long-term goal to benchmark cross-industry best practices based on a generally accepted Supply Chain Operational Reference (SCOR) model.

For the future, these questions remain: How can multiple trading partners work together to identify and eliminate supply chain inefficiencies, information delays, and hidden operating costs? And how will these same trading partners agree to split the profits from such an effort?

**Understanding ERP**

The production and inventory management (P&IM) professional in a single-firm environment manages inventory using the time-proven concepts of material and capacity planning and control. Before such professionals can optimize the planning and control necessary to achieve superior customer service at a competitive advantage, they need to capture a significant amount of information in a single cross-functional database. P&IM professionals use the financial feeds with the database to link accounts-receivable and accounts-payable cash flows with the general ledger.

Computer-aided tools such as Materials Resource Planning (MRP II), and advanced manufacturing philosophies such as the Theory of Constraints (TOC), have enabled the single firm to achieve breakthrough performance.

Now imagine this firm as a middle link in a supply chain of worldwide trading partners. The partners deal in information, physical product, and cash. The growth of revenues and profits is directly tied to the end-to-end throughput the supply chain can sustain. Optimized production and inventory management through material and capacity planning and control moves beyond the single firm to encompass the entire enterprise. This is the realm of enterprise resource planning (ERP).

Conceptually, ERP is the information hookup along the supply chain that replaces the single database of information that’s essential to the single firm. ERP combines a single information platform with enterprise-wide material and capacity planning and control relevant to all of the trading partners. But for an ERP installation to develop its maximum competitive advantage, every trading partner must learn and embrace the A, B, C, and D principles of supply chain management described above. The partners must also keep in mind the following tenets that are particularly important to them.

1. The number of nodes that define the supply chain should be minimized.
The business processes that define customer interaction with the supply chain for ordering, product delivery, returns, and payment should be simplified and streamlined.

2. The forward and reverse logistics network should be built around relationships with a small number of preferred forwarders and carriers. Wherever possible, logistics volume should be maximized along certain routings.

3. Every trading partner should agree to plan and control in a manner that synchronizes supply to actual customer demand. Every trading partner should understand how the performance of the system constraint will set the ultimate throughput of the supply chain at the same time that performance depends upon the accuracy and velocity of information from each trading partner.

4. Finally, the trading partners should agree to a set of global performance measures defined from the customer’s perspective. Everyone involved must remember that ERP, like MRP II, is but a tool that rests upon a set of fundamental resource management principles.

When understood well, and put to work correctly, supply chain management recognizes this basic fact: The fortunes of the firm, which is but one link in the chain, depend upon the sustained performance of the other trading partners in the enterprise.

### About the Authors

William T. Walker, CFPIM, CIRM, is the architect of supply chain management for Hewlett-Packard’s Power Products Division and president of the APICS Educational & Research Foundation.

Karen L. Alber, CFPIM, is industry segment manager-consumer products for SAP America and president of the Chicago Chapter of APICS. They are the authors of Supply Chain Management: Principles and Techniques for the Practitioner, published in 1998 by the APICS E&R Foundation.