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## Session 1: Understanding Operations & Supply Chain in the new era

Businesses nowadays are highly dynamic and competitive because of innovation, globalization, the constant evolution of technology, and consumer preferences and tastes. To guarantee the organization operates effectively, operations and the supply chain must be streamlined. Organizations have recognized supply chain as one of the main areas of focus for creating and retaining competitive advantage in the marketplace [1].

An efficiently managed supply chain can significantly curtail organizational operating expenses, thus boosting earnings [2].

Operations and Supply Chain Management (OSCM), which covers both the manufacturing and service sectors, encompasses a wide range of activities, including procurement, material management, operations planning, logistics, product distribution and delivery, retailing, demand forecasting, and order execution and completion [3]. Operations management is concerned with the production of products from raw materials, while supply chain generally covers the acquisition and transfer of both raw materials and finished goods [4]. In smaller firms, the two functions may overlap.

Businesses need to be operationally competent, which includes collaborating, teaming up, and reconfiguring. They must have the skills necessary to deal with uncertainty and gain competitive advantages supported by flexible supply chains. According to studies in strategic management, resources can work together in complex ways to create capabilities on purpose.

The strategic operations and supply chain management of an enterprise typically include network resource optimization, which includes network design and decisions about the placement and number of facilities. Operations and supply chain optimization lead to the best possible use of resources and technology, including blockchain, artificial intelligence (AI), and the internet of things (IoT), to boost productivity and performance within a supply network.

**Supply Chain Management Process**

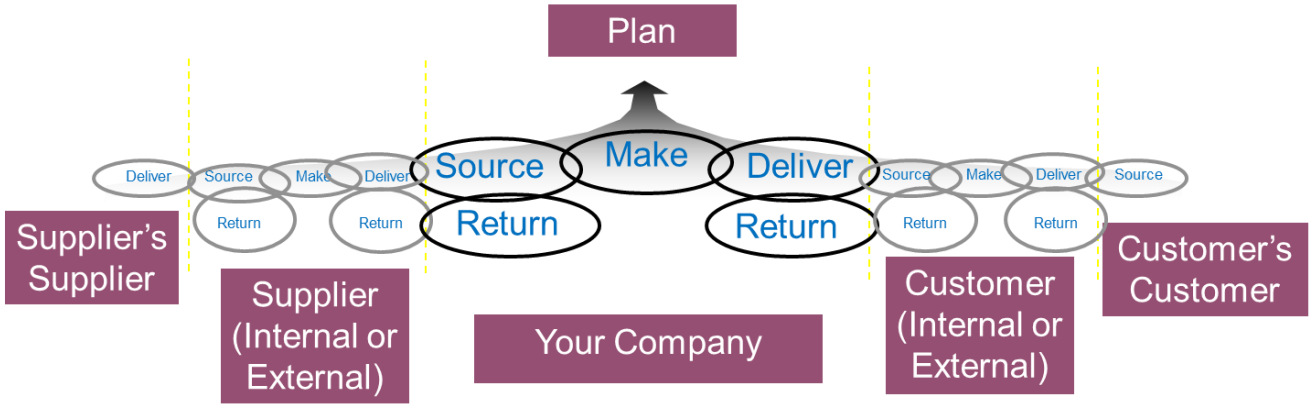
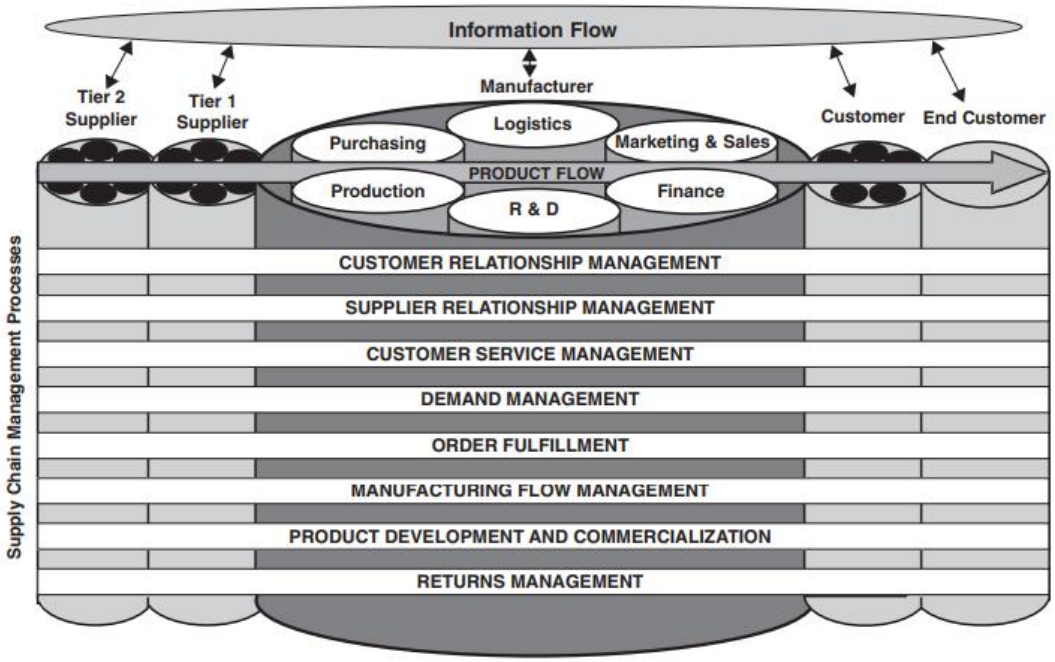
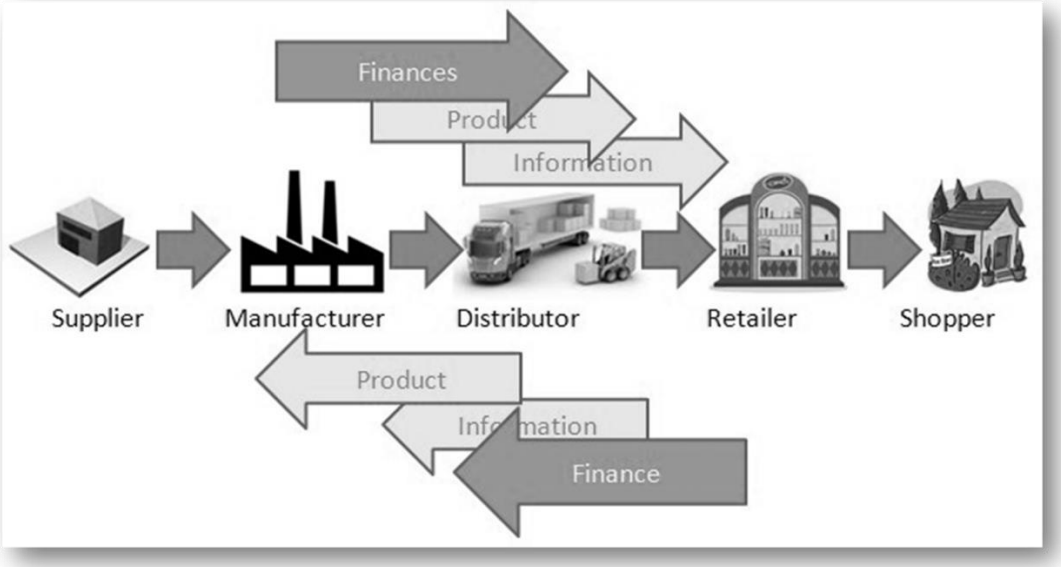


