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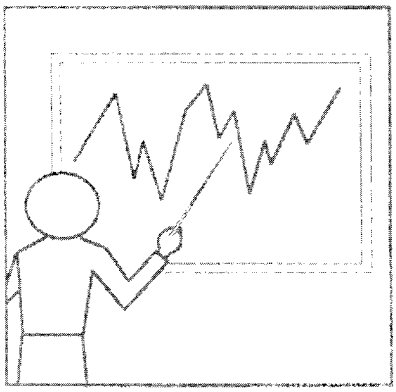
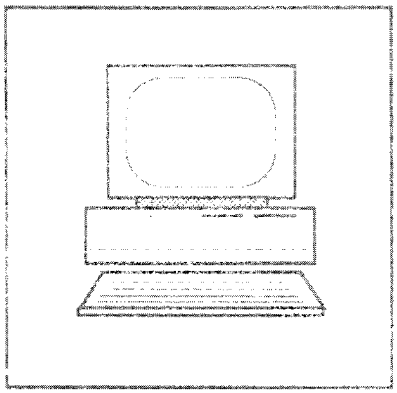
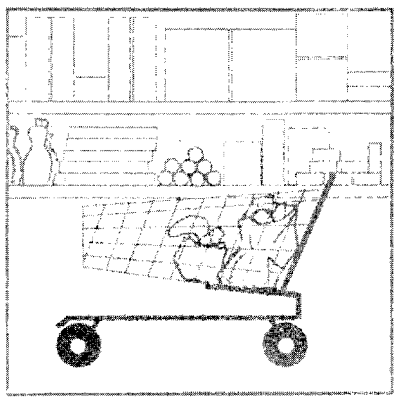
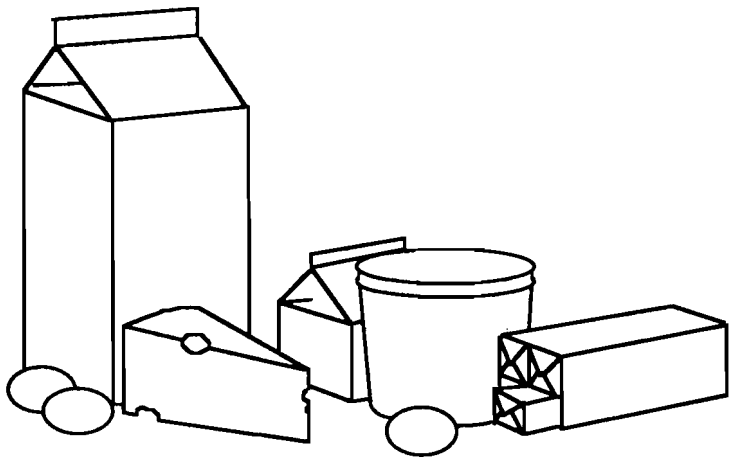






SUPERMARKET DAIRY DEPARTMENT: AN OVERVIEW OF OPERATIONS AND PERFORMANCE



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PREFACE

The objective of this report is to provide an overview of supermarket dairy department operations and a statistical profile of its performance. Major trends and key operating data for the dairy department are identified and interpreted, especially relative to similar benchmarks in other departments in the supermarket. The information drawn upon to make these assessments has been compiled from a variety of secondary sources. The specific industry resources and academic research reports are listed in the References.

Our thanks go to Andrew Novakovic, The E.V. Baker Professor of Agricultural Economics at Cornell University and a specialist in dairy marketing, for his many helpful comments.

In the last year, there has been a growing interest in how dairy products are marketed and priced. This report is the first of a number of publications planned to address several topics related to dairy product marketing. If you are interested in additional information on these reports, please contact:

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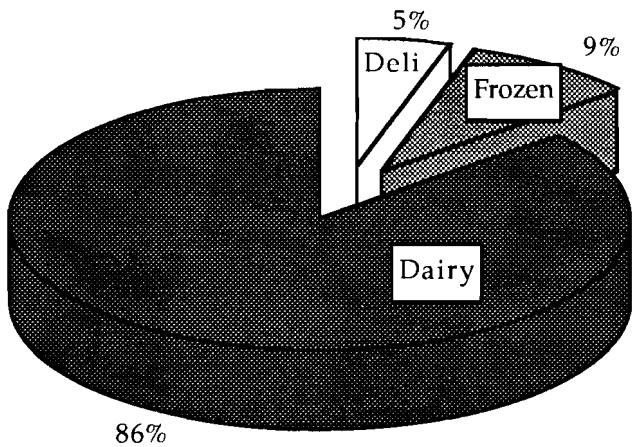
Sales

Consumer expenditures on dairy products were estimated to be almost $58 billion in 1989. Nearly three-fourths of that value ($43 billion) came through retail sales. In turn, these retail sales are divided nearly equally between supermarket sales ($23.3 billion) and convenience and smaller store sales ($20.0 billion).

When reviewing trade statistics on food retailing it is well to keep in mind that not everything in the dairy department is made from milk and, conversely, many dairy products are sold outside the dairy case. Generally, product statistics on food retailing are categorized by department not product type. Thus, "dairy sales" or "dairy products" usually refer to items sold in the dairy case, including products not made from milk. This is well understood by food retailers, but is often a source of confusion to the dairy industry.

