C.41 Warehouse Location

WAREHOUSE LOCATION AS A MARKETING VARIABLE

Warehouse location is a variable of concern to marketers because it influences both the total cost of products and the level of service offered to customers.

Warehousing and the Marketing Logistics System. The **marketing logistics system** is concerned with the movement of finished goods from the producer to the consumer. The system determines the **inventory level** to be maintained (see GLOSSARY entry C.15), the **transportation methods** to be used (see GLOSSARY entry C.40), and **warehouse location,** to be considered in this entry.

In making decisions in each of these marketing logistics areas, the marketer must consider the tradeoff between service and cost. In each case, an increased investment, be it in inventory levels, transportation, or warehousing, will lead to an increase in service to customers, but at an increased cost. These three elements of the marketing logistics system are also interrelated and to some extent can be substituted for each other.

Because of these interrelationships, logistics planners have adopted a **total cost approach** to making decisions. Under the total cost approach, a decision in one element in the logistics system must consider the cost impact of the decision on the other elements of the system as well. Thus, for example, the decision to add a warehouse must not only consider the cost of the warehouse, but also the change in the amount of inventory because of the requirement to stock the warehouse and the change in transportation costs due to shipping through the new location.

Functions of Warehouses. Warehouses are used by manufacturers because they serve both economic functions and service functions.

- *Cost Reduction.* Warehouses can serve to lower total distribution costs. By shipping to warehouses in bulk, the shipper can earn volume discounts over rates that would be paid if small shipments were made direct to each customer. There are, of course, offsetting increases in other costs that must also be considered.
- *Service.* Warehouses increase the level of service available to customers. By moving stocks of finished goods closer to customers, delivery times are shortened and customers are able to lower their levels of inventory.
- *Storage.* Producers maintain inventory in order to be able to fill customer orders promptly. Warehouses provide a facility for storage of finished goods inventory.
- *Bulk Breaking, Assorting.* Warehouses provide a facility for breaking bulk and for assorting. **Breaking bulk** is the process of dividing large shipping containers, car-load, or truck-load lots, into smaller quantities for shipment to the end user. **Assorting** is the process of assembling a variety of products in the amount and variety needed by individual customers.
- *Servicing and Processing.* Warehouses often provide a facility where products can be given final processing and can be service. Some products, for example, are shipped disassembled, to be assembled at the warehouse before delivery to the customer. For agricultural and other natural products, warehouses sometimes serve as a place for grading, sorting, and maturing of product. Warehouses sometimes serve as a location for repair, servicing, and return of products.

MAKING WAREHOUSE LOCATION DECISIONS

Two warehouse location decisions will be considered: (1) How many warehouses should be used and (2) where should warehouses be located. Both decisions require a consideration of the tradeoff between total cost and service to customers.

Deciding on the Number of Warehouses. Service to customers tends to increase as the number of warehouses increases. With more warehouses, stocks are closer to customers so that delivery is faster. Having a warehouse close to important concentrations of customers can have perceptual as well as real advantages. The availability of a nearby warehouse can be promoted to customers as evidence of high service levels, thereby creating a competitive advantage.[1] Sophisticated marketing logistics systems attempt to quantify the cost of service levels by determining the sales loss from poor delivery performance. Inability to fill customer orders promptly realizes lost revenue (a cost) because customers buy the product from another supplier and may be lost permanently as a customer for that and other products in the line.[2] Since delivery service capability increases with the number of warehouses, the cost of lost sales tends to decline with the number of warehouses. The behavior of the cost of lost sales in relation to the number of warehouses is shown in Figure C.41-1.

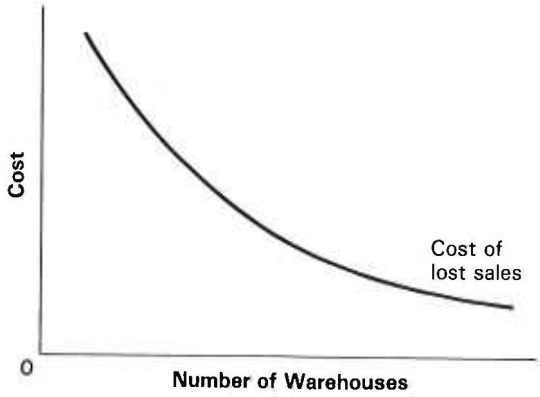

FIGURE C.41-1

Cost of Lost Sales and Number of Warehouses

In addition to the benefits of increased service, determining the number of warehouses must consider the changes in costs as the number of warehouses increases.

- *Warehousing Cost.* The cost of building and operating warehouses increases directly with the number of warehouses.
- *Inventory Cost.* The total amount of inventory carried tends to increase as the number of warehouses increases because each warehouse carries a minimum stock of inventory, even of slow moving items. As a result, inventory carrying cost increases with the number of warehouses.
- *Transportation Cost.* Transportation costs can be expected to decline as the number of warehouses increases, offsetting the increases in warehousing and inventory costs. Transportation costs decline because volume discounts can be earned by shipping in large lots to warehouses rather than direct shipping small orders to customers.
- *Total Cost.* Total cost should decline as the number of warehouses increases until an optimal number of warehouses is reached. Total cost may then rise.

The point of lowest total cost indicates, from a cost standpoint, the ideal number of warehouses and indicates the increase in cost as more warehouses are added. The ideal number of warehouses based on cost must be compared to the ideal number based on service levels desired and tradeoffs made.

If the cost of lost sales has been quantified, it can be plotted together with the other warehouse-related costs to provide an optimal solution. This is shown in Figure C.41-2. The optimal number of warehouses is at the low point of the total cost curve.

Deciding on Warehouse Location. Locating warehouses requires first that a location pattern policy be adopted. Warehouses can be market located, production located, or have intermediate location.[3]

- *Market Located.* Market-located warehouses are positioned close to concentrations of customers. Market-located warehouses realize maximum transportation economies from

[1]Robert E. Sabath, "How Much Service Do Customers Really Want?" *Business Horizons* (April 1978), pp. 26–32.

[2]See Harvey N. Shycon and Christopher R. Sprague, "Put a Price Tag on Your Customer Service Levels," *Harvard Business Review* (July–August 1975), pp. 71–78. See also the discussion in GLOSSARY entry C.15.

[3]See Donald J. Bowersox, *Logistical Management,* 2d ed. (New York: Macmillan Publishing Co., 1978), pp. 240–42.

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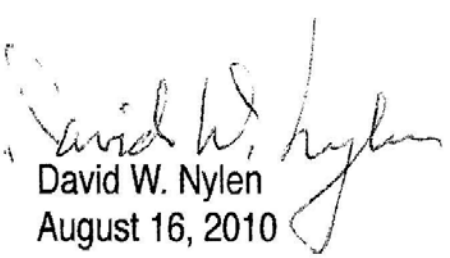

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