**Figure 1-1**
**Supply Chain Management:**
**Integrating and Managing Business Processes Across the Supply Chain**




Source: Adapted from Douglas M. Lambert, Martha C. Cooper, and Janus D. Pagh, "Supply Chain Management: Implementation: Issues and Research Opportunities," *The International Journal of Logistics Management,* Vol. 9, No. 2 (1998), p. 2.

## Supply Chain Flows



**Challenges to operations and supply chain optimization**

Consistent, thorough, and systematic operation optimization across the board is a need for competitiveness. Modern communications technologies and globalization have opened up a wide range of opportunities for improving operations. However, the same developments also lead to more intense global rivalry, putting more pressure on both established companies and developing sectors to plan their operations and construct and manage their supply chains in a productive and economical way.

In all likelihood, operations and supply chain optimization will be a difficult technological task to complete, especially if the dimensions are large; notably for businesses with worldwide operations and supply networks that span the globe. Such supply chains are complex systems that cover a wide range of manufacturing, distribution, and supply services. These components are linked by a number of transportation methods, including trucks, trains, planes, and ships, all of which have different lead times. This interconnected system is known as the supply chain. It is frequently subject to a number of uncertainties, including but not limited to changes in the prices of commodities on a worldwide scale and interruptions in supply.

One major issue in the new period is the growing focus on environmentally friendly production, which forces companies to embrace technologies and materials that will lessen their carbon impact. The required adjustment must be executed not just at one location but all along the supply chain. To adapt to changes in the business environment, operations and supply chain configuration must be improved. The current setup, which may seem to be the best balance of cost and service, is likely to change gradually in response to changes in the business environment, such as fluctuations in material costs, changes in carriers, shifts in customer demographics, or other issues that typically require constant monitoring and control.