The great majority of sales of the milk-based products in the supermarket, about 86% of the total ($20.1 billion), originated in the dairy department in 1989 (Figure 1), however the frozen food department contributed 9% ($2.1 billion) of the total with ice cream and other milk-based frozen products and the delicatessen department added another 5% ($1.14 billion), primarily from an expanding variety of domestic and international cheeses (Supermarket Business 1990).

Figure 1. Supermarket Dairy Product Sales, 1989



Source: Supermarket Business (1990)

In 1989, supermarket dairy department sales amounted to approximately $20.1 billion, or 7.8% of total supermarket sales (Table 1). Fluid milk is the largest selling item in the dairy department, representing 31% of sales. Within the dairy department, fluid milk is followed in sales importance by cheese at 20% and eggs at 10% of department sales. Table 1 also shows that approximately 38% of the typical supermarket "dairy department" is comprised of non-milk based products.

TABLE 1
DAIRY DEPARTMENT SALES

DAIRY PRODUCTS: **7.81% of Total Store Sales**	SUPERMARKET SALES	
	1989 Volume ($ millions)	% of Category Sales
Fluid milk products*	6,230.32	31.0
Cheese*	4,001.28	19.9
Eggs	2,047.23	10.2
Refrigerated juices & drinks	1,938.21	9.6
Margarine	1,262.28	6.3
Yogurt*	1,251.24	6.2
Butter*	1,011.81	5.0
Cottage cheese*	685.52	3.4
Refrigerated dough products	620.90	3.1
Party snacks	410.29	2.0
All other dairy case items	376.95	1.9
Fish & fish snacks	138.47	0.7
Toppings*	71.24	0.4
Pizza	45.13	0.2
Yeast	23.78	0.1
Refrigerated salads	11.43	0.1
TOTAL	$20,126.08	100.0

*Milk based products

Source: *Progressive Grocer* (1990).

Since 1984, growth of dairy department sales has increased at a 5 year compounded rate of 2.1% annually. This is less than one-half of the same rate of growth for total supermarket sales, 5.2% (Table 2). It is important to point out, however, that during this period, prices of all dairy products increased at only about two-thirds the rate of all supermarket foods, thus tempering the sales growth of dairy products measured in dollar terms (DSO, p. 16).

TABLE 2
SUPERMARKET SALES PERFORMANCE

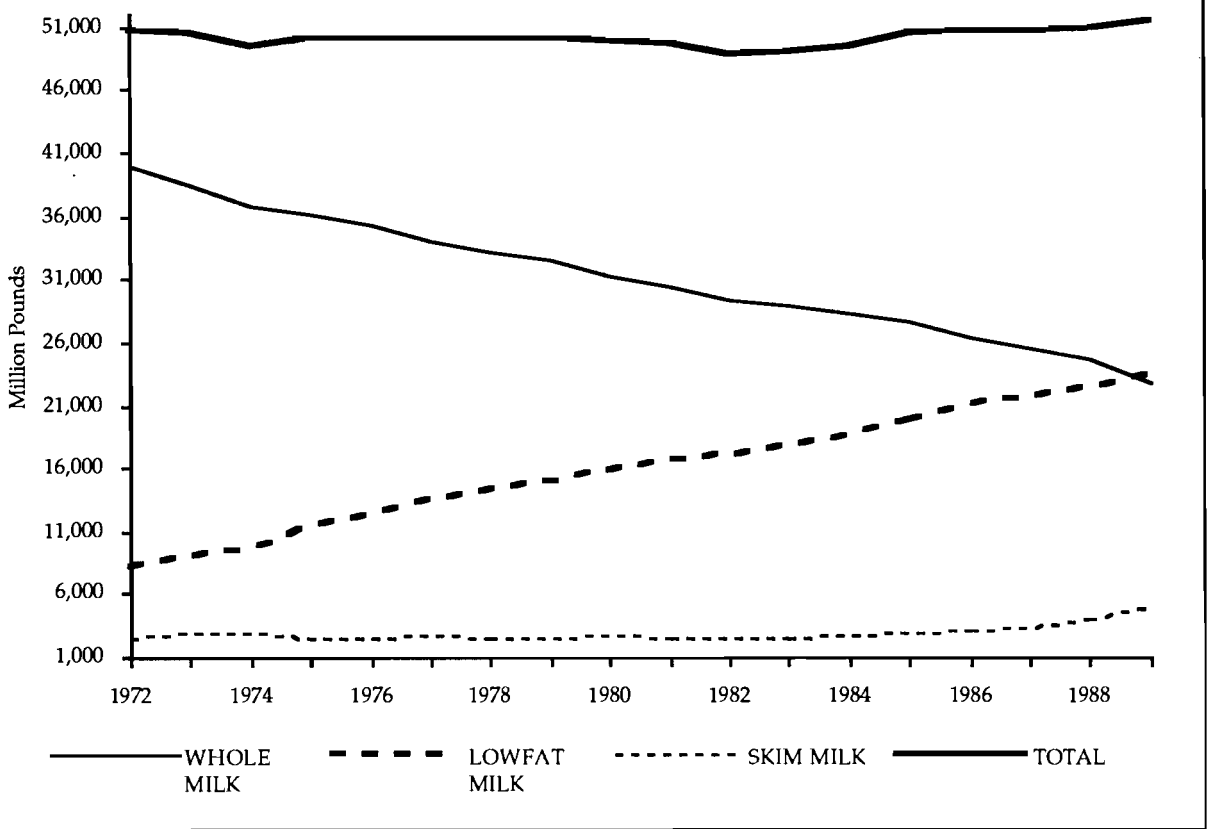
		GROWTH	
CATEGORY	SALES SHARE	CHANGE 89 VS. 88	AVERAGE 5 YEAR (Compounded)
	- % -	- % -	- % -
Dry Grocery	27.66	6.2	4.7
Non edibles	12.45	5.8	4.1
Gen. merchandise	4.20	3.9	4.0
HBA	4.00	5.0	6.4
Unclassified	2.50	--	--
Perishables	49.30	7.0	5.2
Totals	100.00	7.2	5.2
DAIRY*	**7.80**	**5.0**	**2.1**

