Logistics Planning & Analysis
Chapter 4
Inventory Management

Objectives

- Understand why inventory is important in logistics.
- Understand the reasons for carrying inventory.
- Know the costs of carrying inventory.
- Able to compute the optimum quantity using a simple inventory model.

Introduction

- Firms are becoming more aware of the need to manage and maintain reasonable levels of inventory.
- Some factors such as product differentiation, new product developments and other factors have led firms to seriously consider the impact inventories have on its business activities and profits.

Inventory as an Asset

- Inventory often represents a large significant proportion of the firm's assets.
- Assume cost of inventory is 25%.
- If the value of inventory is reduced by $500k, then the cost saving is $500k x 25% = $125k.
- If the profit ratio is 5% of sales, then a reduction of $ 125k would be equivalent with an increase of sales of$125k/5% = $2.5m.

Reasons for Carrying Inventory

- Purchase economies
- Transportation savings
- Safety stock
- Seasonal supply
- Promotional stock

Inventory carrying costs.

- Order cost
  - Ordering or acquisition cost encompasses direct costs such as clerical personnel, paper and supplies, as well as indirect costs such as managerial costs and other costs of securing and maintaining sources of' supply.

- Holding cost
  - This is the cost of keeping inventory in the warehouse.

Holding Cost versus Ordering Cost.

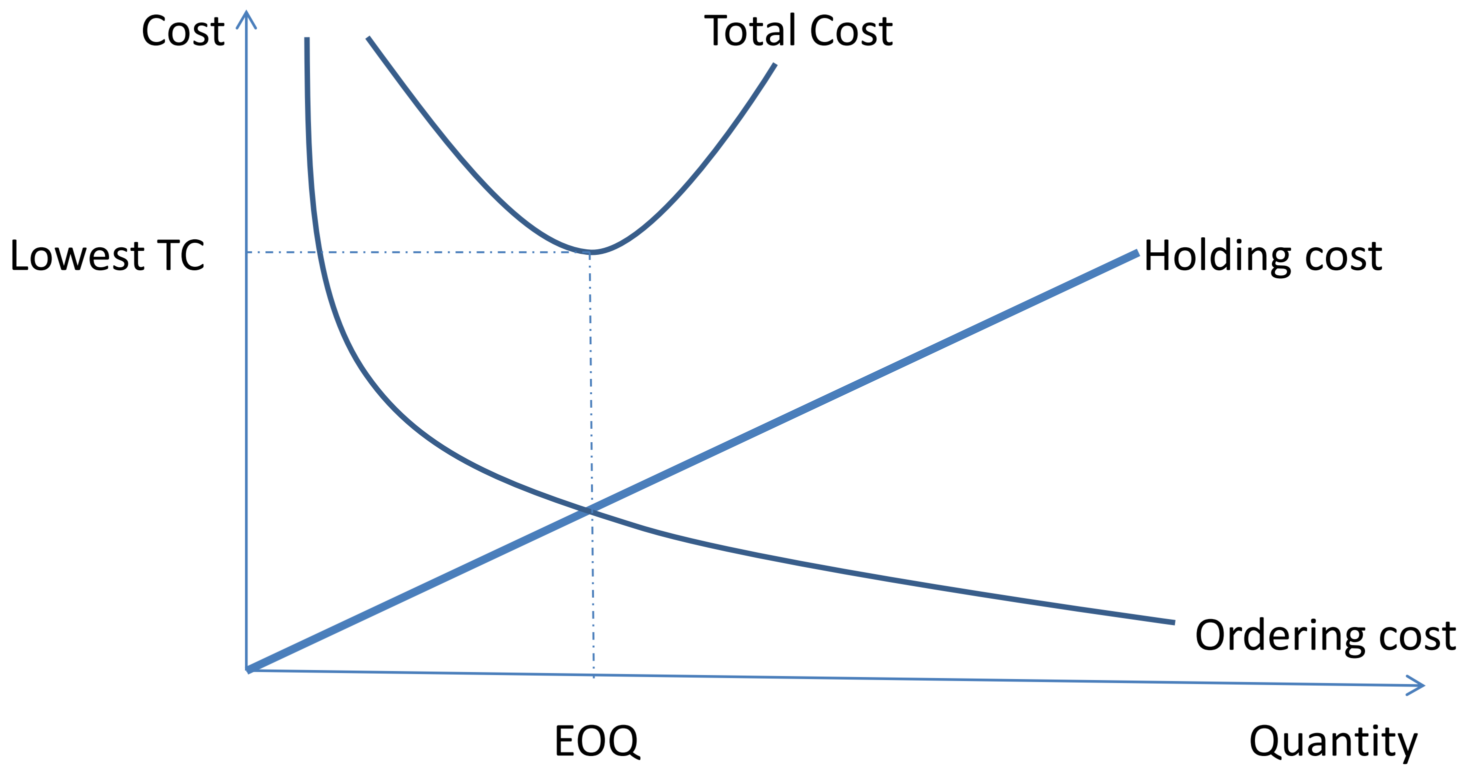

Figure 4-1: Order Cost versus Carrying Cost

Holding Cost versus Ordering Cost.

