CHAPTER SEVENTEEN

SUPPLY CHAIN AND LOGISTICS MANAGEMENT
AFTER READING THIS CHAPTER YOU SHOULD BE ABLE TO:

• Explain what supply chain and logistics management are and how they relate to the marketing mix.

• Understand the nature of the logistics trade-offs among transportation, inventory, and other logistics functions.

• Explain how managers trade off different “logistics costs” relative to customer service in order to reach a logistics decision.

(continued)
AFTER READING THIS CHAPTER YOU SHOULD BE ABLE TO:

• Recognize how customer service in logistics decisions contributes to customer value and successful marketing programs.

• Describe the key logistics functions of transportation, warehousing and materials handling, order processing, and inventory management and the emerging role of third-party logistics providers.
The Unglamorous World of the Supply Chain & Logistics Management

• It makes no sense to have brilliant marketing programs to sell world-class products if the products aren’t available:
  a. at the right time,
  b. at the right place, and
  c. in the right form and condition that consumers want them.

• Poor customer service adds up to lost revenue and profit opportunities.

• Welcome to the unglamorous--but critical--world of supply chain and logistics management.
Definition of Logistics

Logistics involves those activities that focus on getting the right amount of the right products to the right place at the right time at the lowest possible cost.
Logistics Management is . . .

1. Organizing the cost effective flow and storage of materials, in-process inventory, finished goods and related information
2. From point of origin to point of consumption
3. To satisfy customer requirements
A Supply Chain is a sequence of firms that perform activities required to create and deliver a good or service to consumers or industrial users.
The Supply Chain

- A supply chain differs from a marketing channel in terms of membership.
- A supply chain includes suppliers who provide raw material inputs to a manufacturer as well as the wholesalers and retailers who deliver finished goods.
Supply chain management is the integration and organization of information and logistics activities across firms in a supply chain for the purpose of creating and delivering goods and services that provide value to consumers.
PP17-1 Related marketing channels, logistics management, and supply chain management

Logistics Management

Suppliers → Producer → Consumers

Inbound flow of raw materials & parts
Outbound flow of finished products

Supplier Network
Marketing Channel

Supply-chain Management
PP17-2  The Automotive Supply Chain

Supplier Network
Raw materials: steel, aluminum, rubber
Components: transmission, brakes, seats
Subassembly: suspension, chassis, engine

Auto Manufacturer
Assembly:
- General Motors
- Ford
- Daimler Chrysler

Marketing Channel
Dealer network:
- Cadillac/Chevy
- Lincoln/Mercury
- Buick/Dodge

Consumer

Paint Industry Supply Chain

- Suppliers
  - chemicals
  - steel pail
  - plastics

- Paint manufacturers

- Warehouses

- Commercial Branches
  - retail stores
  - wholesalers
  - home centres

- Households/
  DIY Market

Blending Stations

Professional Paint Market (PPM)
The Supply Chain & the Marketing Mix

The Impact of the Supply Chain on:

- product factors
- pricing factors
- promotional factors
- place factors
Concept Check

1. What is the principal difference between a marketing channel and a supply chain?
2. How does logistics interact with the product element of the marketing mix?
Total Logistics Cost Concept

Decisions associated with the flow of product making up the total logistics cost concept include:

- transportation
- warehousing and storage
- packaging
- materials handling
- inventory control
- order processing
- customer service level
- plant and warehouse site location
- return goods handling
PP17-3 How total logistics costs vary with number of warehouses used

Cost

0 5 10 15 20

Number of warehouses

Total logistics costs
Inventory costs
Transportation costs
Customer Service Concept

Customer service is the ability of logistics management to satisfy users in terms of:

- time
- dependability
- communication
- convenience
PP17–4 Logistics Managers Balance Total Logistics Cost Factors Against Customer Service Factors

Total logistics cost factors
- Transportation costs
- Inventory costs
- Materials handling and warehousing costs
- Order processing costs
- Stockout costs

Customer service factors
- Communication
- Dependability
- Time
- Convenience

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Cost of Customer Service

Logistics costs

Low  High

Service level
Customer Service Standards

• **Customers service standards** are a set of formally developed and written standards that serve as objectives and provide a benchmark against which results can be measured for control purposes.

• **Customer service standards are developed within the context of three things:**
  - customer needs,
  - what competitors offer, and
  - willingness of customers to pay more for better service.
<table>
<thead>
<tr>
<th>Type of Firm</th>
<th>Customer Service Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wholesaler</td>
<td>At least 98% of orders filled accurately</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Order cycle time of no more than 5 days</td>
</tr>
<tr>
<td>Retailer</td>
<td>Returns accepted within 30 days</td>
</tr>
<tr>
<td>Airline</td>
<td>At least 90% arrivals on time</td>
</tr>
<tr>
<td>Trucker</td>
<td>A maximum of 5% loss/damage per year</td>
</tr>
<tr>
<td>Restaurant</td>
<td>Lunch served within 5 minutes of order</td>
</tr>
</tbody>
</table>
Concept Check

1. What is a current strategy adopted by firms attempting to squeeze costs from their logistics system while delivering customer service?

2. In what ways do key customer service factors differ between a manufacturer and a retailer?

3. What is the relationship between transportation costs and volume shipped? What impact does it have on the pricing of the firm?
Key Logistics Functions in a Supply Chain

Transportation

Warehouseing & materials handling

Key Supply Chain Logistics Functions

Order processing

Inventory management
Third-Party Logistics Providers

- Third-party logistics providers are firms that perform most or all of the logistics functions that manufacturers, suppliers, and distributors would normally perform themselves.

