Question

How should your company manage its inventory?

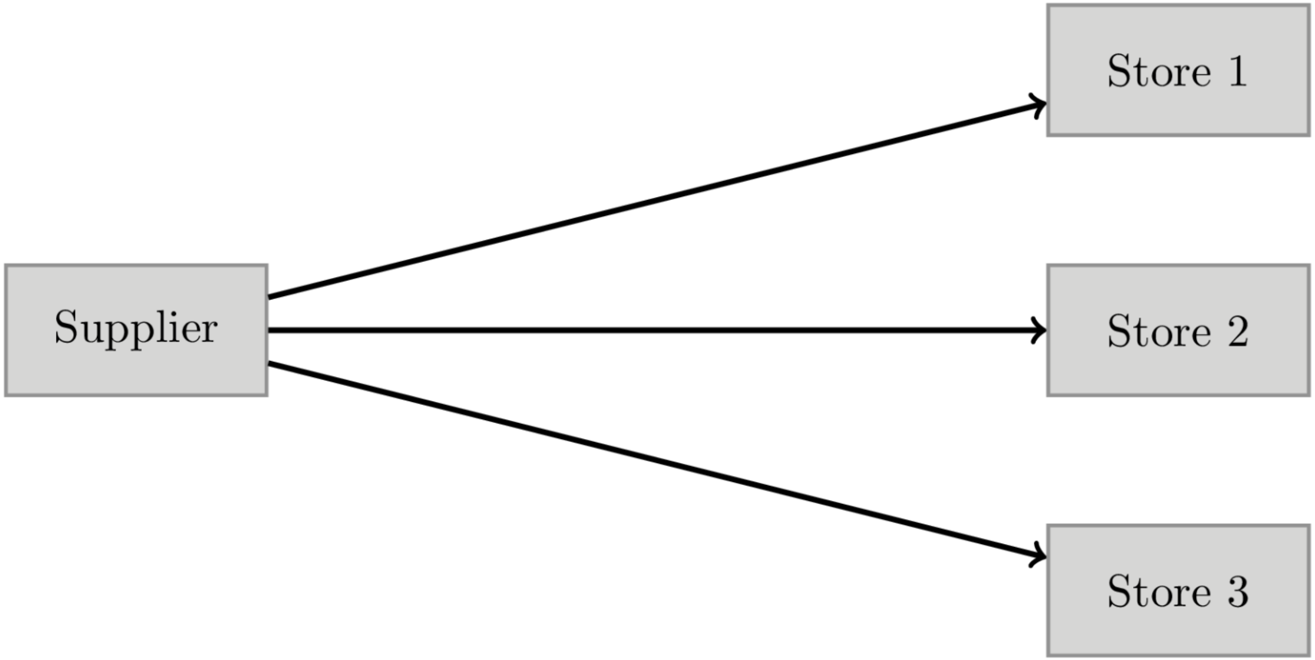
Inventory Management 101

Distribution Strategies

Newsvendor Model

(1) Direct shipping: how it works

- The supplier ships goods directly to retail stores
- Commonly used for **perishable** products (e.g., fresh produce, baked goods) to minimize the rate of spoilage



(1) Direct shipping example: Maxim’s Cakes

- The Maxim Group produces breads and cakes at its central bakery in Tai Po
- Breads and cakes have a short shelf life (1−2 days)
- Breads and cakes are shipped directly from to Maxim’s Cakes retail stores

(1) Direct shipping: pros & cons

+ Minimize the lead time from supplier to stores
+ No warehousing costs
− Higher transportation costs

