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SHELF LABELING OF ORGANIC FOODS: EFFECTS ON CUSTOMER PERCEPTIONS AND SALES

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ABSTRACT

The organic food industry is undergoing tremendous expansion. Retail grocers and organic food suppliers are interested in promoting organic foods to customers in mainstream grocery stores. The purpose of this study was to determine if point of purchase (POP) signage in retail grocery stores affects customer perceptions of organic foods and organic food purchasing behavior (sales).

An experimental study was designed in which control and two levels of POP signage were tested in two grocery store environments in the Twin Cities metropolitan area. Ten stores were involved; six from an upscale chain and four from a discount/warehouse chain. A customer intercept interview method was used to determine the perceptions of approximately 400 customers in each store; and sales data were tracked for 14 selected organic food items. Results revealed that customers in upscale stores were more likely than discount/warehouse store customers to recognize signs designating organic foods. Younger people, women and those having larger household sizes recognized organic signage most often. In both chains, signage increased the proportion of customers who reported ever buying and planning to buy organic foods. Sales data suggest a positive effect of POP signage on volume of sales for some, but not all tracked foods. Signage significantly increased the sales of skim milk, butter, eggs, deli bread, fresh carrots, spaghetti and flaked cereal in the discount/warehouse stores. In the upscale stores, significant effects of POP signage were found for skim milk, spaghetti, peach nectar and fresh carrots when the sales figures were adjusted for the store's weekly sales volume. The mixed sales results underscore the dynamic interplay between the store environment, its customers, and POP technology.

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Shelf Labeling of Organic Foods: Effects on Customer Perceptions and Sales

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EXECUTIVE SUMMARY

The purpose of this study funded by The Retail Food Industry Center and conducted in conjunction with the Midwest Organic Alliance, was to collect objective data on customers' interest in and response to organic foods and to determine the effect of point of purchase (POP) signage on customer perceptions and purchasing behavior. Specific research questions investigated in an upscale store environment (6 stores) and a discount/warehouse store environment (4 stores) in late summer 1996 included:

- 1. What are customers' perceptions in response to POP shelf labels for organic foods?**
 - a. Do customers recall seeing signage?**
 - b. Does seeing signage change customers' reported purchasing behavior?**
- 2. Is there a threshold for effect? Does level of shelf labeling (moderate versus high) make a difference?**
- 3. Are the demographics of customers (age, gender, household size) associated with reactions to shelf labels?**
- 4. Is POP signage effective in increasing the sales of organic foods (based on 6 weeks of data for 14 selected items)?**

To answer these research questions, an experimental study was designed to be replicated in two grocery environments (upscale and discount/warehouse) using control (no new signage) and two intervention levels of POP signage (moderate and high). Stores were matched by characteristics of size and the demographics of their service area and customers and then assigned to intervention or control condition for the study.

Fourteen organic food items were selected for labeling by Midwest Organic Alliance to represent the range of product lines in which organic products are available including: dairy (skim milk, eggs, and butter), breakfast cereal (whole grain flake cereal), baby food (pureed fruit blend), snack foods (chips and salsa or dip), canned and bottled goods (pinto beans, fruit juice or nectar and

spaghetti sauce), pasta (whole wheat spaghetti), produce (peeled baby carrots), bakery products (deli bread), and coffee (whole bean coffee).

After the products were in place, organic foods were identified with Earth-Friendly Organic logo channel strip labels. Signs with additional information about organics were placed throughout the store in accordance with the study protocols. Approximately two weeks later, customer intercept interviews were conducted by trained interviewers.

Effect of signage on sales of organic foods was tracked for a period of six weeks, beginning one week after all stores had foods and signage in place. The pricing coordinator at each store recorded sales data for selected organic products, designated by UPC number using computer reports generated from scanner data. Sales data were recorded on a standard data collection form and sent weekly to investigators. Data analysis was completed in conjunction with the University of Minnesota Computing Services.

Key Findings

1. What are customers' perceptions in response to POP shelf labels for organic foods? a. Do customers recall seeing signage?

About one-fourth of all customers interviewed reported seeing the organic food signage on shelves on the day of the interview.

Customers in upscale stores with Earth-Friendly Organic POP signage were more likely to report seeing signage on shelves identifying organic foods than customers in stores without signage. This was not the case in the discount/warehouse stores.