- Today, many of Canada’s top manufacturers outsource one or more logistics functions, at least on a limited basis.

- Two major companies performing logistics functions are UPS Worldwide Logistics, and FedEx.
All transportation modes can be evaluated on six basic criteria:

- **Cost.** Charges for transportation.
- **Time.** Speed of transit.
- **Capability.** What can be realistically carried with this mode.
- **Dependability.** Reliability of service regarding time, loss, and damage.
- **Accessibility.** Convenience of the mode’s routes (such as pipeline availability).
- **Frequency.** Scheduling.
<table>
<thead>
<tr>
<th>Mode</th>
<th>Relative Advantage</th>
<th>Relative Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail</td>
<td>full capability</td>
<td>some reliability/damage problems</td>
</tr>
<tr>
<td></td>
<td>extensive routes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>low cost</td>
<td>not always complete pickup and deliver</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sometimes slow</td>
</tr>
<tr>
<td>Truck</td>
<td>complete pickup and delivery</td>
<td>size and weight restrictions</td>
</tr>
<tr>
<td></td>
<td>delivery</td>
<td>higher cost</td>
</tr>
<tr>
<td></td>
<td>extensive routes</td>
<td>more weather sensitive</td>
</tr>
<tr>
<td></td>
<td>fairly fast</td>
<td></td>
</tr>
</tbody>
</table>
## Advantages and Disadvantages of Five Modes of Transportation

<table>
<thead>
<tr>
<th>Mode</th>
<th>Relative Advantage</th>
<th>Relative Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air</td>
<td>fast</td>
<td>high cost</td>
</tr>
<tr>
<td></td>
<td>low damage</td>
<td>limited capabilities</td>
</tr>
<tr>
<td></td>
<td>frequent departures</td>
<td></td>
</tr>
<tr>
<td>Pipeline</td>
<td>low cost</td>
<td>limited routes (accessibility)</td>
</tr>
<tr>
<td></td>
<td>very reliable</td>
<td>slow</td>
</tr>
<tr>
<td>Water</td>
<td>low cost</td>
<td>slow</td>
</tr>
<tr>
<td></td>
<td>huge capacities</td>
<td>limited routes &amp; schedules</td>
</tr>
<tr>
<td></td>
<td></td>
<td>more weather sensitive</td>
</tr>
</tbody>
</table>
Intermodal Transportation

Intermodal transportation involves combining different transportation modes to get the best features of each. For example, combining rail and trucks, also referred to as piggyback or trailer on flatcar (TOFC).
Freight Forwarders

- Freight forwarders (FF) are:
  - firms that accumulate small shipments into larger lots;
  - hire a carrier to move them
  - at a reduced cost.

- FFs collect many small shipments consigned to a common destination and pay the carrier a lower rate based on larger volume, so they often convert shipments that are less-than-truckload (LTL) into full truckloads. The rate charged by the FFs are less than the small quantity rate, and the difference is the FF’s margin. In general, the shipment receives better service at a lower cost.

- FFs are available for all modes of transportation.
Warehousing

- **Storage warehouses** have goods that are intended to come to a rest for some period of time, as in the aging of products or in storing household goods.

- **Distribution centres** are designed to facilitate the timely movement of goods and represent a very important part of the supply chain—the second most significant cost in a supply chain after transportation.
Materials Handling

- Materials handling involves moving goods over short distances into, within, and out of warehouses and manufacturing plants, and is a key part of warehouse operations.

- The two major problems with materials handling are:
  - high labour costs
  - high rates of loss and damage
Order Processing

• **Order processing** involves several stages:
  - first, the order is transmitted by a variety of means such as the Internet, an Extranet, or EDI;
  - next, the order is entered into the appropriate databases;
  - then the information is sent to those who need it.
Inventory Management Dilemma

- The dilemma is in the maintaining of a delicate balance between too little and too much inventory.

- Too little inventory results in:
  a. poor service
  b. stockouts
  c. brand switching
  d. loss of market share

- Too much inventory leads to higher costs because the money is tied up in inventory that might become obsolete.
Reasons for Inventory

1. To offer a buffer against variations in demand and supply, often caused by forecasting uncertainties;

2. To provide better service for customers who wish to be served on demand;

3. To promote production efficiencies;

4. To provide a hedge against price increases by suppliers;

5. To promote purchasing and transportation discounts;

6. To protect the firm from contingencies such as strikes and shortages.
Inventory Costs

1. Capital costs
2. Inventory service costs
3. Storage costs
4. Risk costs
Just-in-Time (JIT) Concept

• JIT is an inventory supply system that operates with very low inventories and requires fast, on-time delivery.

• When parts are needed for production, they arrive from supplier “just in time,” which means neither before or after they are needed.

• JIT is used in situations where demand forecasting is reliable. It is NOT appropriate for inventories that are to be stored over a significant period of time.
Vendor-Managed Inventory

Vendor-managed inventory is an inventory management system whereby the supplier determines:

- the product amount
- and
- the product assortment

a customer (such as a retailer) needs and automatically delivers the appropriate items.
Reverse Logistics

- Reverse logistics is a process of reclaiming recyclable and reusable materials, returns, and reworks from the point of consumption or use for repair, remanufacturing, or disposal.

- The effect of reverse logistics can be seen in the reduced amount of waste in landfills and lowered operating costs for companies.
Concept Check

1. What are the basic trade-offs between the modes of transportation?

2. What types of inventory should use storage warehouses and which types should use distribution centres?

3. What are the strengths and weaknesses of a JIT system?