

What is a Supply Chain?

A supply chain consists of all parties involved, directly or indirectly, in fulfilling a customer request. The supply chain not only includes the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves. Within each organization, such as manufacturer, the supply chain includes all functions involved in receiving and filling a customer request. These functions include, but are not limited to, new product development, marketing, operations, distribution, finance, and customer service.

Consider a customer walking into a Wal-Mart store to purchase detergent. The supply chain begins with the customer and their need for detergent. The next stage of this supply chain is the Wal-Mart retail store that the customer visits. Wal-Mart stocks its shelves using inventory that may have been supplied from a finished-goods warehouse that Wal-Mart manages or from a distributor using trucks supplied by a third party. The distributor in turn is stocked by the manufacturer (say Procter & Gamble [P&G] in this case). The P&G manufacturing plant receives raw material from a variety of suppliers who may themselves have been supplied by lower tier suppliers. For example, packaging material may come from Tenneco packaging while Tenneco receives raw materials to manufacture the packaging from other suppliers.

A supply chain is dynamic and involves the constant flow of information, product, and funds between different stages. In our example, Wal-Mart provides the product, as well as pricing and availability information, to the customer. The customer transfers funds to Wal-Mart. Wal-Mart conveys point-of-sales data as well as replenishment order via trucks back to the store. Wal-Mart transfers funds to the distributor after the replenishment. The distributor also provides pricing information and sends delivery schedules to Wal-Mart. Similar information, material, and fund flows take place across the entire supply chain.

In another example, when a customer purchases online from Dell Computer, the supply chain includes, among others, the customer, Dell's Web site that takes the customer's order, the Dell assembly plant, and all of Dell's suppliers and their suppliers. The Web site provides the customer with information regarding pricing, product variety, and product availability. Having made a product choice, the customer enters the site to check the status of the order. Stages further up the supply chain use customer order information to fill the order. That process involves an additional flow of information, product, and funds between various stages of the supply chain.

These examples illustrate that the customer is an integral part of the supply chain. The primary purpose from the existence of any supply chain is to satisfy customer needs, in the process generating profits for itself. Supply chain activities begin with a customer order and end when a satisfied customer has paid for his or her purchase. The term supply chain conjures up images of product or supply moving from suppliers to manufacturers to distributors to retailers to customers along a chain. It is important to visualize information, funds, and product flows along both directions of this chain. The

term supply chain may also imply that only one player is involved at each stage. In reality, a manufacturer may receive material from several suppliers and then supply several distributors. Thus, most supply chains are actually networks. It may be more accurate to use the term supply network or supply web to describe the structure of most supply chains.

A typical supply chain may involve a variety of stages. These supply chain stages include:

- Customers
- Retailers
- Wholesalers/Distributors
- Manufacturers
- Component/Raw material suppliers

Each stage need not be presented in a supply chain. The appropriate design of the supply chain will depend on both the customer's needs and the roles of the stages involved. In some cases, such as Dell, a manufacturer may fill customer orders directly. Dell builds-to-order; that is, a customer order initiates manufacturing at Dell. Dell does not have a retailer, wholesaler, or distributor in its supply chain. In other cases, such as the mail order company L.L. Bean, manufacturers do not respond to customer orders directly. In this case, L.L. Bean maintains an inventory or product from which they fill customer orders. Compared to the Dell supply chain, the L.L. Bean supply chain contains an extra stage (the retailer, L.L. Bean itself) between the customer and the manufacturer. In the case of other retail stores, the supply chain may also contain a wholesaler or distributor between the store and the manufacturer.

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