Overall, about one-third of the customers that said they had not seen signage on the day of the interview reported ever seeing anything that called their attention to organic foods in the store where they were interviewed. Customers in stores with signage were more likely to answer yes to whether they had ever seen anything that called their attention to organic foods.

Overall, the Earth-Friendly Organic logo was recognized by about 10% - 16% of customers in all stores. Customers in discount/warehouse stores with Earth-Friendly Organic signage (15%)

were more likely to report recognizing the Earth-Friendly Organic logo than customers in stores without signage (11%).

The intervention in this study was limited to printed signs and a take home brochure. Additional POP technologies (e.g. tasting booths, videos, price incentives) may be necessary to increase awareness and trigger a trial behavior of purchasing organic products. There may be a "learning curve" for which customers are given longer exposure to organic food signage, and the opportunity to purchase organic products and make a personal assessment of the benefits experienced. Such exposure and trial behavior may lead to increased attention to organic food labeling and expanded organic food purchases in future shopping trips.

The extent to which customers recognized the Earth-Friendly Organic logo was significant considering the competition for attention by numerous other shelf labeling and in the discount/warehouse stores. Having up to 15% of customers recognize a logo that had been in existence for only about 6 months is highly significant compared to 25% of customers reporting having seen any 5-A-Day information in their grocery store (FMI/Prevention, 1996). The 5-A-Day for Better Health logo has had a presence in stores for about 5 years with national marketing support.

b. Does seeing signage change customers' reported purchasing behavior?

Of those customers that reported seeing signs on shelves identifying or ever calling attention to organic foods in all stores, about 20% said signs caused a change in their shopping behavior. Of those that said signs caused a change in shopping behavior, most said signage caused them to examine or purchase the product.

About one-third of the customers interviewed in the discount/warehouse stores and one-half of the customers interviewed in the upscale stores reported ever purchasing organic foods. In all stores, about 7% reported purchasing organic products on the day of the interview. In upscale stores with signage, the percentage of customers reporting ever purchasing organic foods and buying organic products today was increased slightly due to the presence of signage.

In the discount/warehouse stores, about 40% reported that they were planning to buy organic products in the future, while in the upscale stores, about 50% reported planning to buy organic

products in the future. Slightly more customers in both types of stores with signage said they plan to purchase organic foods compared to customers in stores without signage.

Shelf-labeling may be most effective if it catches customers' attention, makes them aware of organic foods, and triggers them to recognize action options (e.g. to select organic milk rather than the traditional product). Movement toward behavioral change is facilitated by an increase in awareness and attitude change.

2. Is there a threshold for effect? Does level of shelf labeling (moderate versus high) make a difference?

In the upscale stores as the level of signage increased, there was an increase in the number of customers reported seeing signage identifying organic foods on the day of the interview and ever seeing anything that called their attention to organic foods.

Sales were not consistently related to amount of signage. Except for milk, more signage did not produce more sales.

3. Are the demographics of customers (age, gender, household size) associated with reactions to shelf labels?

In stores with signage, customers who appeared to be in their 30's and 40's were more likely to report seeing signage identifying organic foods than customers estimated to be older (50's and 60's).

Women were more likely to report seeing signage identifying organic foods in stores with or without signage. In upscale stores with signage, women were more likely to report ever buying organic foods or planning to buy organic products than women in stores without signage.

In the discount/warehouse stores, as household size increased, customers were more likely to report ever seeing anything calling attention to organic foods.

4. Is POP signage effective in increasing the sales of organic foods (based on 6 weeks of data for 14 selected organic food items)?

In the discount/warehouse stores, there was a trend toward somewhat higher sales in stores with POP signage for organic foods. Using data from three stores, sales appeared to be positively influenced by signage for skim milk, butter, eggs, spaghetti, deli bread, flake cereal, and carrots. Week of the month did not appear to be an important factor in this study.

In the upscale environment, stores had different patterns of organic food sales that overcame the effect of POP signage. When the sales figures were adjusted for the store's weekly sales volume, significant effects of POP signage were found for some food items---skim milk, spaghetti, peach nectar and carrots.

Sales data were collected over a short period of time (six weeks); and involved 14 organic food products. While some foods (milk, eggs, bread) are purchased on a regular basis, many of the tracked organic products may only be purchased occasionally. A longer list of foods or a different selection of items may produce different results.

There was a significant store effect for sales of three foods in the discount/warehouse environment. It is conceivable that more store effects would be found if a larger number of stores were studied. Week of the month did not appear to be an important factor in this study.

