Online File W8.1

Types of Supply Chains

The supply chain shown in Figure 8.1 (page 359 of the book) is typical for a manufacturing company. If the company is a traditional one, it will produce items that will be stored in warehouses and other locations, making the supply chain more complex. If the company uses a make-to-order business model, there will be no need for storing finished products, but there will be need to store raw materials and components. Therefore, it is clear that supply chains depend on the nature of the company. The following four types are very common.

**Integrated Make-to-Stock Model**

The integrated make-to-stock supply chain model focuses on tracking customer demand in real time, so that the production process can restock the finished-goods inventory efficiently. This integration is often achieved through use of an information system that is fully integrated (an enterprise system, described in Section 8.3). Through application of such a system, the organization can receive real-time demand information that can be used to develop and modify production plans and schedules. This information is also integrated further down the supply chain to the procurement function, so that the modified production plans and schedules can be supported by input materials.

An example is Starbucks Coffee (starbucks.com) which uses several distribution channels, not only selling coffee drinks to consumers, but also selling beans and ground coffee to businesses such as airlines, supermarkets, department stores, and ice-cream makers. Sales are also done through direct mail, including the Internet. Starbucks is successfully integrating all sources of demand and matching it with the supply by using Oracle’s automated information system for manufacturing (called GEMMS). The system does distribution planning, manufacturing scheduling, and inventory control (using MRP). The coordination of supply with multiple distribution channels requires timely and accurate information flow about demand, inventories, storage capacity, transportation scheduling, and more. The information systems are critical in doing all the above with maximum effectiveness and reasonable cost. Finally, Starbucks must work closely with hundreds of business partners.

**Build-to-Order Model**

Dell Computer is best known for its application of the build-to-order model (see Appendix 3A). In this model a company begins assembly of the customer’s order almost immediately upon receipt of the order. This requires careful management of the component inventories and delivery of needed supplies along the supply chain. A solution to this potential inventory problem is to utilize many common components across several production lines and in several locations.

One of the primary benefits of this type of supply chain model is the perception that each customer is receiving a personalized product. In addition, the customer is receiving it rapidly. This type of supply chain model supports the concept of mass customization.

**Continuous Replenishment Model**

The idea of the continuous replenishment supply chain model is to constantly replenish the inventory by working closely with suppliers and/or intermediaries. However, if the replenishment process involves many shipments, the cost may be
too high, causing the supply chain to collapse. Therefore very tight integration is
needed between the order-fulfillment process and the production process. Real-
time information about demand changes is required in order for the production
process to maintain the desired replenishment schedules and levels. This model
is most applicable to environments with stable demand patterns, as is usually
the case with distribution of prescription medicine. The model requires inter-
mediaries when large systems are involved. Such a distribution channel is
shown in Figure W8.1.1 (upper part) for McKesson Co.

**Channel Assembly Model**

A slight modification to the build-to-order model is the channel assembly sup-
ply chain model. In this model, the parts of the product are gathered and assem-
bled as the product moves through the distribution channel. This is accomplished
through strategic alliances with *third-party logistics (3PL)* firms. These services
sometimes involve either physical assembly of a product at a 3PL facility or collection of finished components for delivery to the customer. For example, a computer company would have items such as the monitor shipped directly from its vendor to a 3PL facility (e.g., one run by Federal Express or UPS). The customer's computer order would therefore only come together once all items were placed on a vehicle for delivery. A channel assembly may have low or zero inventories, and it is popular in the computer technology industry. An example is shown in Figure W8.1.1 (lower part), with a large distributor, Ingram Micro, at the center of the supply chain.