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Impact of a Food Distribution Center on Produce Handling and Distribution*

by

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Abstract

The Maryland Wholesale Food Center is an integral part of the food distribution system in the Baltimore-Washington metropolitan area. The Food Center encompasses many segments of the food industry, including the Maryland Wholesale Produce Market, the Maryland Wholesale Seafood Market, a distribution center for a regional supermarket chain, and other independent wholesalers.

This paper focuses on a comparison of characteristics and operating costs of wholesale firms located on the Food Center, firms located in other sections of the metropolitan area, and firms operating in 1964. The paper illustrates differences in product movement, distribution, and facilities among the types of firms. A major finding is that firms located on the Maryland Wholesale Produce Market are more cost efficient in several areas of operation relative to other firms. As a result, locating on a food distribution center may improve the competitive position of wholesalers.

Introduction

Terminal markets have had a prominent role in the movement of food products from growers to consumers. In the first half of this

century, when large quantities of food were shipped via rail, the terminal market served as the point of entry into metropolitan areas. Independent wholesalers located at this central market received the product and then distributed it to other wholesalers or to retail establishments. Terminal markets maintain an important niche in the present food distribution system, although the role of these markets has changed. The number of chain stores receiving food products directly from growers or manufacturers is a prominent factor in the changed role of these markets. Although wholesalers still provide special products to chain stores, their main customers are restaurants and institutions.

Changes in the physical characteristics of terminal markets are also occurring. In many areas of the United States, terminal market facilities have evolved into food distribution centers (specialized industrial parks for several types of food firms). The Hunts Point Cooperative Market in New York, the Atlanta Farmers' Market, and the Maryland Wholesale Food Center are examples of food centers. In addition, construction of new markets is under way in Raleigh, North Carolina and Syracuse, New York. Often located in suburban areas to reduce congestion, these centers offer firms modern warehouse space

*This paper is based on a report entitled, *Wholesale Food Distribution Center Growth and Development*. The report was prepared under the Wholesale Market Development Program of the Agricultural Marketing Service (AMS), U.S. Department of Agriculture (USDA), in cooperation with the Maryland Food Center Authority.

and provide a central market for both buyers and sellers.

The Maryland Wholesale Food Center (MWFC) located in Jessup, Maryland is one of the most modern food distribution centers. Built in the early 1970s to accommodate wholesale food firms displaced by urban redevelopment in Baltimore, the MWFC now consists of the Maryland Wholesale Produce Market (MWPM), the Maryland Wholesale Seafood Market (MWSM), a distribution center for a regional chain store, a bank and other support businesses, and independent food distributors. Due to its growth over the years and the types of firms located at the site, the market is an integral part of the food industry in the Baltimore-Washington area. Using the MWFC as an example, this paper examines the differences between traditional terminal markets and modern food centers.

USDA Involvement and Methodology

Further plans for redevelopment in Baltimore and the need for long-range planning at the MWFC led to a study conducted by the Marketing Facilities Branch of the Commodities Scientific Support Division of the Agricultural Marketing Service, U.S. Department of Agriculture under its Wholesale Market Development Program. Fruit and vegetable, egg, meat, poultry, dairy, and frozen food wholesalers operating in Baltimore City and surrounding counties (Anne Arundel, Baltimore, Carroll, Harford, and Howard) were interviewed during this study to measure the need for new wholesale facilities. In this paper, one portion of the study is highlighted; financial and product movement information collected from fruit and vegetable wholesalers located on the Maryland Wholesale Produce Market (MWPM) as well as produce firms located in non-market facilities is summarized. This information, in connection with data obtained during a feasibility study conducted in 1964 (before the MWFC was built) by the USDA, is used to compare the characteristics of firms across markets and time.

Produce firms in the Baltimore area listed in trade publications and other sources were surveyed during this study. Information concerning facility size and condition, operating performance, product flow, employment, and other factors was obtained. Firms operating in inadequate facilities, facing potential development, and firms located on the MWPM were asked to provide additional financial information such as cost of goods sold, total investment in equipment, and facility related expenses. This information was

used to evaluate the relocation of these firms to new facilities.