Economies of scale in transportation/logistics

Economies of scale: number of units shipped ↑ ⇒ cost per unit ↓

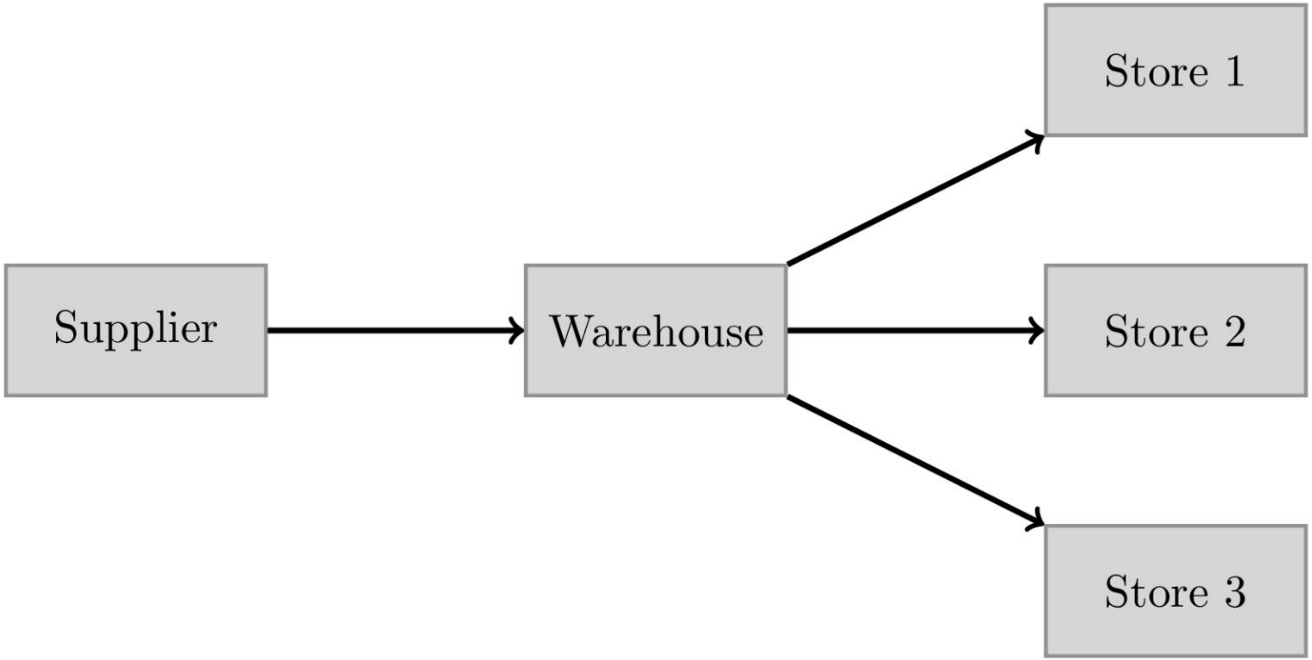
Examples:

- Travelling by bus is cheaper than taxi
- Shipping a semi-trailer is cheaper than less than truckload shipping

Key takeaway: A few large shipments is cheaper than many small shipments

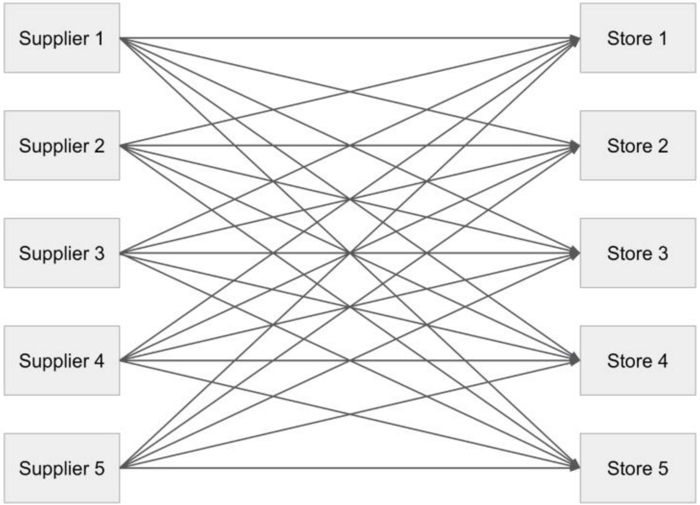
(2) Traditional warehousing: how it works

- A supplier ships goods to the warehouse
- The warehouse holds inventory and ships goods to retail stores



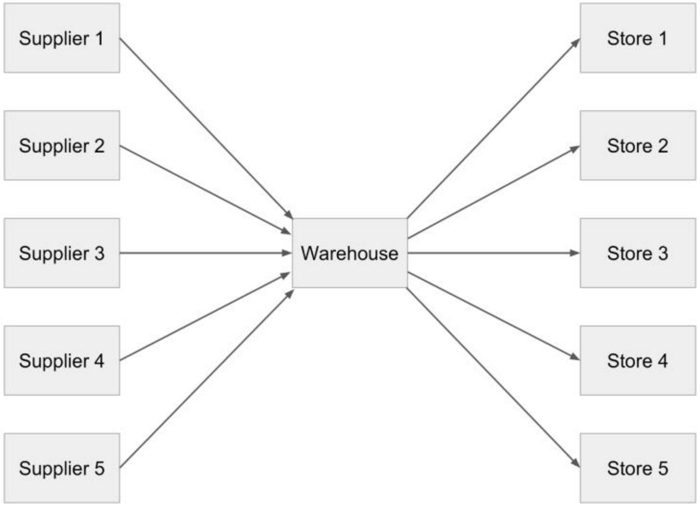
(2) Traditional warehousing reduces transportation costs