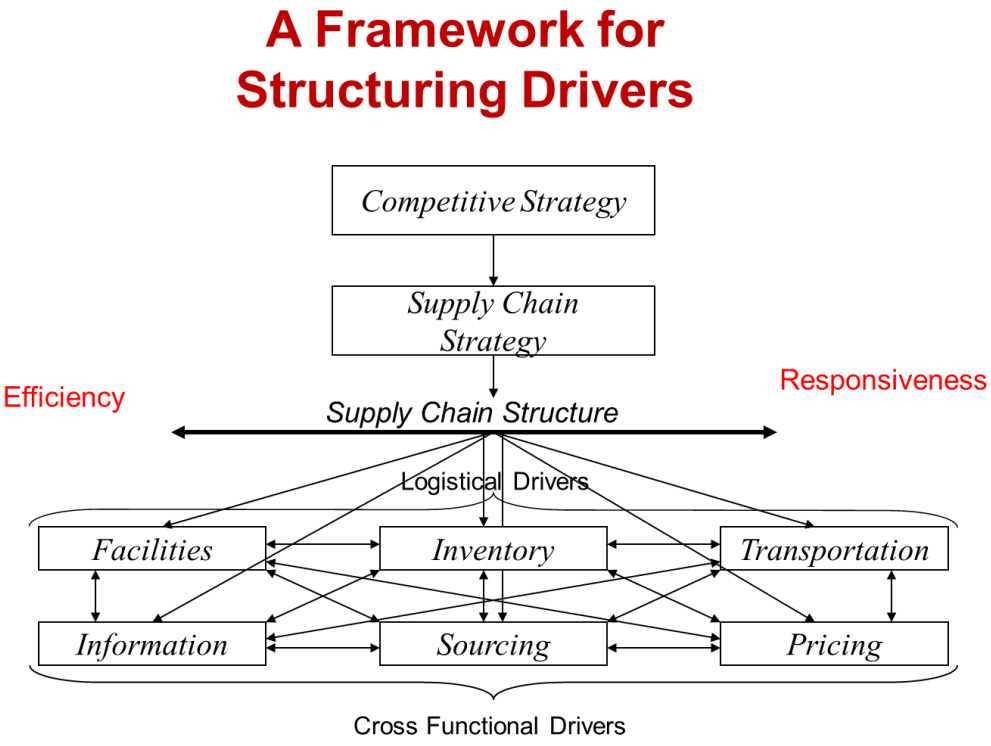
## Session 2: Supply Chain Drivers

Supply chain drivers are the key factors that affect the performance and success of a supply chain.

In the present dynamic business scenario, every organization needs to have a competitive edge over the rest. To achieve this, organizations are adopting different processes and technologies for aligning the capabilities of their supply chains with their business strategies. This is also required to maintain a balance between supply chain efficiency and responsiveness.

For this, organizations require examining different supply chain drivers and utilizing them appropriately. A supply chain driver is a factor that enables a supply chain to operate efficiently and responsively. There are six key supply chain drivers.

A supply chain's performance depends on the interaction among these six key supply chain drivers. The supply chain of each organization targets aligning its competitive strategy with its supply chain strategy for increased efficiency and responsiveness. To achieve this, organizations require structuring a suitable combination of all these six drivers of a supply chain. These drivers interact with one another to determine the supply chain's responsiveness. Let us first discuss the framework for structuring these drivers.



## Facilities

Facilities are physical locations in a supply chain network that are used for manufacturing, storing, and transporting products. There are different types of facilities in a supply chain, such as:

- Plant sites
- Factories
- Warehouses
- Distribution centers

The efficiency and responsiveness of a supply chain depend on the capacity, location, and flexibility of facilities. For example, a distributor who wants to respond quickly to customers should choose a facility that is located near the consumption center. An organization usually makes long-term decisions related to facilities in its supply chain.

Therefore, it considers various factors before deciding on facilities, including:

- Transportation costs
- Production capacity
- Customer demand
- Market uncertainties

## Inventory

Inventory refers to the stock of materials or goods owned by a business with an aim of production and sale. It includes the following:

- Raw materials that are used to manufacture products
- Work-in-progress or goods at the semi-finished stage
- Finished goods or final output

It is essential to maintain an appropriate level of inventory in an organization to meet the increasing demands of customers and avoid understocking or over-stocking products. Based on their role in the entire process of customer satisfaction, there are five main types of inventories held by an organization.