Response of Produce Firms

The survey identified 70 produce firms in the area in 1987 (Figure 1). Due to duplication, business failures or mergers, and firms not operating wholesale facilities, 38 firms were eliminated during the interviews. Of the 32 remaining firms, 22 were operating in Anne Arundel County (location of the MWPM), 6 were located in Baltimore City, and 4 were operating in Carroll or Baltimore counties. Twenty of these wholesalers were located on the MWPM and 12 were located elsewhere. In the 1964 study conducted by USDA, a total of 71 firms operated in the study area. The decline in the number of firms reflects the consolidation of independent food wholesalers that has occurred throughout the United States.

Product Movement

Comparing product movement and business characteristics highlights differences among the types of firms and presents a background for cost comparisons. Volumes handled by wholesalers and methods of transportation are shown in Figure 2. Seventy-one firms operating in 1964 handled about 340,000 tons of produce, while the 20 MWPM and 12 non-market firms handled 428,000 tons and 95,000 tons, respectively, in 1987. Estimated values (in 1987 dollars) for produce handled were \$180 million for 1964 firms, \$185 million for MWPM firms, and \$50 million for non-market firms.

In addition to the growth in volumes handled by individual firms, the data also reflect changes in the transportation industry, namely, the shift from rail to truck. In 1964, of the produce purchased from firms outside the study area, about 40 percent was received via rail and 60 percent by truck. In 1987, MWPM firms received only 20 percent of their produce by rail or piggyback. Non-market firms received only 1 percent of their products via rail.

The amount of inter-dealer transfers also has diminished over time. Based on the survey, about 25 percent of the volume handled by wholesalers in 1964 was actually traded among firms. Of the produce sold by MWPM firms, 8 percent went to wholesalers in the study area; no sales to wholesalers were identified for non-market firms. The ability of customers to shop many wholesalers at a central location, increased firm size, and greater produce line diversification may account for the diminished inter-dealer trade.

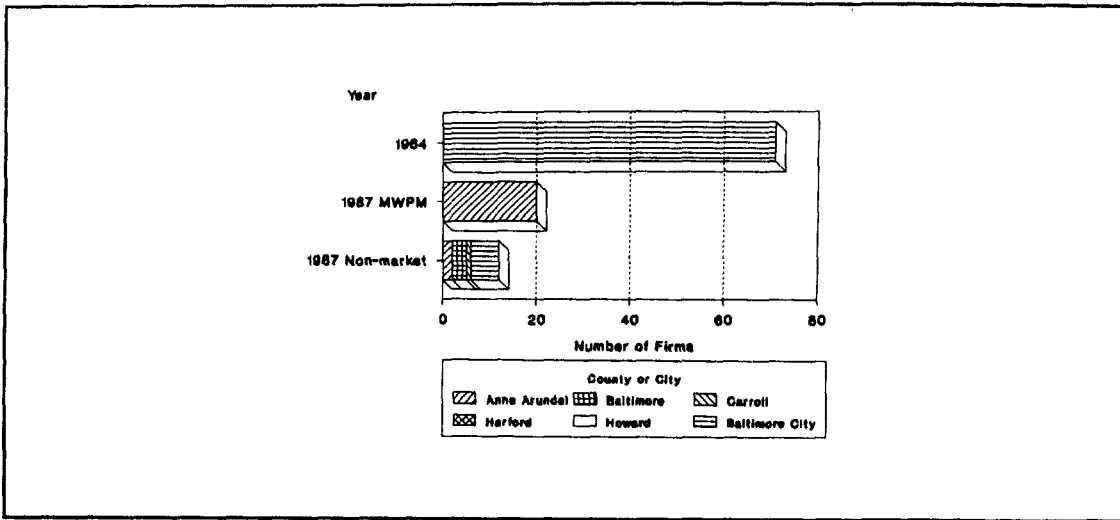


Figure 1. Location and Number of Firms Interviewed in Baltimore Region in 1964 and 1987.

