

## 6.7: Logistics and Communication

### Logistics

Logistics refers to the activities of coordinating and moving resources, particularly inputs into the transformation process, and finished goods out to customers. Originally, the term logistics was from the military and referred to moving troops, equipment and supplies. Managing logistics involves making decisions such as the following:

- Choosing to operate and manage the firm's own transportation, or whether to outsource this activity
- Selecting suppliers that have the capability to ship goods safely and securely within the required time frame
- Choosing the correct mode of transportation and the most effective route
- Negotiating the shipping rate

### *Modes of Transportation*

There are several modes of transportation available to companies. We discuss them in the following:

#### *Trucking*

The majority of goods are shipped by truck completely or at some point during the shipping. Trucking is the most flexible of all modes of transportation. Trucking is categorized by "truck-load" (TL) when the entire truck is hired and delivered directly, or "less-than-truckload" (LTL) which generally includes using several orders to increase the utilization of the truck. A serious issue facing Canada at this time is the expected shortage of qualified drivers. Demand for drivers continues to increase every year, and the average age of drivers is increasing. The trucking industry will face challenges to make driving more attractive to entice new workers into trucking jobs.<sup>[3]</sup>

#### *Railroads*

Rail can be a very cost effective means of transporting goods that need to travel long distances. Goods in containers, or products that are bulky and heavy are ideal for train transport. Canadian rail ships products including cars, fertilizer, food and beverages, forest products, grain, metals and minerals and petroleum products. Often, large manufacturers locate themselves near rail lines to make for easy shipment of raw material into, and finished goods out of their facilities. Compared to trucking, shipping by rail is very energy efficient, and removes many trucks from congested highways. Canada has a very old and well-established rail system.<sup>[4]</sup>

#### *Airfreight*

For goods that are expensive, small and light, air shipping may be a good choice. Air carriers charge by a combination of the weight and size of the shipment. This mode of transport is generally used when speed is more important than cost. Shipping by air is very reliable. Firms may want to consider the environmental impact of regular use of air shipping.

#### *Waterway*

This is a very common way of shipping goods. The goods that travel by water include chemicals, stone, cement, sugar, coal and other heavy commodities. Millions of containers travel by ship each year. Do you know what goods travel by ship? [Read here.](#)

The Great Lakes St. Lawrence Seaway System is a 3,700 kilometer marine highway that runs between Canada and the United States. Opening in 1959 the seaway is a major trade artery that serves many industries to ship iron ore, coal, limestone, steel, grain and cement. The cost for shipping by waterways is inexpensive. Most low-cost products are shipped by waterways.<sup>[5]</sup>

#### *Pipelines*

Crude oil, natural gas and other petroleum products are shipped by pipelines. Once the pipelines are built, the cost per kilometre for shipping is very inexpensive. There is a lot of opposition and concern over new pipelines because of worry over spills and leaks that may contaminate land and waterways.<sup>[6]</sup>

### *Multimodal/Intermodal shipping*

This refers to the use of a combination of different types of transportation to move goods from origin to destination. A common example is a combination of truck/ship/train. The goal is to ship the goods as efficiently as possible. The goods are shipped under a single contract with a carrier, and can be easily tracked. It also uses several modes of transportation but also uses a container so that freight does not have to be handled each time it changes modes. Each mode will have a carrier responsible for the shipment. The use of containers increases the security, reduces loss and damage and increases the speed of shipment.



## TRUCKING

- Flexible (truck load vs. less-than-truckload)
- Drivers in demand
- Creates highway congestion



## RAILROADS

- Ideal for bulkier products or containers
- Cost effective over distances
- Energy efficient



## AIRFREIGHT

- Ideal for small & light products
- Prioritizes speed over cost
  - Reliable
  - Air pollutant



## WATERWAY

- Ideal for low cost, heavy products
  - Very common
  - Inexpensive



## PIPELINE

- Used for crude oil, gas, petroleum
- Once built, very cost effective



## MULTIMODAL

- Uses a combination of modes through a carrier
- Products secured

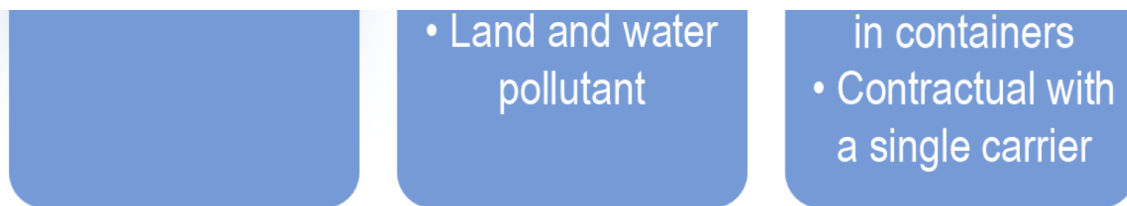


Figure 4.4: Diagram summarizing various modes of transportation.

