

A Course Material on

## **LOGISTICS AND SUPPLY CHAIN MANAGEMENT**



**Subject : LOGISTICS AND SUPPLY CHAIN MANAGEMENT**

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## **LECTURE – 10**

## **1.6 Supply Chain Decisions**

We classify the decisions for supply chain management into two broad categories -- strategic and operational. As the term implies, strategic decisions are made typically over a longer time horizon. These are closely linked to the corporate and guide supply chain policies from a design perspective. On the other hand, operational decisions are short term, and focus on activities over a day-to-day basis. The effort in this type of decisions is to effectively and efficiently manage the product flow in the "strategically" planned supply chain.

There are four major decision areas in supply chain management: 1) location, 2) production, 3) inventory, and 4) transportation (distribution), and there are both strategic and operational elements in each of these decision areas.

### **1) Location Decisions**

The geographic placement of production facilities, stocking points, and sourcing points is the natural first step in creating a supply chain. The location of facilities involves a commitment of resources to a long-term plan. Once the size, number, and location of these are determined, so are the possible paths by which the product flows through to the final customer. These decisions are of great significance to a firm since they represent the basic strategy for accessing customer markets, and will have a considerable impact on revenue,

cost, and level of service. These decisions should be determined by an optimization routine that considers production costs, taxes, duties and duty drawback, tariffs, local content, distribution costs, production limitations, etc. ( Arntzen, Brown, Harrison and Trafton [1995]) Although location decisions are primarily strategic, they also have implications on an operational level.

## **2) Production Decisions**

The strategic decisions include what products to produce, and which plants to produce them in, allocation of suppliers to plants, plants to DC's, and DC's to customer markets. As before, these decisions have a big impact on the revenues, costs and customer service levels of the firm. These decisions assume the existence of the facilities, but determine the exact path(s) through which a product flows to and from these facilities. Another critical issue is the capacity of the manufacturing facilities--and this largely depends the degree of vertical integration within the firm. Operational decisions focus on detailed production scheduling. These decisions include the construction of the master production schedules, scheduling production on machines, and equipment maintenance. Other considerations include workload balancing, and quality control measures at a production facility.

## **3) Inventory Decisions**

These refer to means by which inventories are managed. Inventories exist at every stage of the supply chain as either raw materials, semi-finished or finished goods. They can also be in-process between locations. Their primary purpose is to buffer against any uncertainty that might exist in the supply chain. Since holding of inventories can cost anywhere between 20 to 40 percent of their value, their efficient management is critical in supply chain operations. It is strategic in the sense that top management sets goals. However, most researchers have approached the management of inventory from an operational perspective.

These include deployment strategies (push versus pull), control policies --- the determination of the optimal levels of order quantities and reorder points, and setting safety stock levels, at each stocking location. These levels are critical, since they are primary determinants of customer service levels.

#### **4) Transportation Decisions**

The mode choice aspect of these decisions is the more strategic one. These are closely linked to the inventory decisions, since the best choice of mode is often found by trading-off the cost of using the particular mode of transport with the indirect cost of inventory associated with that mode. While air shipments may be fast, reliable, and warrant lesser safety stocks, but they are expensive. Meanwhile shipping by sea or rail may be much cheaper, but they necessitate holding relatively large amounts of inventory to buffer against the inherent uncertainty associated with them. Therefore customer service levels, and geographic location play vital roles in such decisions. Since transportation cost is more than 30 percent of the logistics costs, operating efficiently makes good economic sense. Shipment sizes (consolidated bulk shipments versus Lot-for-Lot), routing and scheduling of equipment are keys in effective management of the firm's transport strategy.