

Supply chain Management

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Lecture 3

جامعة الجميع الذكية

تسعى لتكون الكيان الأول الذي يتبنى مبدأ المجتمع التعليمي
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MGM 660

Supply Chain Drivers and Metrics



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After reading this chapter, you will be able to:

1. Identify the major drivers of supply chain performance.
2. Discuss the role each driver plays in creating strategic fit between the supply chain strategy and the competitive strategy.
3. Define the key metrics that track the performance of the supply chain in terms of each driver.
4. Describe the major obstacles that must be overcome to manage a supply chain successfully.



The strategic fit requires that a company's supply chain achieve the balance between responsiveness and efficiency that best meets the needs of the company's competitive strategy. To understand how a company can improve supply chain performance in terms of responsiveness and efficiency, we must examine the logistical and cross functional drivers of supply chain performance: facilities, inventory, transportation, information, sourcing, and pricing.

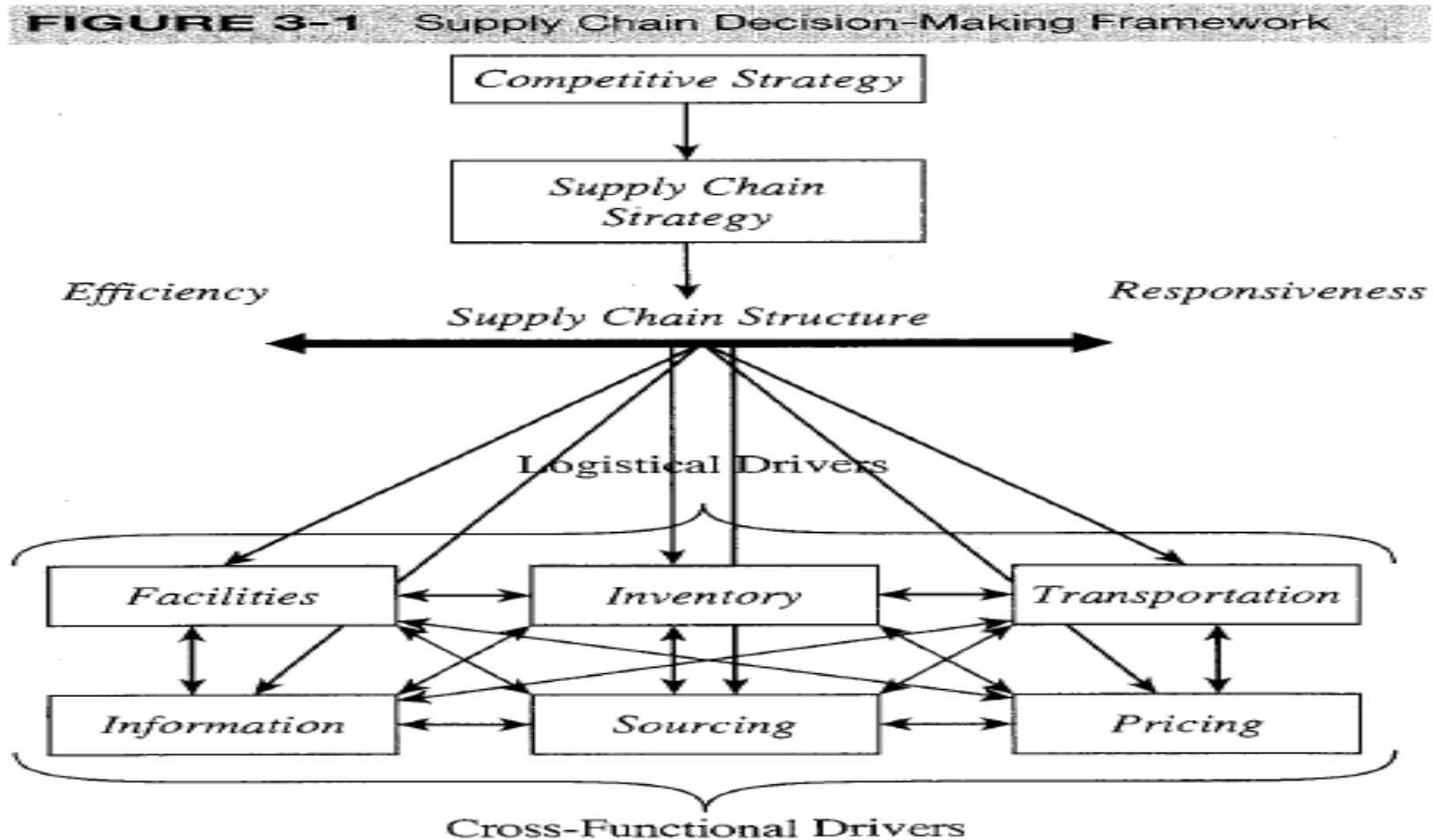
These drivers interact with each other to determine the supply chain's performance in terms of responsiveness and efficiency. As a result, the structure of these drivers determines if and how strategic fit is achieved across the supply chain. First we define each driver and discuss its impact on the performance of the supply chain.