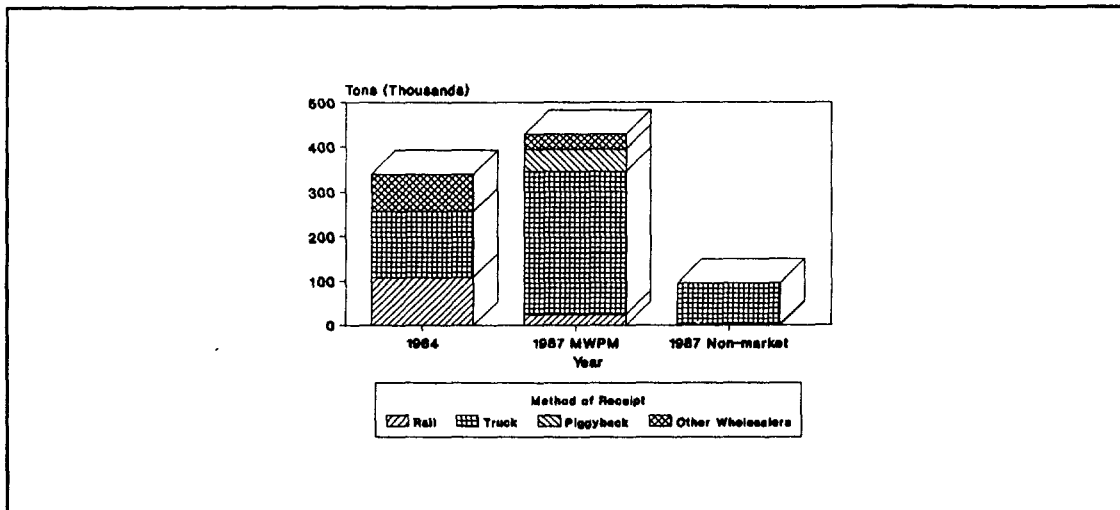


Figure 2. Volume Handled and Method of Receipt for Produce Firms in Baltimore Area.

Table 1

Comparison of Selected Costs in Different Facilities in the Baltimore Region

	Labor Hours			Cost per Ton (1987 \$)		
	1964	1987 MWPM	1987 Non-mkt.	1964	1987 MWPM	1987 Non-mkt.
Rent	--	--	--	\$1.89	\$2.61	\$1.65
Labor						
Admin. & Sales	1.7	0.7	1.9	14.86	6.54	17.76
Handling	1.6	1.2	2.3	13.98	11.22	21.51
Per Ton Totals (Excl. Equipment)	--	--	--	\$28.84	\$17.76	\$39.27
Equipment	--	--	--	0.04	1.31	NA
Total Cost per Ton	--	--	--	\$28.88	\$19.07	NA

Survey information suggests that firms operating in 1987 distribute products in a broader area than did firms in existence in 1964 (Figure 3). Of fruits and vegetables handled in 1964, 72 percent were distributed to customers in the study area. In 1987, a much larger portion of sales occurred outside the study area--65 percent of total sales for MWPM firms and 44 percent for non-market firms. These figures reflect the regional characteristics of the market and its ability to draw customers from neighboring states as well as Maryland. Also, improvements in transportation and growth in suburban populations may explain the wider distribution area.

Comparing the methods of distributing produce to customers also highlights the differences among firm types. Produce handled by the 1964 firms was distributed evenly through customer pickup, firm delivery, and contracted delivery (Figure 4). The distribution methods of MWPM and non-market firms were less balanced. Customers picked up over one-half of the produce sold at the MWPM. The popularity of customer pickup may suggest that customers are attracted to the centralized market and the competitive environment. Delivery of produce to customers was largely done with contracted carriers rather than firm-owned trucks. On the other hand, non-market firms delivered nearly all of their produce to customers.