*Dairy is a sub-category of "Perishables"

Source: *Progressive Grocer* (July 1990).

Although whole milk sales have declined substantially over the last 20 years, low fat and skim milk sales have increased to offset much of the decline, allowing the fluid milk category to remain the supermarket's top selling item in sales dollars (Figure 1). Whereas sales of whole milk declined 43% between 1972 and 1989, the corresponding sales of skim milk and low fat milk nearly doubled and tripled respectively. Between 1988 and 1989, these trends continued: whole milk sales declined by 8.1% while low fat milk sales grew 5.1% and skim milk sales grew 24.1% (DSO, p. 18).

Figure 2. Milk Sales, by Major Variety, 1972-1989



Source: *DSO* (1990).

Fifteen of the top selling 50 items in the supermarket come from the dairy case (Nielsen 1990). In fact, the top 2 selling items in the entire store, private label 2% (plastic gallon) and private label whole milk (plastic gallon), are fluid milk products. As a result, fluid milk sales represent over 2% (over $6 billion in annual sales) of total supermarket sales, greater than any other single product group (Table 3). The high sales volume of the dairy department is emphasized by a comparison of sales movement of the dairy case with that of the entire supermarket. Typically, retailers measure volume by the number of cases sold of a product each week. In an average supermarket, only 15% of all products generate a movement of one case per week. In the dairy department, it is common to see 40% of products reaching this sales level. In fact, 85% of milk-based items move greater than one case per week (Nielsen 1990).

TABLE 3
LEADING SUPERMARKET SALES CATEGORIES,* 1989

Category	1989 Sales Volume ($000)
Milk-fluid	$6,461,517
Cigarettes	6,124,348
Cereal-ready-to-eat	5,251,936
Bakery-bread-fresh	3,557,963
Cookies	2,683,379
Toilet tissue	1,991,962
Fruit juice-orange-refrigerated	1,594,456
Detergents	1,586,247
Eggs-fresh	1,464,648
Margarine	1,330,749

*Excludes fresh meat, fresh produce, pharmacy and liquor products.

Source: A. C. Nielsen (1990).

Dairy Department Size

Increasingly, supermarket shelf space is limited as the number of new products introduced far outweighs the space available for them. Table 4 illustrates the "dilemma:" the number of new food products introduced into the supermarket in 1990 (over 10,000 new items) represented a 900% increase over the 1970s annual average, whereas store size over the corresponding period has only grown 47% (Table 4).

TABLE 4
NEW FOOD PRODUCTS AND RETAIL STORE SPACE, 1970-89

	Average 1970-81	1988	1989	1990	1979/81-90 Percent Change
New food products	1,026	8,183	9,192	10,301	904%
New store size (sq.ft.)	27,200	40,800	40,600	40,000	47%

Source: *New Product News* (1991) and *FMI* (1990).

Similarly, for a more recent period, from 1988 to 1990, dairy shelf space grew an average of approximately 6% (IDDA 1990), while the number of new products introduced to the dairy case only increased 55% (Table 5). Although, as noted, the dairy department only accounted for 7.8% of supermarket sales (only about 62% of which are actual milk-based products), Table 5 demonstrates that in 1990 it represented 12.9% of all new food product introductions into the supermarket.