the goal of a supply chain strategy is to strike the balance between responsiveness and efficiency that fits with the competitive strategy. To reach this goal, a company must structure the right combination of the three logistical and three cross-functional drivers discussed earlier. For each of the individual drivers, supply chain managers must make a trade-off between efficiency and responsiveness based on interaction with the other drivers. The combined impact of these drivers then determines the responsiveness and the profits of the entire supply chain.



We provide a visual framework for supply chain decision making in Figure 3-1. below Most companies begin with a competitive strategy and then decide what their supply chain strategy ought to be. The supply chain strategy determines how the supply chain should perform with respect to efficiency and responsiveness.

The supply chain must then use the three logistical and three cross-functional drivers to reach the performance level the supply chain strategy dictates and maximize the supply chain profits. Although this framework is generally viewed from the top down, in many instances, a study of the six drivers may indicate the need to change the supply chain and potentially even the competitive strategy.



In this section, we discuss the role that facilities play in the supply chain as well as critical facility-related decisions that supply chain managers need to make.

If we think of inventory as what is being passed along the supply chain and transportation as how it is passed along, then facilities are the where of the supply chain. They are the locations to or from which the inventory is transported. Within a facility, inventory is either transformed into another state (manufacturing) or it is stored (warehousing).





Facilities are a key driver of supply chain performance in terms of responsiveness and efficiency. For example, companies can gain economies of scale when a product is manufactured or stored in only one location; this centralization increases efficiency. The cost reduction, however, comes at the expense of responsiveness, as many of a company's customers may be located far from the production facility. The opposite is also true.



Locating facilities close to customers increases the number of facilities needed and consequently reduces efficiency. If the customer demands and is willing to pay for the responsiveness that having numerous facilities adds, however, then this facilities decision helps meet the company's competitive strategy goals.



Decisions regarding facilities are a crucial part of supply chain design. We now identify components of facilities decisions that companies must analyze.

Role

For production facilities, firms must decide whether they will be flexible, dedicated, or a combination of the two. Flexible capacity can be used for many types of products but is often less efficient, whereas dedicated capacity can be used for only a limited number of products but is more efficient.





Firms must also decide whether to design a facility with a product focus or a functional focus. A product-focused facility performs many different functions (e.g., fabrication and assembly) in producing a single type of product. A functional-focused facility performs few functions (e.g., only fabrication or only assembly) on many types of products. A product focus tends to result in more expertise about a particular type of product at the expense of the functional expertise that comes from a functional methodology.



For warehouses and DCs, firms must decide whether they will be primarily crossdocking facilities or storage facilities. At cross-docking facilities, inbound trucks from suppliers are unloaded; the product is broken into smaller lots, and is quickly loaded onto store-bound trucks. Each store-bound truck carries a variety of products, some from each inbound truck. For storage facilities, firms must decide on the products to be stored at each facility.



Deciding where a company will locate its facilities constitutes a large part of the design of a supply chain. A basic trade-off here is whether to centralize in order to gain economies of scale or to decentralize to become more responsive by being closer to the customer. Companies must also consider a host of issues related to the various characteristics of the local area in which the facility is situated. These include macroeconomic factors, quality of workers, cost of workers, cost of facility, availability of infrastructure, proximity to customers, the location of that firm's other facilities, tax effects, and other strategic factors.





Companies must also determine a facility's capacity to perform its intended function or functions. A large amount of excess capacity allows the facility to be very flexible and to respond to wide swings in the demands placed on it. Excess capacity, however, costs money and therefore can decrease efficiency. A facility with little excess capacity will likely be more efficient per unit of product it produces than one with a lot of unused capacity. The high-utilization facility, however, will have difficulty responding to demand fluctuations. Therefore, a company must make a trade-off to determine the right amount of capacity to have at each of its facilities.