Employment and Handling Efficiencies

The produce industry is a major employer. In the Baltimore region, wholesale firms provided 770 jobs in 1987, 21 percent more than in 1964

(Figure 5). MWPM firms employed approximately 60 percent of these people. Most jobs in the 1987 firms were classified as sales and administrative and handling. There were fewer positions in processing and trucking, particularly for MWPM firms, due to the lack of delivery and processing operations on the market. Because firms have grown and consolidated, there were considerably more employees per firm in 1987 (23 for MWPM firms and 26 for non-market firms) as compared to 1964 (9).

Labor efficiency as measured by the number of labor hours needed for selected tasks is described in Figure 6. Overall, MWPM firms are more labor efficient than 1964 or non-market firms. This advantage is especially evident in sales and administration and handling. MWPM firms allocated less than one labor hour per ton for sales and administrative tasks and slightly more than one hour to handle each ton. The administrative and sales efficiency advantage is attributable to the centralized market and to the market's ability to attract customers. The modern warehouse space and high levels of mechanization contribute to handling efficiencies. Other categories of firms had advantages in processing and trucking. Non-market firms needed fewer labor hours for processing while 1964 firms allocated fewer hours to trucking tasks.

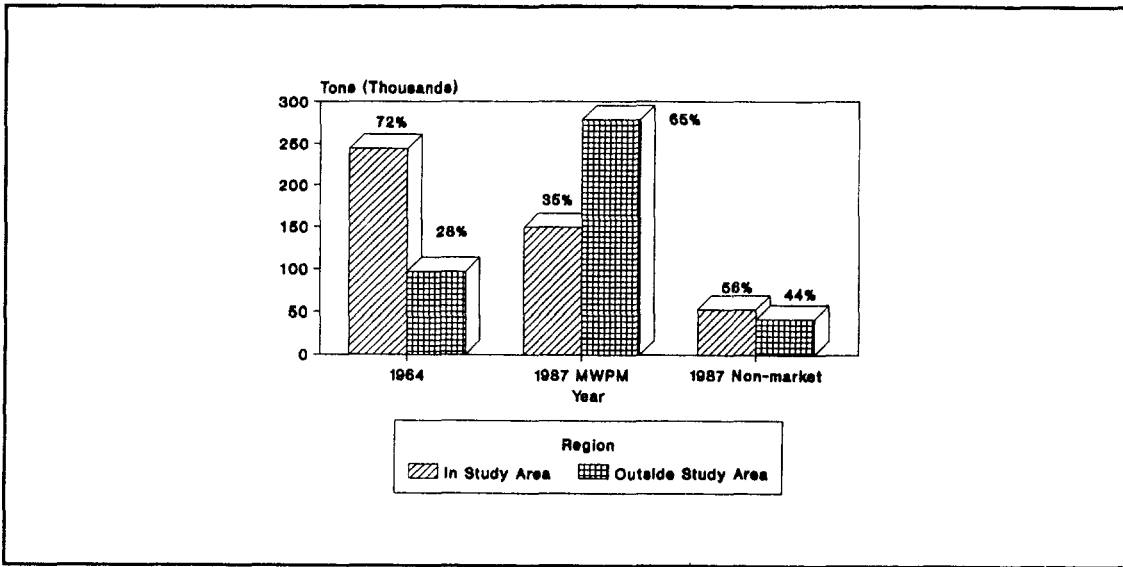


Figure 3. Areas of Distribution for Firms Interviewed in Baltimore Region.