TABLE 5
NEW FOOD PRODUCT TOTALS BY CATEGORY[1] -- 1986-1990

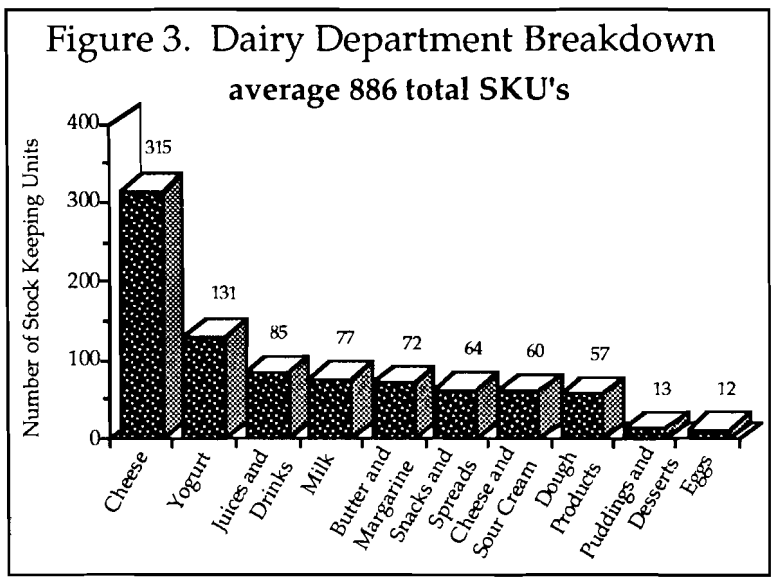
Category	1988	1989	1990
Food Categories:			
Baby foods	55	53	31
Bakery foods	968	1155	1239
Baking ingredients	212	233	307
Beverages	936	913	1433
Breakfast cereal	97	118	123
Candy/gum/snacks	1310	1355	1486
Condiments	1608	1701	2028
Dairy[2]	**854**	**1348**	**1327**
Desserts	39	69	49
Entrees	613	694	753
Fruits & vegetables	262	214	325
Pet food	100	126	130
Processed meats	548	509	663
Side dishes	402	489	538
Soups	179	215	159
Total, Food	**8183**	**9192**	**10,301**

[1]Non-food categories not included.

[2]Includes ice cream and ice milk.

Source: *New Product News* (January 6, 1991).

Over recent years new product introduction has been especially active in the cheese category. The cheese section in a typical dairy department now carries 315 different types (variations) and package types of cheeses, representing 35% of all stock keeping units (SKUs) in the dairy department (Figure 3). Similarly, although cheese sales are only about one-third as large as fluid milk sales in the dairy department, the extensive variety of cheese items has resulted in a space allocation to the cheese category nearly twice as great, 93 linear feet versus 54 linear feet, as for fluid milk (Table 6). Moreover, significant geographical differences exist regarding dairy product space allocation: whereas the average supermarket in the eastern U.S. typically devotes approximately 82 linear feet to the cheese section, this figure rises to 110 linear feet in the west, a 25% increase.



Source: IDDA, "What's in Store" (1990).

TABLE 6
SPACE ALLOCATION, SELECTED DAIRY CATEGORIES, 1989

Categories	Avg. sales/store/month linear foot	Average linear feet per store				
		Total U.S.	Eastern	Central	Southern	Pacific
Regrigerated dairy dept.		374.7 ft.	363.3 ft.	383.2 ft.	364.6 ft	389.5 ft.
Cheese	$227	93.3	81.9	95.8	87.1	109.9
Milk	643	54.2	46.5	54.9	50.7	65.8
Margarine	169	39.7	35.1	41.0	42.6	36.3
Yogurt	117	37.0	41.5	37.6	29.3	46.0
Orange juice/drinks	241	27.8	28.5	29.9	27.9	23.8
Dough products	127	27.5	18.5	25.7	36.3	22.1
Eggs - fresh	348	21.7	20.2	19.1	21.6	27.2
Remaining juices/drinks	400	19.4	25.5	17.9	18.2	18.6
Cottage cheese	242	11.2	15.9	10.9	8.9	12.0
Pudding/desserts	78	10.0	11.2	9.6	9.1	11.2
Butter	330	9.2	10.8	9.9	8.1	8.6
Sour cream	228	7.2	8.3	7.3	6.2	8.0

Source: A. C. Nielsen (1990).

A recent Kraft study showed that dairy departments in newly constructed supermarkets are 10 to 15 percent larger than in previously built stores and predicts that the dairy case will grow from an average 100 linear feet today to 140 linear feet by 1995 (Kraft 1990).

Promotion

Among the consumers passing through the dairy department (approximately 73% of store shoppers), 95% actually make a dairy department purchase, the highest "shopper conversion" ratio in the store (FMI 1991). The high frequency of dairy product purchases by consumers makes them popular as featured or display items. Observation of weekly supermarket advertising circulars reveals that dairy products are promoted often, presumably to build store traffic. Many supermarket companies promote at least one type of fluid milk, for example, every week, sometimes on the weekly ad's front page. This degree of promotional frequency is not standard practice in the rest of the store. In fact, milk is a member of a very select group of categories (the soft drink and beer categories are other examples) that are promoted with this high degree of frequency due to their believed strong drawing power with shoppers.

Figure 4 shows the percentage of "all commodity volume" (ACV) sold as a feature or display for a variety of dairy department products. As indicated, for certain dairy department items a significant majority of all volume is sold while the product is being featured or displayed (ADA 1989). Over 90% of cheese and margarine volume, for example, is sold while on special feature (A.C. Nielsen, 1990). Moreover, sales increases in cheese as high as 42% above non-promoted levels have been observed with a retail coupon and Point-of-Purchase (POP) display.