### Distribution Management

Distribution management refers to the process of overseeing the movement of goods from supplier or manufacturer to point of sale. Distribution management is an important part of the business cycle for distributors and wholesalers. The profit margins of businesses depend on how quickly they can turn over their goods. The more they sell, the more they earn, which means a better future for the business. Having a successful distribution management system is also important for businesses to remain competitive and to keep customers satisfied.

Distribution involves diverse functions such as customer service, shipping, warehousing, inventory control, private trucking-fleet operations, packaging, receiving, materials handling, along with plant, warehouse, store location planning, and the integration of information.

The goal is to achieve ultimate efficiency in delivering raw materials and parts, both partially and completely finished products to the right place and time in the proper condition.<sup>[7]</sup>

The combination of distribution and transportation is **logistics**. The most important factor in any logistics is quickly delivering product in perfect condition. [Read here](#) how Amazon has used its supply chain management to fuel its rise to the top.

### Crossdocking

A broad definition of **crossdocking** is the transfer of goods and materials from an inbound carrier to an outbound carrier without the products actually entering the warehouse or being put away into storage. Thus, the products “cross the docks” from the receiving dock area to the shipping dock area. It can provide significant inventory savings, and the cost of holding inventory and the costs of handling the inventory are reduced. Crossdocking helps to provide excellent customer service by speeding up customer deliveries.<sup>[8]</sup>

## Communication and Technology in the Supply Chain

### Electronic Data Interchange (EDI)

Electronic Data Interchange (EDI) is the computer-to-computer exchange of business documents, such as purchase orders and invoices, in a standard electronic format between business partners, such as retailers and their suppliers, banks and their corporate clients, or car-makers and their parts suppliers.

EDI enables the companies to transfer the documents without having any people involved. The documents are automatically transferred from one computer (account) to another. As a result, there are many advantages to using EDI. The primary benefit is the speed and accuracy of the information transmitted. Information is made available in real time and errors that may have previously been caused during the data entry process are eliminated.

Common information exchanged using EDI include:

- Purchase orders
- Invoices
- Advance shipment notices (ASN)
- Customs documents
- Inventory information
- Shipping status
- Payment documents
- Bill of lading
- Sales/price catalogues
- Shipment status messages

## Barcodes

Barcodes have been used extensively since the 1970s, and consist of data that is displayed in a machine-readable form that can be scanned by barcode readers. The information contained on the barcode is typically pricing information, product number and description and any other pertinent information. Barcodes have become the norm in retail operations allowing for pricing accuracy and easy price changes. This data provides point-of-sale information to allow retailers to track items being sold, update inventory, identify fast and slow moving products and assist in forecasting.

## QR

Quick Response (known as QR) is using bar codes and EDI to make sales data available to vendors so that vendors can quickly replenish goods in the correct quantity. This is thought of as JIT in the retail industry. The goal is to reduce out-of stock incidents, as well as using smaller more frequent deliveries to reduce inventory and operating expenses.

## Radio Frequency Identification Device (RFID)

This technology uses radio waves to communicate information contained on a tag attached to an object. The information contained on a tag may include things such as the products origin, date of production, shipment information, pricing info, and any other pertinent info. In order to transfer this info, both a tag and a reader are needed. There are two types of tags, active and passive. An active tag contains a power source such as a battery and can operate a great distance from the reader. Passive tags use energy from the reader. Unlike barcodes, the RFID tag and reader do not require line of site in order to transmit the information.

RFID applications include the following plus many more:

- Retail use to protect from theft
- Toll road payments
- Identification (i.e. tracking of animals and people)
- Passports
- Shipping tracking – to identify location and contents of orders
- Asset tracking (e.g. laptops, expensive tools, medical devices in hospitals)
- Race timing for marathons
- Tracking luggage during travel

## Supply Chain Collaboration

### Vendor Managed Inventory (VMI)

Vendor Managed Inventory (VMI) is an advanced supply chain relationship whereby a vendor (often a manufacturer) has access to their customer's inventory information and the vendor takes the responsibility for maintaining an agreed-upon level of product at the customers location. This arrangement can be used with manufacturers, distributors and retailers.

VMI has numerous benefits for both the supplier (vendor) and the customer. The vendor has strong motivation to ensure that shelves are fully stocked, any slow-moving stock is discontinued and that employees have full understanding of the product offerings. The customer benefits from these VMI relationships because less work is involved on the buyers' end. Due to EDI, there are few errors and goods flow quickly. Point-of-sale data updates the inventory and determines what items are needed. Salespeople from the vendor often provide assistance by training sales staff and assisting customers when possible.

### Collaborative Planning, Forecasting and Replenishment (CPFR)

Collaborative Planning, Forecasting and Replenishment (CPFR) is an arrangement where two trading partners in a supply chain collaborate to agree on forecasts and orders between the manufacturer and distributor/retailer. The distributor/retailer will have collected POS data and added any additional information, such as promotion plans, inventory status or forecasts. That information gets shared with manufacturers who will then compare it with their own forecasts and capacity. Both teams can collaborate to solve any discrepancies, eliminate gaps and agree on a final set of numbers. Collaborating in this way will enable both firms to reduce inventory as well as reducing problems such as shortages and capacity problems.

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