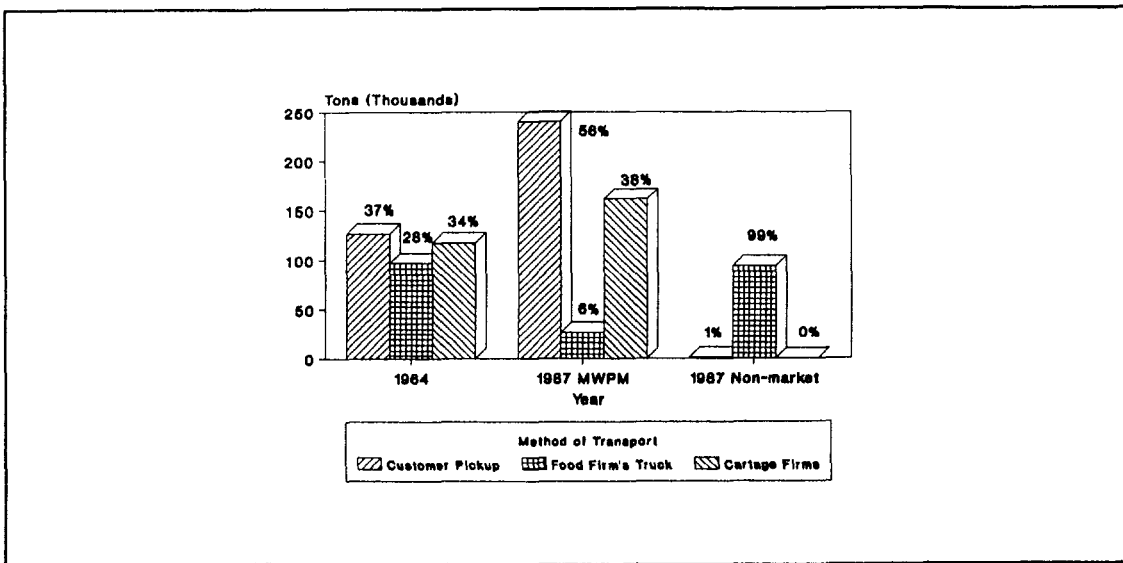


Figure 4. Transport of Produce to Customers for Firms in Baltimore Region.

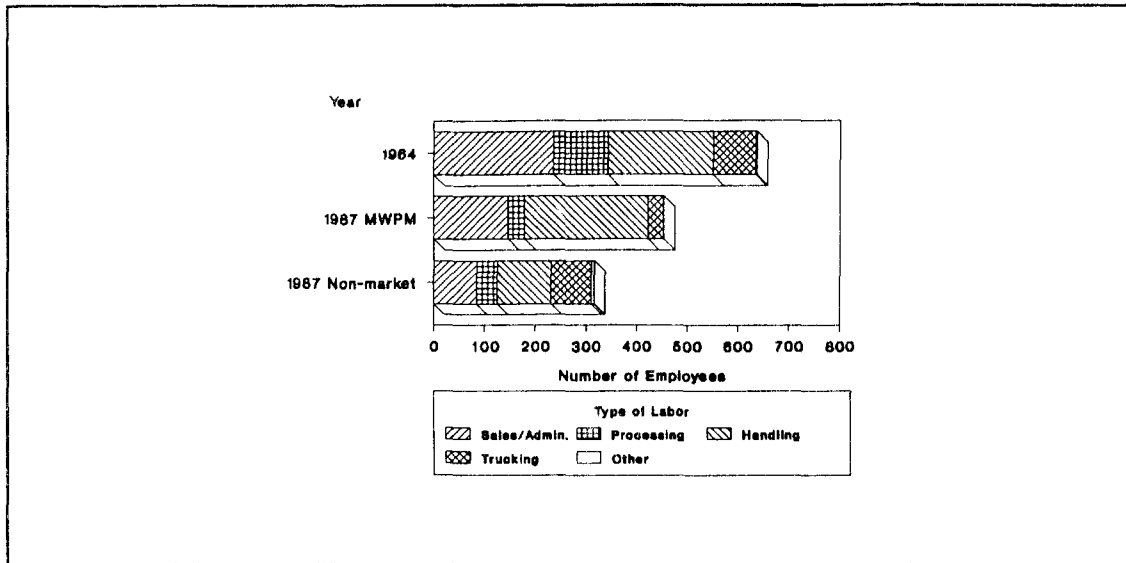


Figure 5. Employment of Produce Firms.