Figure 4. Supermarket Dairy Department Feature and Display Activity, 1990

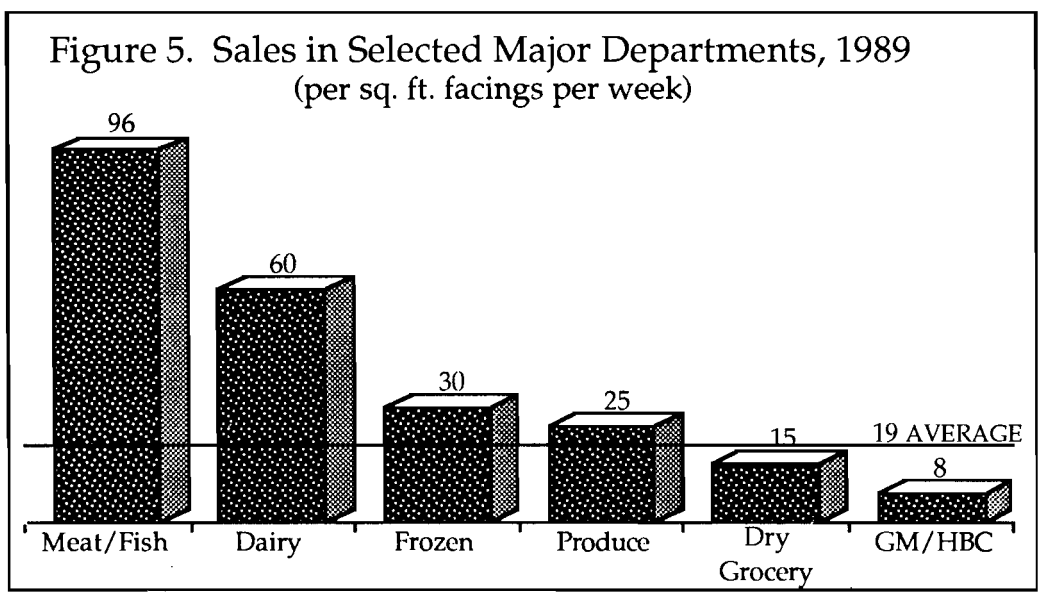
	When Featured		When Displayed	
	Avg. monthly % stores ACV*	Point change vs. 1989	Avg. monthly % stores ACV*	Point change vs. 1989
Cheese	93	6	75	-4
Juices & drinks	93	7	66	-3
Margarine	92	6	41	-4
Butter	89	1	4	-5
Cottage cheese & sour cream	81	5	5	-4
Yogurt	79	8	8	-1
Dough products	55	7	11	-2
Milk	48	-1	13	-5
Snacks & spreads	45	9	9	0
Pudding & desserts	39	20	4	3
Eggs	19	-7	2	-6

*All commodity volume.

Source: A. C. Nielsen (1990).

Performance

High sales volume and productivity combine to make the supermarket's dairy department an important source of potential supermarket profits. The dairy department contributes, on average, $24,184 to a supermarket's average weekly sales of $294,000. This represents sales of $60 per square foot of facing per week, second only to the meat/fish department and approximately three times the comparable storewide sales productivity measure (Figure 5).



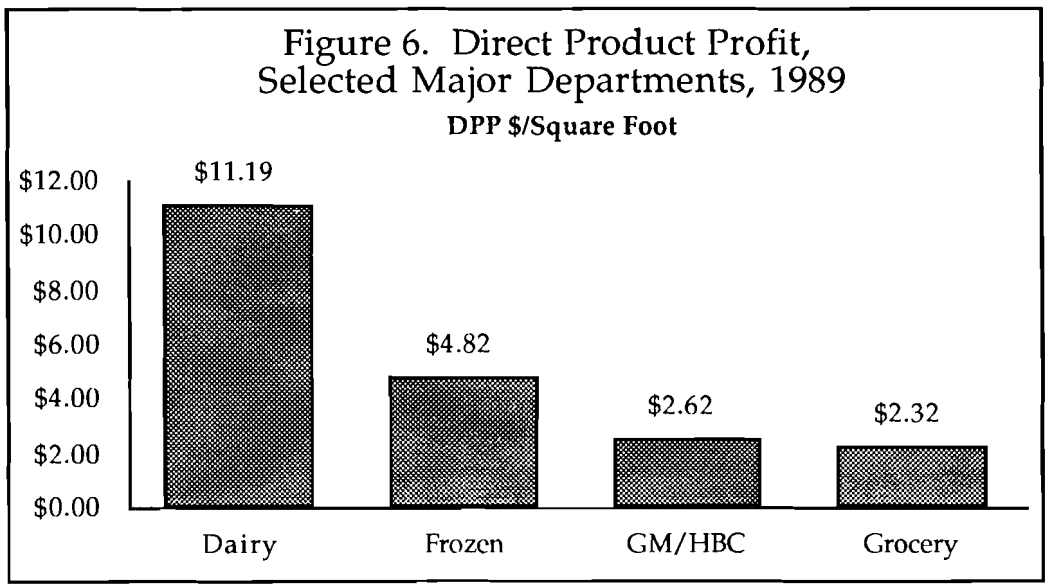
Source: Deloitte & Touche (1990).