The fundamental trade-off that managers face when making facilities decisions is between the cost of the number, location, and type of facilities (efficiency) and the level of responsiveness that these facilities provide the company's customers. Increasing the number of facilities increases facility and inventory costs but decreases transportation costs and reduces response time. Increasing the flexibility of a facility increases facility costs but decreases inventory costs and response time.



In this section we discuss the role that inventory plays in the supply chain and how managers use inventory to drive supply chain performance.

Role in the supply chain

Inventory exists in the supply chain because of a mismatch between supply and demand. This mismatch is intentional at a steel manufacturer, where it is economical to manufacture in large lots that are then stored for future sales.



The mismatch is also intentional at a retail store where inventory is held in anticipation of future demand. An important role that inventory plays in the supply chain is to increase the amount of demand that can be satisfied by having the product ready and available when the customer wants it. Another significant role that inventory plays is to reduce cost by exploiting economies of scale that may exist during production and distribution.



Inventory plays a significant role in a supply chain's ability to support a firm's competitive strategy. If a firm's competitive strategy requires a very high level of responsiveness, a company can achieve this responsiveness by locating large amounts of inventory close to the customer. Conversely, a company can also use inventory to become more efficient by reducing inventory through centralized stocking.



The latter strategy would support a competitive strategy of being a lowcost producer. The trade-off implicit in the inventory driver is between the responsiveness that results from more inventory and the efficiency that results from less inventory.



In this section we discuss the role that transportation plays in the supply chain, as well as key transportation-related decisions that supply chain managers must make.

Role in the supply chain

Transportation moves product between different stages in a supply chain. Like the other supply chain drivers, transportation has a large impact on both responsiveness and efficiency. Faster transportation allows a supply chain to be more responsive but reduces its efficiency.



The type of transportation a company uses also affects the inventory and facility locations in the supply chain. Dell, for example, flies some components from Asia because doing so allows the company to lower the level of inventory it holds. Clearly, such a practice also increases responsiveness but decreases transportation efficiency because it is more costly than transporting parts by ship.





The role of transportation in a company's competitive strategy figures prominently in the company's consideration of the target customer's needs. If a firm's competitive strategy targets a customer who demands a very high level of responsiveness, and that customer is willing to pay for this responsiveness, then a firm can use transportation as one driver for making the supply chain more responsive.



In this section we discuss the role that information plays in the supply chain, as well as key information-related decisions that supply chain managers must make.

Role in the supply chain

Information deeply affects every part of the supply chain. Its impact is easy to underestimate, as information affects a supply chain in many different ways. Consider the following:

1. Information serves as the connection between various stages of a supply chain, allowing them to coordinate and maximize total supply chain profitability.





2. Information is also crucial to the daily operations of each stage in a supply chain. For instance, a production scheduling system uses information on demand to create a schedule that allows a factory to produce the right products in an efficient manner. A warehouse management system uses information to create visibility of the warehouse's inventory. The company can then use this information to determine whether new orders can be filled.



Information is an important driver that companies have used to become both more efficient and more responsive. The tremendous growth of the importance of information technology is a testimony to the impact that information can have on improving a company. Like all the other drivers, however, even with information, companies reach a point when they must make the trade-off between efficiency and responsiveness.



In this section we discuss the role that sourcing plays in the supply chain and key sourcing related decisions that managers need to make.

Role in the supply chain

Sourcing is the set of business processes required to purchase goods and services. Managers must first decide which tasks will be outsourced and those that will be performed within the firm. For each outsourced task, the manager must decide whether to source from a single supplier or a portfolio of suppliers. If a portfolio of multiple suppliers is to be carried, then the role of each supplier in the portfolio must be clarified.





The next step is to identify the set of criteria that will be used to select suppliers and measure their performance. Managers then select suppliers and negotiate contracts with them. Contracts define the role of each supply source and should be structured to improve supply chain performance and minimize information distortion from one stage to the next. Once suppliers and contracts are in place, procurement processes that facilitate the placement and delivery of orders play a major role.