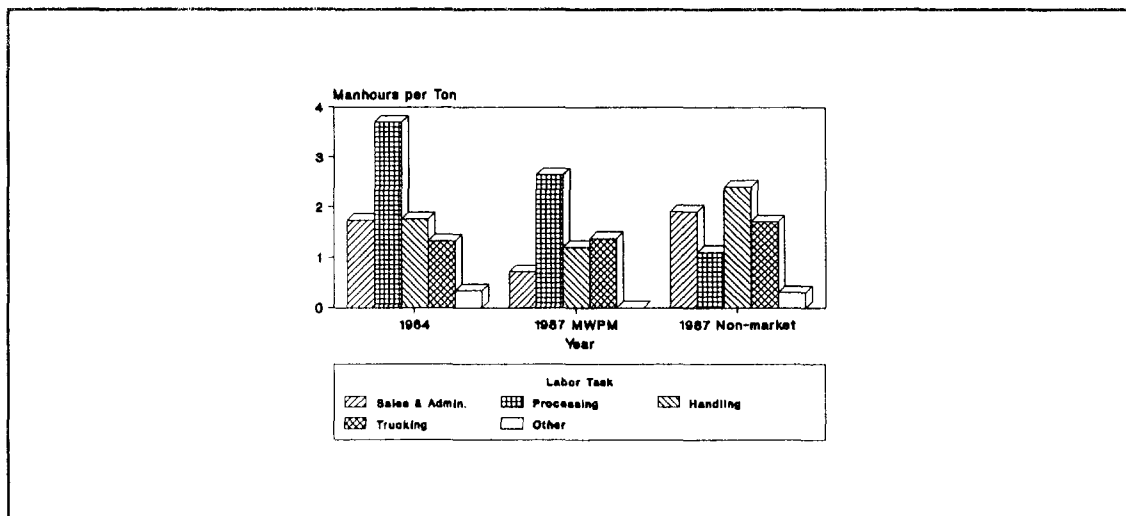


Figure 6. Labor Hours Needed for Selected Activities.

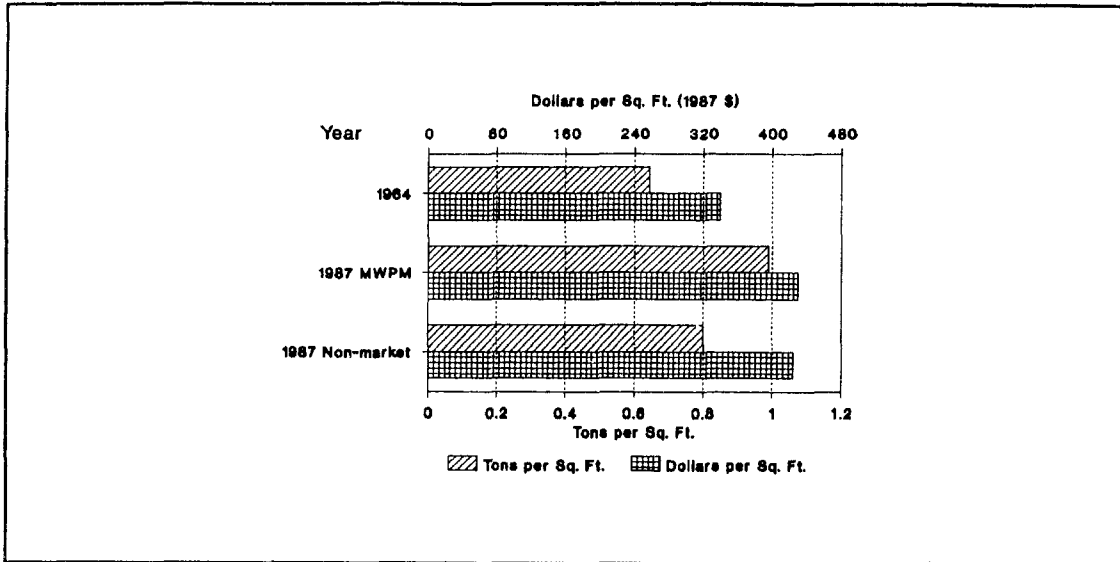


Figure 7. Tonnage Handled and Sales per Square Foot for Produce Firms.

