

Warehousing enables the firms to store purchases ,work in progress and finished goods, while providing faster and more frequent delivers of finished product to customers ,resulting in better customer service when the system designed and managed correctly.

Today's warehouse are not used to store things but rather to receive , breakdown repackages and distribute components to a manufacturing location or finished products to customers.

- These activities are collectively referred to as cross docking .here warehouse is described as a distribution center.

therefore; warehouse are still in use , some just to store things and others to provide efficient throughput of goods.

Storage facilities are designed around four primary functions holding ,consolidation , break-bulk and ,mixing.

- Holding ; the use of storage facilities is to provide protection and the orderly holding inventories . the length of time for holding goods and the requirements for the storage dictate the facilities configuration and layout usually we have a long term storage facility ,specialized storage a general-purpose merchandise storage (seasonal holding of goods )temporary holding of goods .the product that are stored in various modes can include finished goods ready for the market ,semi manufactured goods and also raw materials.

## Consolidation

Transportation rate structure especially rat  
breaks ,influence the use of storage facilities . if  
goods originate from number of sources ,it is  
economical to establish a collection point (a  
warehouse or a freight terminal) to consolidate  
the small shipments in to larger ones and to  
reduce overall transportation costs.

We can use the term distribution warehouse for  
this . the distribution warehouse is in contrast  
with the holding warehouse .

- A holding warehouse implies that much of warehouse space is devoted to semi permanent or long term storage.

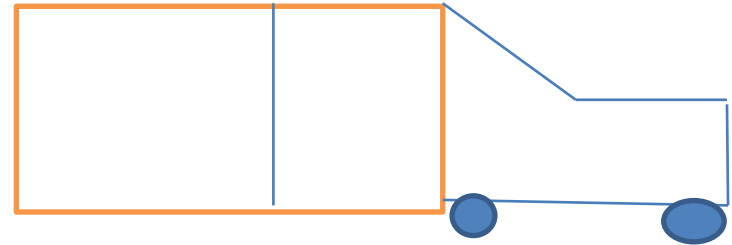
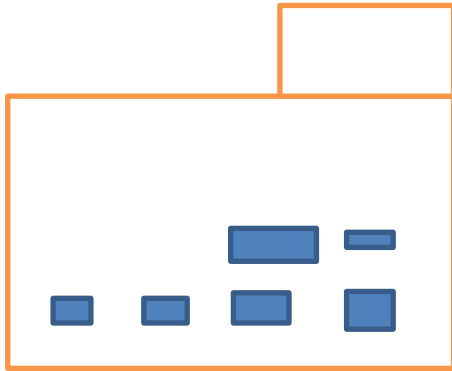
A distribution warehouse has most of its space allocated to temporary storage and more attention is given to speed and ease of product flow.

- Breakbulk

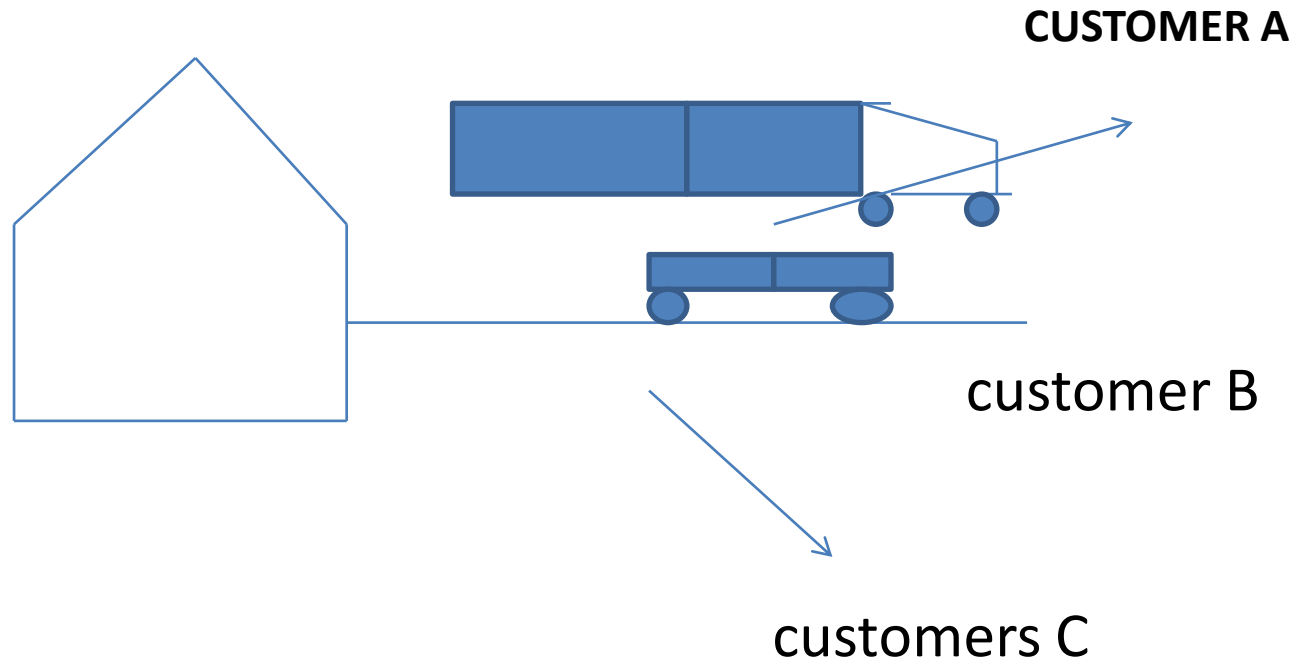
Using storage facilities to break-bulk is the opposite of using them to consolidate shipments .volume shipments having low transport rates are moved to the warehouse and the reshipped in smaller quantities .break bulk is common in distribution or termination warehouses , especially when inbound transportation rates per unit is less than the outbound rates per unit ,customers order in less than vehicle load quantities and the distance between manufacturer and customers is great.