Retailers generally rely on gross margin (price less cost of goods sold expressed as a percentage) as a measure of profitability in the supermarket. The average gross margin in the dairy department is 21.4%, slightly lower than the average for the entire store, 22.84% (Table 7). Within the dairy case, milk and milk products typically have a lower gross margin than the dairy case as a whole. In 1989, the average gross margin for milk and milk products was 15.3% while the average of the dairy case as a whole averaged 21.4%. Dairy sales produces a gross margin of $15.06 per square foot of facing per week (Deloitte & Touche).

TABLE 7
SUPERMARKET GROSS MARGINS, 1989

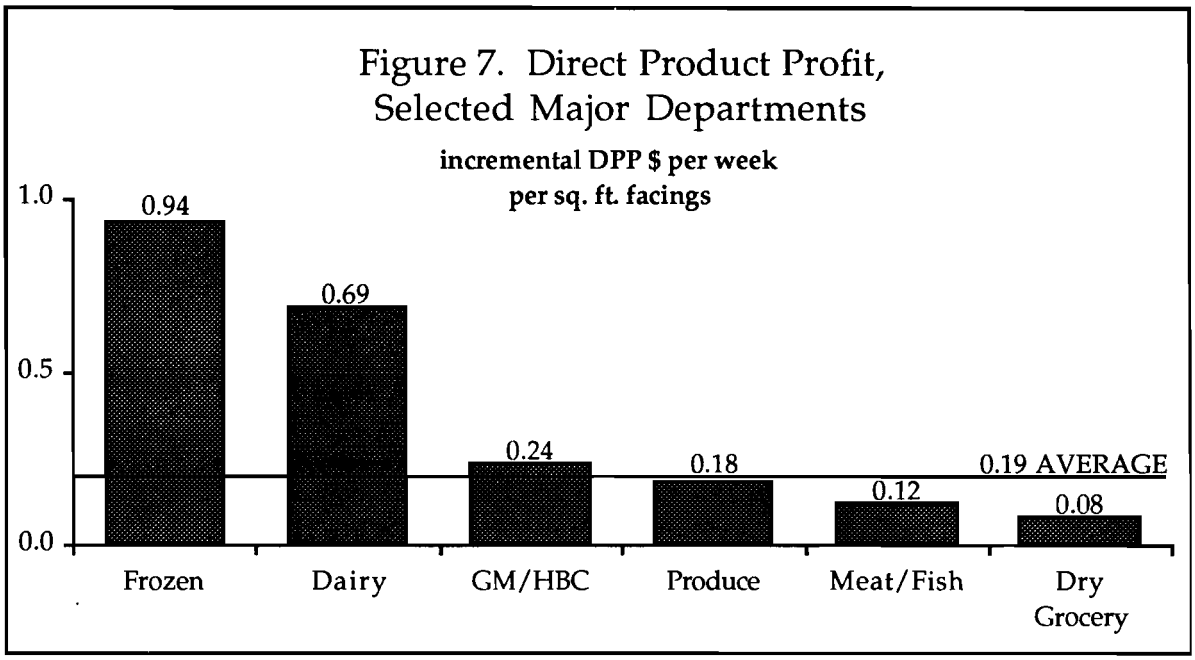
CATEGORY	MARGIN %
General Merchandise	31.10
Health and Beauty Care	26.20
Perishable	25.20
Dairy	**21.40**
Dry Grocery	20.10
Unclassified	18.60
Non-Edible	17.30
Store Average	22.84

Source: *Supermarket Business* (September 1990).