Another measure of efficiency is the amount of produce firms can handle per square foot of operating space. In Figure 7 this ratio is shown for each of the firm categories. MWPM firms handled the most tonnage per year per square foot of total operating space--approximately one ton. Non-market firms operating in 1987 handled about 0.8 tons of produce per square foot, and 1964 firms handled 0.65 tons per square foot. In dollar terms, MWPM firms generated approximately \$430 of sales each year per square foot of operating space, non-market firms realized \$424 of revenue per square foot, and 1964 firms received \$340 (expressed in 1987 dollars) per square foot. The ability of MWPM firms to use their space better may be attributable to more modern warehouse space (i.e. higher ceilings, truck-height docks, and greater accessibility), use of pallets and machinery, and inventory control.

Selected Operating Costs

The final and most comprehensive comparison among the firm categories is based on operating costs. Rental, labor, and equipment costs for produce firms in the Baltimore region are shown in Table 1. Rental costs were highest for 1987 MWPM firms. The cost for total operating space represented \$2.61 per ton of produce handled. For 1964 firms and 1987 non-market firms, the cost of space was considerably lower--

\$1.89 and \$1.65 per ton, respectively. Location of facilities, local real estate markets, as well as the quality of facilities influence rental costs.

Estimated labor costs for each of these firms suggest that measurable differences exist among the quality of facilities. As indicated earlier, MWPM firms allocated fewer labor hours per ton of product for sale and administration and handling. Based on average inflation-adjusted labor rates in the wholesale trade industry (\$8.74 in 1964 and \$9.35 in 1987),¹ the dollar differences in labor efficiency are substantial. MWPM firms pay about \$20 per ton for sales, administration, and handling compared to the totals of \$40 and \$65 for 1964 and 1987 non-market firms respectively. This information suggests that movement of produce within the facility and to customers is easier in MWPM facilities than in either 1964 or 1987 non-market facilities.

Taking advantage of modern facilities requires investment in specialized equipment. The final cost figures in Table 1 indicate that annual equipment costs were higher for MWPM firms than for 1964 firms. (Data on equipment investments needed to realize other operating efficiencies were not available for 1987 non-market firms). Annual costs for handling, vehicle,

and other equipment was \$1.31 per ton for MWPM firms and \$0.04 per ton for 1964 firms.

Summary and Implications for Food Industry

Findings of this survey indicate that substantial differences are evident between firms that operate in food distribution centers and firms located elsewhere. Assuming the information collected in the Baltimore region is representative of other regional food industries, food distribution centers are beneficial to produce firms, and possibly to other types of wholesalers. Information presented in this paper shows that MWPM firms distribute to a broader area than do their competitors. In addition, the centralized market draws customers to the firms so that firms do not have to commit as many resources to sales or delivery. Efficiencies in handling and the ability to use space effectively provide cost savings to firms on the MWPM. These savings outweigh the higher rental costs for the more modern warehouse facilities.

The major impact of these food distribution centers may be on the structure of the food industry. Over the past few decades, independent wholesalers have faced competitive pressures from chain stores, food service firms, and other independent wholesalers. In addition, many of the facilities used by wholesalers are aged and lack the characteristics needed for efficient handling and storage. The cost savings attributable to food centers shown in this study and potential sales to other food firms at the site may strengthen independent wholesalers and broaden their present niche in the market.

Endnote

¹U.S. Bureau of Labor, *Employment and Earnings*, selected monthly issues.