- Manufacturer

\* low rate truck load shipment



- **Distribution warehouse(POOL POINT,CROSS DUCK OR TERMINAL )USED TO BREAK BULK**





## MIXING

Firms that purchase from a number of manufacturers to fill a portion of their product line at each of a number of plants may find that establishing a warehouse as a product mixing point offers transportation economies.

Without a mixing point, customer orders might be filled directly from producing points at high transportation rates on small volume shipments of portion of the product line to be collected at a single point and then assembled into orders and reshipped to customers.

- Types of warehouses

Private warehouse ;refers to warehouse that are owned by the firms storing the goods

1.Firms which have large volumes of goods to store or transfer , private warehouse represent an opportunity to reduce the costs of warehousing.

2.Firms can decide what to store ,what to process , what type of security to provide and the types of equipment to use among other operational aspects of warehouses.

3.Private warehouses can generate income and other advantages through leasing of excess capacity.

- Public warehouse

As the name implies public warehouses are owned by for profit organization that contract their services to other companies.

Public warehouses provide a number of specialized services that firms can combine to create customized services for various shipments and goods.

1-breakbulk

2-repackaging; after breakbulk ,items are repackaged for specific customers order warehouses can also do individual product packaging and labelling.

- 3-assembly

Some warehouses also provide final assembly operations to satisfy customer request and create customized final products.

#### 4-quality inspection

Warehouse personnel can perform incoming and outgoing quality inspection

- Material handling , equipment maintenance and documentation services ,storage.

- 1 the public warehouse provide flexibility and investment cost savings that private warehouses cannot offers.
- 2 if demand changes or product changes ,the short term commitments of public warehouse allow firms to quickly change warehouse locations
- 3 .the cost of a public warehouse can also be very small particularly if the capacity requirements are minimal.
- 4 they also offer the reverse logistic services.

- Risk pooling and warehouse location ;

The more important decision regarding warehouse is where to locate them .

This decision impacts the number of warehouses needed their required size or capacity ,the warehousing system level , customer service level and warehousing system cost

When the number of warehouses increases the system becomes more decentralised.

- Responsiveness and delivery service levels increases since goods can be delivered more quickly to customers ,however warehousing system operating and inventory costs also increases . other cost that has to be considered is the outgoing transportation costs to customers and transportation cost associated with the incoming delivery of goods to each warehouse . The trade off between costs and customer services must be carefully considered as the firm make its warehousing location decisions .this brings very imporant topic of risk pooling.

- Risk pooling

Risk pooling describes the relationship between the number of warehouses, inventory and customer service. It can be explained as follows.

When market demand is random, it is very likely that higher than average demand from some customers will be offset by lower than average demand from other customers served by a single warehouse. As the number of warehouses increases, these demand variabilities will offset each other more effectively, reducing overall demand variance and the likelihood of stock outs. Consequently, the amount of safety stock required to guard against stock outs decreases.



- Thus the more centralized a warehousing system is , the lower the safety stock required to achieve a given system wide customer service level.

- The difference between centralized and decentralized warehousing system follow:

Safety stock and average system inventory:

When firm moves towards fewer warehouse and more centralized warehousing system ,safety stocks and thus average inventory levels across the system are decreased.

\* responsiveness: as warehouse centralization increases ,delivery lead times increase, increasing the risk of late deliveries to customers and reducing the ability of the organization to respond quickly to changes in demand.

- customer service : as centralization increases ,customer service level at each warehouse increases, reducing the likelihood of stock outs for a given level of average system inventory.
- transportation costs : as centralization increases outbound transportation costs increases as LTL shipments must travel farther to reach customers .inbound transportation costs decreases since manufacturers and other suppliers are able to ship larger quantities as TL rates to fewer warehouse locations .the overall impact on transportation costs thus depends on the specific warehouse locations , the goods stored ,the location of suppliers and the modes of transportation utilized.

- warehouse system operating costs:

As centralization increases , total operating costs decreases b'coz there are fewer warehouses , fewer employees ,less equipment and less maintenance costs.