<u>Direct Shipping</u>



5 × 5 = 25 **small** shipments

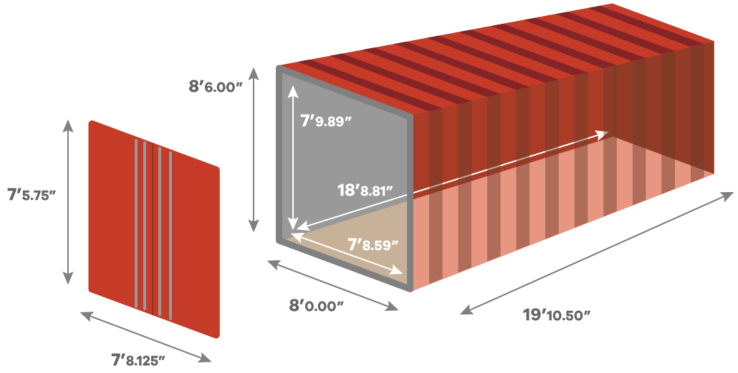
<u>Traditional Warehousing</u>



5 + 5 = 10 **large** shipments

(2) Traditional warehousing example: ParknShop

- ParknShop operates more than 300 shops in Hong Kong
- ParknShop sells a lot of Pampers diapers every week
- Note: Pampers is a brand of diapers marketed by Procter & Gamble
- How should Parknshop stores receive replenishments of Pampers diapers?
  - *Direct Shipping* The P&G factory ships **boxes** to each individual store
  - *Warehousing* The P&G factory ships a **shipping container** to a ParknShop warehouse



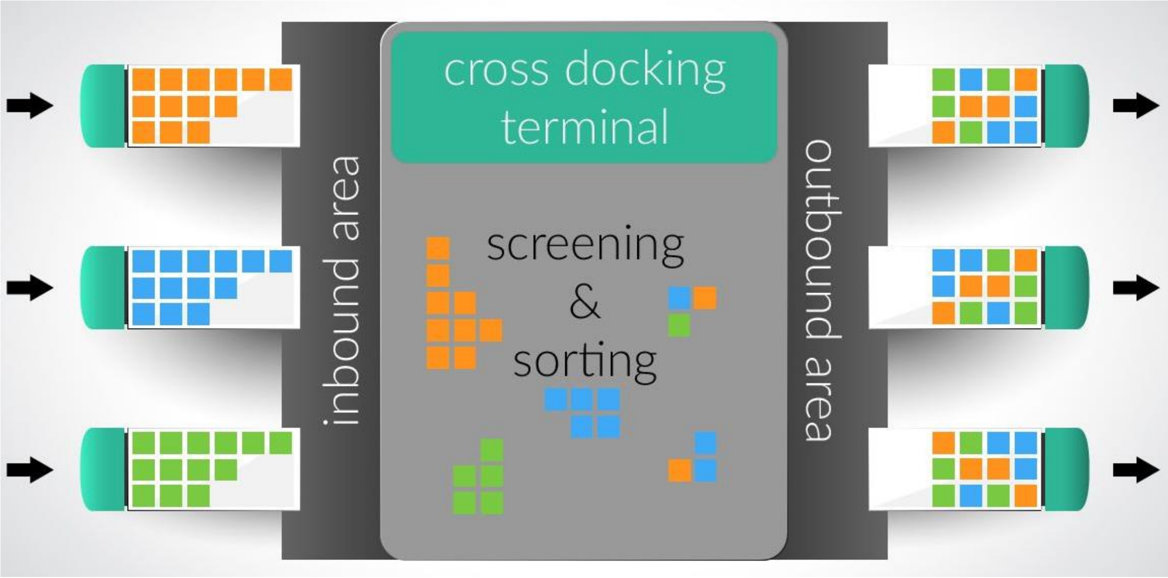
(2) Traditional warehousing: pros & cons

+ Reduced transportation costs (by making larger shipments)
+ Shorter lead times
    - Lead time from warehouse to store < Lead time from supplier to store
+ Shorter lead times ⇒ reduced inventory levels and inventory costs
− Expenses of operating a warehouse

(3) Cross-docking: how it works

Key differences compared to traditional warehousing:

