

Logistics Basics for Purchasing and Supply Professionals

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Abstract. This paper is intended to help purchasing and supply professionals understand (a) logistics processes; (b) logistics' role in supply management, (c) the management of tradeoffs among these processes, and (d) balancing logistics priorities.

Definitions. One of the challenges facing those in purchasing and supply management is the babble of terminology faced by everyone involved in the profession. One must constantly keep in mind that the same term means different things in different organizations, and that different organizations use different terms to describe similar concepts. In any communication with individuals from other organizations, purchasing and supply professionals should clarify the meaning of technical terms so that miscommunications are minimized. For purposes of this paper, *NAPM'S Glossary of Key Purchasing and Supply Terms, 3rd edition* (Tempe, AZ: Institute for Supply Management, 2000) was used for the following definitions. *Supply Chain Management* is the design and management of seamless, value-added processes across organizational boundaries to meet the real needs of the end customer. *Supply Management* is a systems management concept employed by some organizations, designed to optimize the factors of material costs, quality, and service. *Logistics* is the process of planning, implementing, and controlling the cost-effective flow and storage of raw materials, in-process inventory, finished goods, and related information from the point of origin to the point of consumption for purposes of conforming to customer requirements. As a slight oversimplification, *supply management* focuses on the inbound side of supply chain management and *logistics* focuses on supply chain management implementation.

Logistics Processes. Four decision areas that are common to logistics in most organizations are transportation, inventory control, warehousing, and customer service. While each of these topics has its own issues, effective logistics decisions are a blend that optimizes transportation, inventory control, warehousing, and customer service. Effective management of these four decision areas can contribute to competitive advantage by contributing to organizational cost advantage, providing superior responsiveness to customers, or both. The contributions of logistics to competitive advantage can be especially important if the firm's product offerings are otherwise undifferentiated from those of competitors.

Decision issues in *transportation* focus on providing time and place utility for inbound materials, goods in process, and outbound materials. Generally, priorities in transportation decisions emphasize carrier service (transit time, transit time reliability, loss and damage experience, claims processing, on-time pickup and delivery, and equipment availability) and

cost. Generally, shippers optimize cost subject to obtaining satisfactory carrier service performance. Additional decision issues in transportation choice include for-hire versus private (shipper owned) carriers, use of intermediaries (freight forwarders or brokers) versus dealing directly with carriers, control of carrier choice (by the shipper or receiver), type of carrier (air, motor, rail, parcel, water, multi-modal) selected, number and types of carriers to use, and integration of transportation decisions with other logistics decision areas.

Inventory control decisions focus on the tradeoffs of inventory investment and customer responsiveness. At one extreme, high levels of inventory may provide excellent in stock availability (and a high level of customer service) at the expense of high levels of inventory (obsolescence, damage, and investment opportunity) carrying costs. On the other hand low levels of inventory may minimize inventory carrying costs at the expense of customer dissatisfaction and lost sales. Strategies that help achieve inventory availability and lower inventories focus on better management of information, consolidation of system-wide inventories, and efficient use of responsive transportation.

Warehousing decisions are often integrated with decisions regarding transportation and inventory control. Warehousing decisions include number and size of warehouses, whether warehouse facilities are privately owned or provided by warehouse operators, the extent that distribution is managed by outside providers, and the extent that the logistics process is contracted. Warehouse strategies may vary within individual firms. For example, it might make sense for a firm to operate private warehouses in some markets, use third-party providers in other markets, and work with traditional public warehouses in still other markets. In addition, the storage of inventories can include the use of supplier or customer facilities, postponement (delaying the assembly of components into finished product), and the performance of order processing by a third-party provider.

