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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 \times 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.