Sourcing decisions are crucial because they affect the level of efficiency and responsiveness the supply chain can achieve. In some instance, firms outsource to responsive third parties if it is too expensive for them to develop this responsiveness on their own. An example is the outsourcing of next-day delivery by all firms to a few package carriers because it is too expensive for a firm to develop next-day delivery capability on its own.



In this section we discuss the role that pricing plays in the supply chain.

Role in the supply chain

Pricing is the process by which a firm decides how much to charge customers for its goods and services. Pricing affects the customer segments that choose to buy the product, as well as the customer's expectations. This directly affects the supply chain in terms of the level of responsiveness required as well as the demand profile that the supply chain attempts to serve.



Pricing is also a lever that can be used to match supply and demand. Short-term discounts can be used to eliminate supply surpluses or decrease seasonal demand spikes by moving some of the demand forward. In short, pricing is one of the most significant factors that affect the level and type of demand that the supply chain will face.



Pricing is a significant attribute through which a firm executes its competitive strategy. For example, Costco, a membership-based wholesaler in the United States, has a policy that prices are kept steady but low. Customers expect low prices but are comfortable with a lower level of product availability. The steady prices also ensure that demand stays relatively stable. Costco serves a well defined segment, and it can thus design an appropriate supply chain.



The key to achieving strategic fit is a company's ability to find a balance between responsiveness and efficiency that best matches the needs of its target customer. In deciding where this balance should be located on the responsiveness spectrum, companies face many obstacles. In this section we discuss some of the obstacles and also provide a feel for how the supply chain environment has changed over the years.



On one hand, these obstacles have made it much more difficult for companies to create the ideal balance. On the other hand, they have afforded companies increased opportunities for improving supply chain management. Managers need a solid understanding of the impact of these obstacles because they are critical to a company's ability to reap the maximum profitability from its supply chain.



Product proliferation is rampant today. With customers demanding ever more customized products, manufacturers have responded with mass customization and even segment-of-one (companies view each customer as an independent market segment) views of the market. Products that were formerly quite generic are now custom-made for a specific consumer.



In addition to the increasing variety of product types, the life cycle of products has been shrinking. Today there are products whose life cycles can be measured in months, compared to the old standard of years. These are not just niche products, either. PCs now have a life cycle of several months, and even some automobile manufacturers have lowered their product life cycles from five plus years to about three years.



Customers are constantly demanding improvements in delivery lead times, cost, and product performance. If they do not receive these improvements, they move on to new suppliers. Many companies had periodic, standard price increases--not due to a rise in demand or any other factor, but simply because raising prices was the way business was done.



Now, one repeatedly sees companies that cannot force through any price increases without losing market share. Today's customers are demanding faster fulfillment, better quality, and better-performing products for the same price they paid years ago. This tremendous growth in customer demands (not necessarily demand) means that the supply chain must provide more just to maintain its business.



Over the past several decades, most firms have become less vertically integrated. As companies have shed noncore functions, they have been able to take advantage of supplier and customer competencies that they themselves did not have. This new ownership structure, however, has also made managing the supply chain more difficult.



With the chain broken into many owners, each with its own policies and interests, the chain is more difficult to coordinate. Potentially, this problem could cause each stage of a supply chain to work only toward its own objectives rather than the whole chain's, resulting in the reduction of overall supply chain profitability.



Supply chains today are more likely than ever to be global. Establishing a global supply chain creates many benefits, such as the ability to source from a global base of suppliers who may offer better or cheaper goods than were available in a company's home nation. Globalization, however, also adds stress to the chain, because facilities within the chain are farther apart, making coordination much more difficult.



Creating a successful supply chain strategy is not easy. Once a good strategy is formulated, however, the execution of the strategy can be even more difficult. For instance, Toyota's production system, which is a supply chain strategy, has been widely known and understood. Yet this strategy has been a sustained competitive advantage for Toyota for more than two decades. Does Toyota have a brilliant strategy that no one else can figure out? Their strategy is brilliant, but many others have figured it out.



The difficulty other firms have had is in executing that strategy. Many highly talented employees at all levels of the organization are necessary to make a supply chain strategy successful. Although we deal mostly with the formulation of strategy in this book, one should keep in mind that skillful execution of a strategy can be as important as the strategy itself.

Lecture 3

Reference

Supply chain management
Strategy, Planning, and Operation
By: Sunil Chopra,
>eter Meind!.-3rd ed.

Chapter 3