Different types of inventories:

- Cycle Inventory
- Transit Inventory
- Safety Inventory
- Seasonal Inventory
- Obsolete Inventory

An organization can make its supply chain more efficient and responsive by managing its inventories effectively. For example, if a large amount of inventory is stocked near consumption centers, it will help the organization to meet customer demand on time.

## Transportation

Transportation refers to the movement of products from one location to another, such as from a supplier to a manufacturer. It directly impacts the product delivery schedules of an organization. Therefore, it plays a crucial role in ensuring the effectiveness and responsiveness of a supply chain.

A supply chain becomes more responsive with faster transportation means.

An organization needs to take various strategic decisions to make its transportation responsive and cost-effective.

## Information

Information refers to the consolidated data associated with various facets of a supply chain, such as transportation, facilities, prices, costs, customers, and suppliers. The efficiency and responsiveness of a supply chain depend on timely and accurate information. If suitable information is not provided, various supply chain activities may suffer, including:

- Warehouse management
- Inventory control
- Transportation planning
- Development of customer service standards
- Design procurement
- Operation of supply and distribution systems

Information also impacts other supply chain drivers. Information determines all decisions related to supply chain activities. If information is correct, it improves coordination among various units of the supply chain and thus maximizes total profitability.

## Sourcing

Sourcing is an array of business processes used to purchase and deliver products and services. It includes the selection of suppliers for various supply chain activities, such as production, storage, information management, and transportation. It determines whether a particular supply chain activity should be performed in-house or outsourced.

These decisions impact the efficiency and responsiveness of a supply chain considerably.

While designing the sourcing process, an organization should consider the following steps:

- Decide which tasks should be outsourced.
- Decide whether to source these tasks from one supplier or multiple suppliers.
- In the case of multiple suppliers, create a portfolio that defines the role of each supplier.

- Define appropriate criteria for the selection and measurement of the performance of suppliers.
- Choose suitable suppliers based on the criteria.
- Negotiate contracts with the selected suppliers.

This sourcing process may help the organization maintain a consistent and accurate information flow across the various stages of a supply chain and improve its performance.

## Pricing

Pricing is a process that is used to determine the amount charged by an organization for making its products and services available to customers. This process impacts the purchase decisions of customers to a large extent. It also plays a critical role in matching the supply and demand of products in the market. For example, an organization can offer short-term discounts to customers to reduce excess supply.


Consider this framework using Wal-Mart as an example. Wal-Mart's competitive strategy is to be a reliable, low-cost retailer for a wide variety of mass-consumption goods. This strategy dictates that the ideal supply chain will emphasize efficiency but also maintain an adequate level of responsiveness. Wal-Mart uses the three logistical and three cross-functional drivers effectively to achieve this type of supply chain performance. With the inventory driver, Wal-Mart maintains an efficient supply chain by keeping low levels of inventory. For instance, Wal-Mart pioneered cross-docking, a system in which inventory is not stocked in a warehouse but rather is shipped to stores from the manufacturer. These shipments make only brief stops at distribution centers (DCs), where they are transferred to trucks that make deliveries to stores. This significantly lowers inventory because products are stocked only at stores, not at both stores and warehouses. With respect to inventory, Wal-Mart favors efficiency over responsiveness. On the transportation front, Wal-Mart runs its own fleet, to keep responsiveness high. This increases transportation cost, but the benefits in terms of reduced inventory and improved product availability justify this cost in Wal-Mart's case. In the case of facilities, Wal-Mart uses centrally located DCs within its network of stores to decrease the number of facilities and increase efficiency at each DC. Wal-Mart builds retail stores only where the demand is sufficient to justify having several of them supported by a DC, thereby increasing efficiency of its transportation assets. To utilize information in the supply chain, Wal-Mart has invested significantly more than its competitors in information technology. As a result, Wal-Mart is a leader in its use of the information driver to improve responsiveness and decrease inventory investment. Wal-Mart feeds demand information across the supply chain to suppliers who manufacture only what is being demanded. The supply chain's ability to share demand information has required large investments, but the result is an improved supply chain in terms of both responsiveness and efficiency. With regard to the sourcing driver, Wal-Mart identifies efficient sources for each product it sells. Wal-Mart feeds them large orders, allowing them to be efficient by exploiting economies of scale. Finally, for the pricing driver, Wal-Mart practices "everyday low pricing" (EDLP) for its products. This ensures that customer demand stays steady and does not fluctuate with price variations. The entire supply chain then focuses on meeting this demand in an efficient manner. Wal-Mart uses all the supply chain drivers to achieve the right balance between responsiveness and efficiency so that its competitive strategy and supply chain strategy are in harmony.