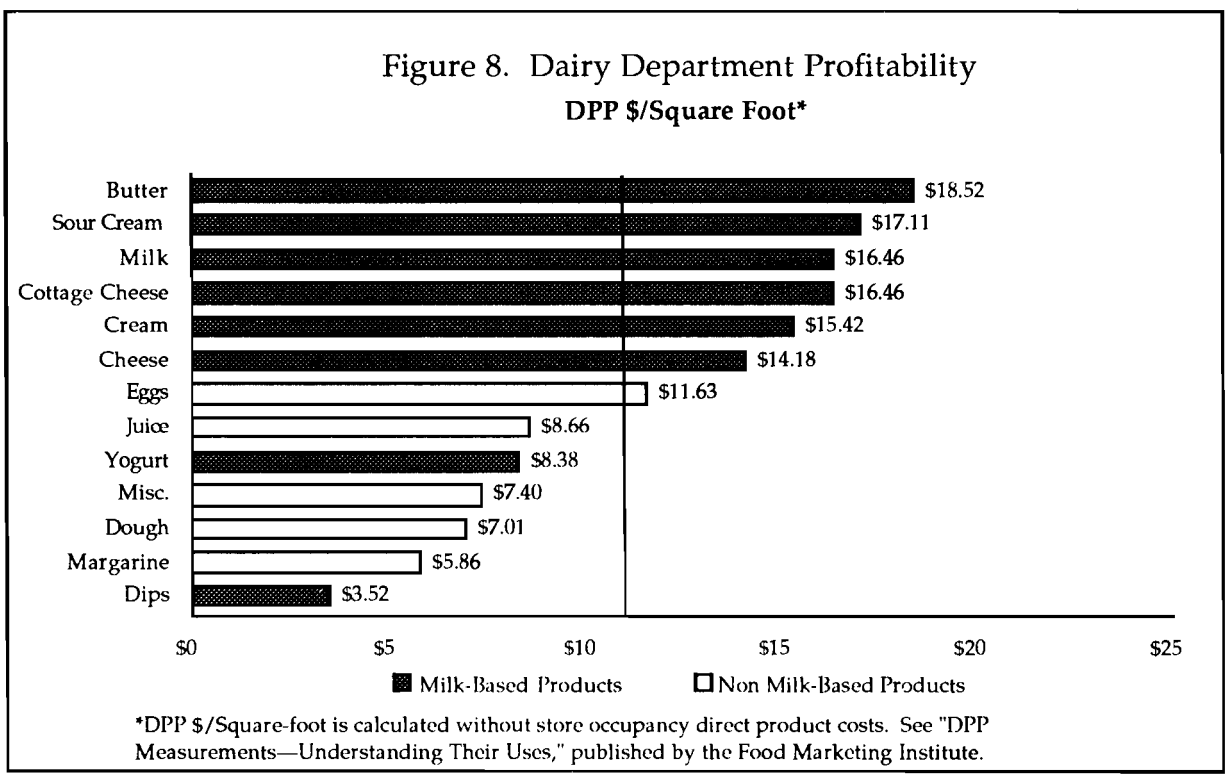
Source: Willard Bishop Consulting (January 1990).

Many recent studies measure profitability in terms of Direct Product Profit (DPP). Not yet widely used by retailers in planning, DPP measures profit on the basis of gross margin, after subtracting the direct costs associated with selling the item. DPP is widely regarded as a superior measure of performance to gross margin since it approaches actual net margin or profit. Using this measure, the dairy department produces the highest profit-to-space ratio in the supermarket. At $11.19 per square foot of facings per week, the dairy department contributes more than twice as much to store profits as the next most profitable department, frozen foods (Figure 6). When considering the incremental DPP resulting from space reallocation, an additional square foot of dairy product facings adds approximately $0.69 per week to store profit, second only to frozen foods and about 3.6 times the store average (Figure 7).



Source: Willard Bishop Consulting (January 1990).

Furthermore, when examining DPP on an individual product basis, milk-based products tend to be the clear profit leaders in the dairy department (Figure 8).

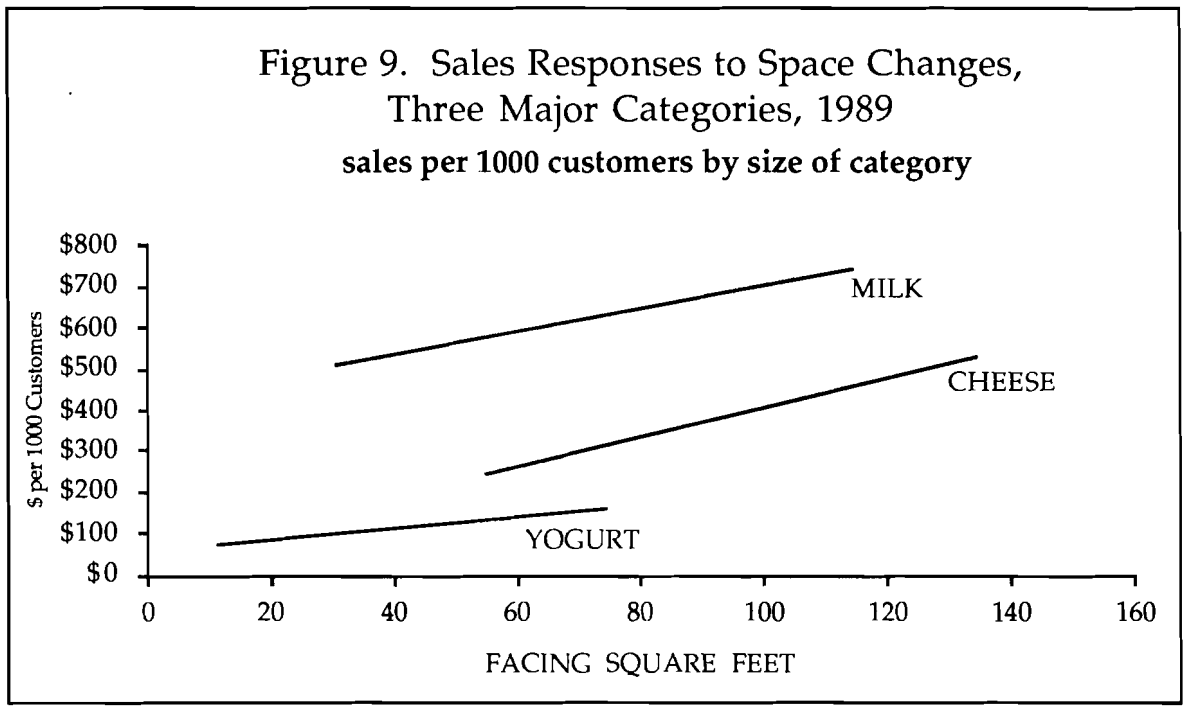


Source: Willard Bishop Consulting (January 1990).