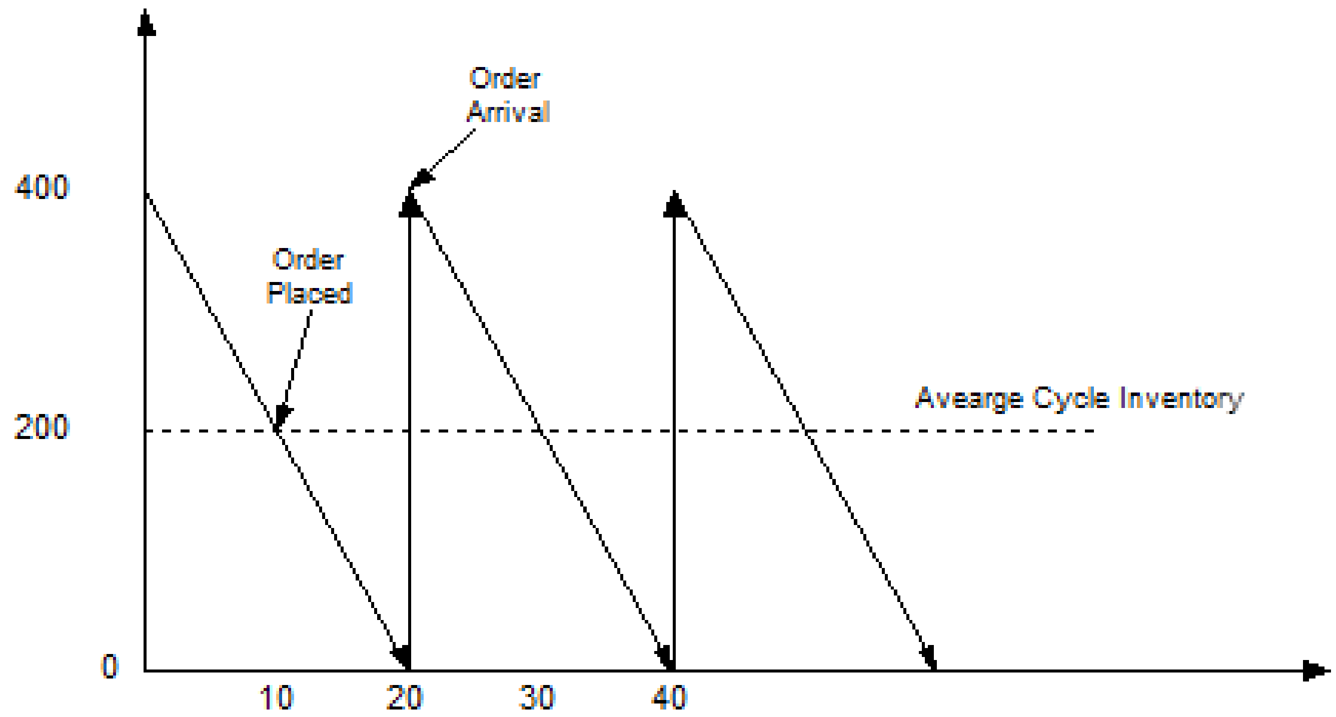

Figure 4-2: Order Cycle

Simple EOQ Model

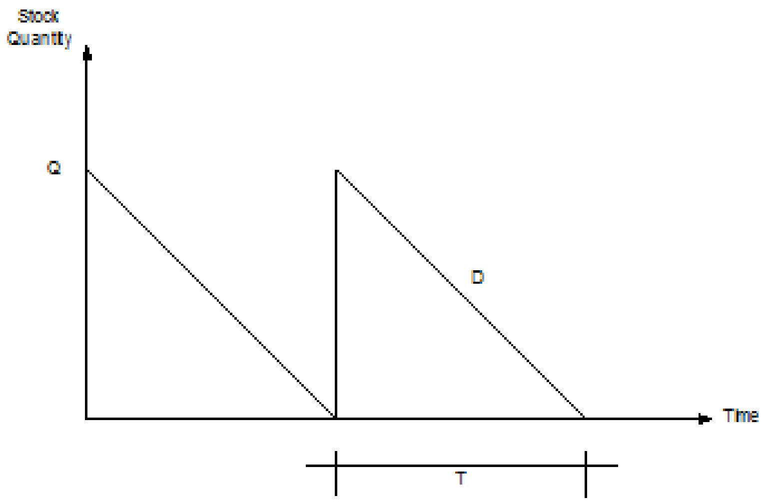

Figure 4-3: Sawtooth Model

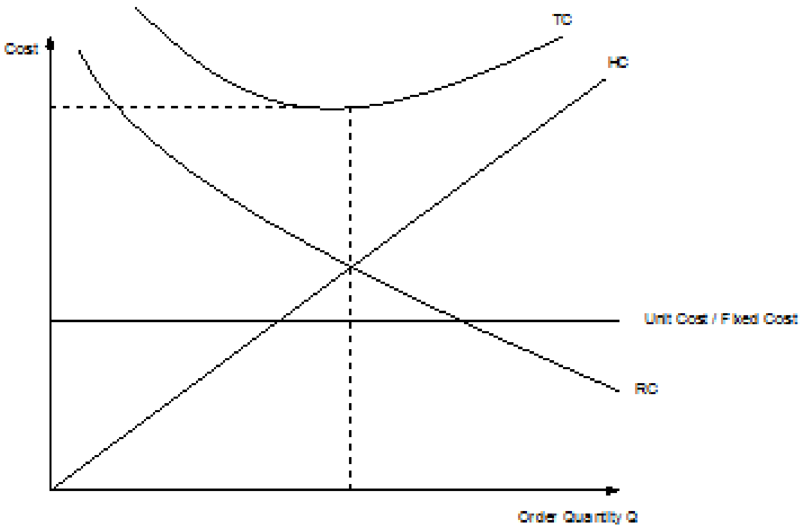

Figure 4-4: EOQ Model

Conclusion

- In the past, inventory has been considered an asset. It is still an asset only when it does not become excessive.
- On the other hand, insufficient inventory can affect customer service level in many ways through lack of availability.
- Inventory is temporarily stored in warehouses until they are order picked to meet customers' requirements.