

MATERIALS HANDLING AND PACKAGING ISSUES

LOGISTIC MANAGEMENT

MATERIAL HANDLING EQUIPMENT

- Material handling equipment and systems often represent a major capital outlay for an organization.
- Materials handling can affect many aspects of the firm's operations.
- Material handling equipment:
 - Manual / nonautomated Materials Handling System
 - Automated Materials Handling System

MANUAL / NONAUTOMATED MATERIALS HANDLING SYSTEM

- Categorized according to the functions performed:
 - Storage and order picking equipment
 - Transportation and sorting
 - Shipping

Storage and order picking equipment

Includes:

- Rack
- Shelving
- Drawers
- Operator control devices (forklift trucks)

Manual systems provide a great deal of flexibility in order picking, because they use the most flexible system (i.e. people)

Transportation and sorting items

Powered and nonpowered equipment for transporting and sorting items.

- Forklift trucks
- Platform trucks
- Hand trucks
- Cranes
- Carts

Manual sorting of items is a very labor-intensive part of warehousing. It involves separating and regrouping picked items into customer orders. This is a time-consuming process subject to human error. As a result, most firms attempt to minimize manual sorting.

Shipping products

The powered and nonpowered equipment previously described are used for this purpose. Includes:

- Pallets, Palletizers, Strapping machines, Stretch wrappers

Shipping of products to customers involves preparing items for shipment and loading them onto the transport vehicle.

The shipping and receiving activity requires equipment for handling outbound and inbound transportation vehicles. Therefore, shipping and receiving docks are important elements of material handling process. (including: considering regulations in amount of weight a truck trailer can haul, width and length of trailers).

AUTOMATED MATERIALS HANDLING SYSTEM

- Improvements in material handling efficiency and productivity
- Include:
 - Automated storage and retrieval systems (AS/RS)
 - Carousels
 - Case-picking and item picking equipment
 - Conveyors
 - Robots
 - Scanning systems

PACKAGING

- Packaging is an important warehousing and materials management concern, one that is closely tied to warehouse efficiency and effectiveness.
- The best packaging increases service and decreases cost, and improve handling.
- Good packaging can have a positive impact on layout, design, and overall warehouse productivity.

FUNCTIONS OF PACKAGING

- Packaging serves two basic functions: marketing and logistics.
- The [package] is the "silent sales [person]". In marketing function, the package provide customers with information about the product and promotes the product through the use of color and shape. Product's packaging: brand name, color, and display.
- From a logistic perspective, the function of packaging is to organize, protect, and identify products and materials. In performing this function, packaging takes up space and adds weight. Industrial users of packaging strive to gain the advantages packaging offers while minimizing the disadvantages, such as added space and weight. The (closer to) ideal types of packaging: corrugated containers, foam-in-place packaging, stretch wrapping, and strapping.
- The environmental aspects of packaging are important because of green and reverse logistics concepts.

PACKAGING PERFORM SIX LOGISTICS FUNCTIONS:

- Containment
 - Products must be contained before they can be moved from one place to another. If the package breaks open, the item can be damaged or lost, or contribute to environmental pollution if it is a hazardous material.
- Protection
 - To protect the contents of the package from damage or loss from outside environmental effects (e.g. moisture, dust, insects, contamination).
- Apportionment
 - To reduce output from industrial production to a manageable, desirable "consumer" size, that is translating the large output of manufacturing into smaller quantities of greater use to customers.
- Utilization
 - To permit primary packages to be utilized into secondary packages (e.g. placed inside a corrugated case); the secondary packages are utilized into a stretch-wrapped pallet, and ultimately into a container that is loaded with several pallets. This reduces the number of times a product must be handled.
- Convenience
 - To allow products to be used conveniently, that is, with little wasted effort by customers (e.g. blister packs, dispenser)
- Communication
 - The use of unambiguous, readily understood symbols such as a UPC (Universal Product Code)

FUNCTIONS OF PACKAGING

- The package should be designed to provide the most efficient storage.
- Good packaging interfaces well with the organization's material handling equipment and allows efficient utilization of storage space as well as transportation cube and weight constraints.



Improved design!!



EFFECTS OF PACKAGING ON COSTS AND CUSTOMER SERVICE

- Saving money through efficient and effective packaging:
 - Lighter packaging may save transportation costs
 - Careful planning of packaging size/cube may allow better space utilization of warehousing and transportation
 - More protective packaging may reduce damage and requirements for special handling
 - More environmentally conscious packaging may save disposal costs and improve the company's image
 - Use the returnable containers provides cost savings as well as environmental benefits through the reduction of waste products
- Improve customer service

FACTORS INFLUENCING PACKAGE DESIGN

- Factors governing good package design:
 - Standardization
 - Pricing (cost)
 - Product or package adaptability
 - Protective level
 - Handling ability
 - Product packability
 - Reusability and recyclability
- The packaging decision is truly one that requires the use of a system approach in order to understand the true "total cost" picture

REFERENCE

- Lambert, D. M., Stock, J. R., Ellram, L. M., *Fundamentals of Logistic Management*, 1998, Singapore: Irwin McGraw-Hill,