Elasticity Measures

Space elasticity measures how the sales of a product, or product group, respond to changes in the space allocated to that product or group. Space elasticity studies for dairy products have shown increased space allocation to be effective in increasing sales. The sales results of incremental changes in square feet of facings for three dairy product groups are shown in Figure 9. These data suggest that for each additional square foot of facing added, $3.01 per week in milk, $3.79 per week in cheese, and $1.32 per week in yogurt sales per 1000 customers are realized.

Similarly, price elasticity measures the degree to which changes in price elicit sales responses. Many studies of this phenomenon have shown that dairy products in general exhibit relatively low (inelastic) price elasticities. For example, a recent study found that fluid milk exhibited a price elasticity of -0.26, that is, if the price were lowered by 1%, consumption would increase by only .26% (Table 8). One interpretation of Table 8 is: lowering retail price of the products shown is unlikely to trigger significant sales increases.



Source: Willard Bishop Consulting (January 1990).

TABLE 8
PRICE ELASTICITIES, SELECTED DAIRY PRODUCTS, 1989

Dairy Products	Price Elasticity
Total dairy products	-0.31
Fluid milk	-0.26
Cheese	-0.33
Butter	-0.17
Evap. condensed dry	-0.83
Frozen dairy products	-0.12

Source: USDA (August 1990).

Summary and Implications

This report has presented indices from a variety of sources to provide a profile of dairy products in the supermarket. Although past research has been valuable, much remains to be done. This is particularly true given the rapidly changing nature of the dairy industry supply, its structure, the greater availability of timely and disaggregated electronic data from retail levels and continued, inevitable changes in consumer demand. Important to consumers, retailers, processors and producers, it is clear that dairy products are, and will remain, an integral part of the supermarket product mix.

Despite a dramatic decline in whole milk sales, the dairy industry has responded to consumers' desires to reduce fat consumption with a rapid expansion of skim and low fat milk products: in 1989, for the first time, more low fat milk was sold from the supermarket dairy case than whole milk. Indeed, this report has shown that dairy processors have been more aggressive than their grocery manufacturing counterparts in introducing new products into the supermarket. Moreover, this is projected to continue. Although much of the rationale for these new products has been to meet new consumer demands for products that are healthy and nutritious but still tasteful, an additional consumer benefit is that the greatly expanded varieties of dairy products now available in supermarkets are more likely to fit the needs of a greater number of diverse consumer segments.

Whereas strong supply and demand forces at farm and processor levels result in prices that tend to dominate all other factors influencing raw milk sales, this is decidedly not the case in the modern retail environment. This report has presented considerable information regarding the complexity of the marketing and merchandising process for dairy products in the supermarket. New product development, feature activity, displays, trade "allowances," coupons and shelf location, for example, all play a vital role in determining weekly retail sales, yet often are independent of the price that appears on the dairy case shelf. Thus, although the historical price elasticities referred to above indicate a low consumer responsiveness to changes in dairy pricing over time, the impact of a host of promotional devices may have nearly the opposite effect, at least in the short run: tenfold sales increases are common during some promotional programs. An improved understanding of these retail level phenomena is absolutely fundamental when recalling that the majority of sales of many dairy products (eg., cheese, sour cream, butter) takes place during promotional periods. Similarly, since retail gross margins calculated from Bureau of Labor statistics generally rely on shelf prices, they are likely to overestimate "real" retail prices paid by consumers once the effects of these various promotions are considered. Especially on a week-to-week basis, the relevant time frame for shopping decisions, various dairy marketing and merchandising programs create substantial values for consumers.

Finally, this report highlights several ways in which the newly emerging electronic scanning data from supermarket retailers are demonstrating the positive performance of the dairy department relative to other departments in the store, and, within the dairy department itself, the positive performance of milk based products relative to non-milk based products. This is good news for dairy producers and processors. Many retailers are already beginning to allocate more space to dairy products as a consequence of these new performance results. Once these data are more available for analyses, the dairy industry will have new information on a wide spectrum of performance indicators. It will know, for example, the likely effects of a dairy product promotion, whether the gains are short or long run, and the most effective use of a dairy marketer's limited promotional budget. As this knowledge is extended to the industry at large and more retailers make space allocation and purchase decisions based on DPP and other measures of net profitability, dairy products can be expected to play a greater role in supermarket operations.

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No. 91-12	Raising Dairy Replacements: Practices and Costs, New York, 1990	Jason Karszes B.F. Stanton
No. 91-13	Dairy Farm Business Summary, Central New York and Central Plain Regions, 1990	Wayne A. Knoblauch Linda A. Putnam June C. Grabemeyer James A. Hilson Ann Peck James R. Peck
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