Customer service is a major policy decision by top management of the organization. Customer service is one of two measures (the other being cost) used to evaluate logistics system effectiveness. Examples of customer service standards include: (a) all orders shipped within 24 hours, (b) 95% of all orders shipped complete with not more than five percent back orders, (c) 98% of all inquiries answered to the customer's satisfaction within ten minutes, and (d) 99% of all orders delivered complete to the customer within 48 hours after an order has been received. Customer service policies should be developed with the understanding that a critical purpose of logistics is to deliver to internal and external customers as agreed upon. This ability to deliver as promised often provides a competitive edge that helps organizations attract and retain customers. Superior customer service is often achieved through a combination of fast response, local presence, and quick, reliable delivery.

Logistics' Role in Supply Management. Logistics facilitates the movement of physical product and information in the supply chain. This is shown by the "value chain" illustrated in Exhibit 1. *Value chain* is Professor Porter's term for what is commonly called the *supply chain*. In Exhibit 1, logistics facilitates the implementation of the organization's strategy. In many organizations, inbound, intra-organization, and outbound logistics reports to a common logistics executive. However, in other organizations, responsibility for logistics may be decentralized. This is more likely to occur when the transportation characteristics of inbound materials, goods in process, and finished product differ. For example, a chemical company may receive raw materials by pipeline and bulk water carrier, move goods in process by tank

However, all things are seldom equal. Creative management of logistics can result in improved customer service while reducing transportation, inventory levels, and/or warehousing costs. For example:

- Effective traffic management combined with professional purchasing of transportation services (qualifying suppliers, negotiating favorable contracts, matching carrier capabilities with shipper needs) may result in lower total transportation costs and more responsive transportation providers that contributes to lower system-wide inventories, fewer warehouse locations, and improved customer service.
- Effective management of inventory levels through ABC Analysis (where critical items are managed more intensely than non-critical items) may enable a firm to reduce system-wide inventories while maintaining (or improving) transportation costs, number of warehouse locations, and customer service levels.
- Analysis of storage needs may result in a blend of private warehousing, contract warehousing, traditional public warehousing, and customer onsite storage that may reduce total facility costs while saving on transportation, lowering inventories, and improving customer service.
- Careful analysis of customer service needs may help a firm identify high-potential and low-potential customers and develop tailored customer service programs that meet customer needs, better manage transportation costs, lower inventory levels, and reduce warehousing needs.

Three major challenges in managing logistics trade-offs are (a) identifying potential improvements in the logistics system, (b) managing tradeoffs among transportation, inventories, warehousing, and customer service, and (c) implementing changes in a way that realizes cost savings and service potentials.

Balancing Logistics Priorities. Like all areas of organizational activity, logistics managers must constantly balance the specific needs of logistics with the needs of (a) other departments in the organization, (b) the supply chain, and (c) customers. This results in a continuing search for a dynamic balance between efficiency (doing things right) and effectiveness (doing the right things). For example, a goal of developing an “optimal” transportation/inventory/warehousing strategy might be in conflict with (a) strategic and financial strategies of the organization, (b) customers who want their product moved, stored, and located in a way that meets their needs, and (c) suppliers who offer incentives to conform to their practices. In these situations a successful search for an “optimal” logistics system might begin with an analysis of internal, customer, and supplier realities rather than an internal focus on the logistics “ideal”.

A second issue in the balancing of logistics priorities is the constant conflict between the short-term and long-term. Generally, short-term objectives are tactical, measurable, and specific. For example, the evaluation of monthly logistics operations efficiency may focus on quantitative measures of performance. Cost per unit handled, number of orders shipped complete within 24 hours, number of items handled per employee hour, and so on. On the other hand, long-term objectives are strategic, qualitative, and general. For example, the evaluation of logistics strategic effectiveness might evaluate the ability to obtain carriers,

warehousing, and material handling capacity to respond to unexpected heavy demand in previously slow markets (or conversely, avoid excessive commitments when demand slows in previously busy markets).

Conclusion. Logistics plays an important role in implementing supply chain management strategy. The management of transportation, inventory, warehousing, and customer service provides time, space, possession, and form utility that can provide competitive advantage. This is especially true when product offerings are otherwise undifferentiated.