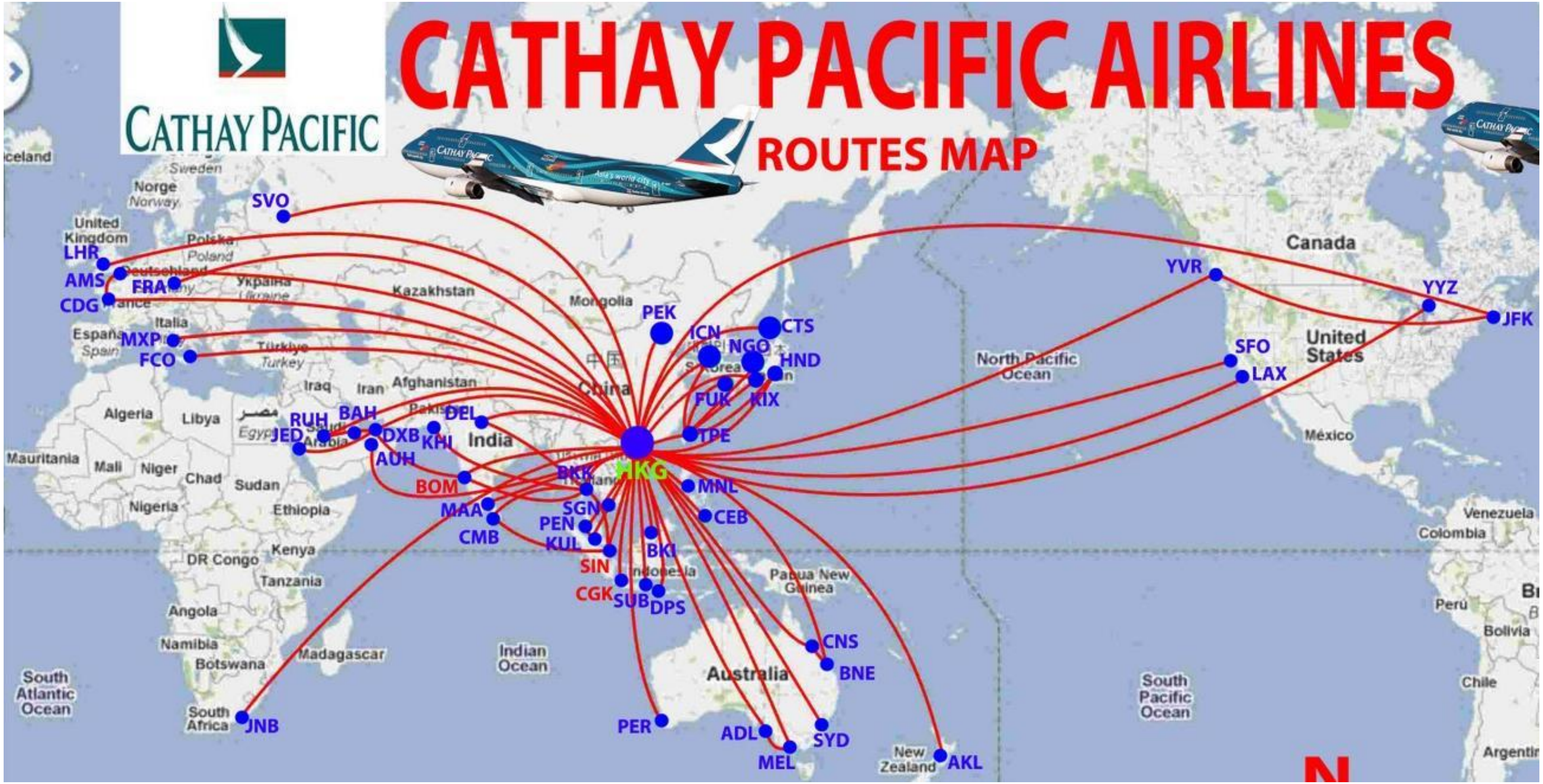
- The cross-docking facility is NOT used as a storage location
- Inbound to outbound time is very short (usually less than 12 hours)
- Every incoming shipment has an intended destination



(3) Cross-docking example: Walmart

- Cross-docking was popularized by Walmart
- Walmart is the world's largest company by revenue (> US$500 billion in 2018)
- In the 1980s, Walmart was a leader in supply chain management
- Lowest supply chain costs ⇒ lowest prices in the stores

(3) Cross-docking analogy: HKG airport transit



(3) Cross-docking: pros & cons

+ Short lead times from supplier to store (almost as fast as direct shipping)
+ Low transportation costs (similar to traditional warehousing)
+ Less warehouse space compared to traditional warehousing
  ⇒ reduced inventory holding costs
− Hard to execute correctly (like synchronized swimming)
  - Suppliers and stores must be linked with advanced information systems
  - The transportation system must be fast and reliable

(4) Retail transshipment: how it works

- Ship a product from one retail store to another retail store
- *Example*
    - I tried to buy a particular laptop from the Fortress store at Festival Walk
    - The laptop was stocked out at the Festival Walk store
    - The Festival Walk store got the laptop shipped from the Kowloon City Plaza store

(4) Retail transshipment: pros & cons

+ Reduced inventory levels from inventory pooling
− Requires advanced information system
− Requires customer to make a repeat visit to the retail store, or for the product to be shipped to the customer