The stores that provided sales data seemed committed to proper implementation of the study. Spot checks by study personnel verified the presence of products and signage. However the difficulty of locating items in the large grocery stores underscored that the POP intervention was minimal. Customers would need to be very attentive shoppers who traveled the whole store to be sufficiently exposed to the POP signage on organic products.

CHAPTER 1: BACKGROUND AND RATIONALE

Purpose

The Midwest Organic Alliance, a non-profit organization, was founded in 1995 to make a measurable impact on production and sales of organic food products. The Alliance focuses on developing the supply of certified organic products in a five state Midwest region and consumer demand for organic foods in the Minneapolis and St. Paul market. The Alliance has developed an Earth-Friendly Organic logo to highlight organic products on grocery shelves in the Twin Cities market. Mainstream retail grocers have been encouraged to carry the Earth-Friendly Organic logo-identified products. Two grocery chains in the Twin Cities market, one with an upscale format and another with a discount/warehouse format, were interested in determining whether the identification of organic products with the Earth-Friendly Organic logo on grocery shelves had an impact on sales and customer perceptions of organic food products. The purpose of this study was to collect objective data on customers' interest and response to organic foods and to determine the effect of point of purchase (POP) signage (Earth-Friendly Organic logo identification) on customer perceptions and purchasing behavior.

An experimental study was designed to be replicated in both grocery environments (upscale and discount/warehouse) using control stores (no new signage) and stores with two intervention levels of signage - high signage and moderate signage. Customer reactions to signage were measured using intercept survey methodology and sales data were collected for 14 selected organic products in each store to measure effects of signage on sales.

The Organic Food Market

The organic food industry has experienced a tremendous period of growth in the past 10 years as organic foods have become more available and affordable for conventional consumers in mainstream grocery stores. The return to organic food production was recently cited as one of the top ten trends for food manufacturers and marketers (Sloan, 1994). Sales of organic foods have grown more than 20% each year for the last six years (Markle, 1997). In 1994, organic food sales grew at an annual rate of 21.7% to an estimated 2.8 billion dollars (Mergentime et al., 1996). By the year 2000, sales of organic foods are predicted to reach 6.6 billion dollars (New Hope Communications, 1993). Organic foods made up 6.3% of all new products introduced into the market in 1995 (Food Marketing Institute, Washington, DC/Starr Track, Eureka, CA 1996). At present, organic products make up only 1% of the U.S. agricultural output, but with the recent strong increase in sales, organic foods may soon represent a more significant portion of total output. Organic foods in natural food stores accounted for the largest share of the organic market at \$1.87 billion in sales in 1994. Conventional supermarkets accounted for about \$210 million in sales of organic food (Mergentime, 1996).

Organic foods or ingredients for organic food products are grown and processed using Federal standards for production, processing and certification under the Organic Food Production Act of 1990 (OFPA, 1990). Using these standards, organic food is produced without the use of synthetic pesticides and fertilizers, with minimal processing to preserve the integrity of the food and with fewer artificial ingredients or preservatives. A National Organic Standards Board overseen by USDA is currently developing guidelines and procedures to regulate organic products. The proposed rules regulating production of crops and livestock, processing, and requirements for accreditation of

certifying agencies will be published in the Federal Register (personal communication, Michael Hankin, National Organic Program, USDA). The emerging federal and state standards are opening the market to more and bigger organic food producers and processors. There are no certification standards for a product to be labeled “natural” , rather the term “natural” is a broad or general term used by the food industry to mean unprocessed or unrefined. Consumers may not have well-defined interpretations for either “natural” or “organic” labeling.

About 40% of the organic market is comprised of produce; packaged grocery items make up the remaining 60%. The most active categories of organic packaged products include baby foods, snack bars, vegetable protein powders and products, cereals, and pasta (MIS, 1993).

The Organic Food Consumer

Consumer interest in and demand for organic food products is expanding to the mainstream supermarket beyond the current 15% of the population who shop at natural or health food stores (personal communication, Ann Woods, Midwest Organic Alliance, 1996). The growth in the organic food industry has been attributed to the growing interest in environmental concerns and avoiding pesticides. The Baby Boom generation born between 1946 and 1964 is estimated to be 78-million strong (Nielsen Marketing Research, 1992). The middle-aging of the Baby Boomers may also explain the growth in the organic food market, as a significant portion of the U.S. population becomes interested in more healthful and wholesome food products. Surveys of consumers have consistently shown a strong concern about agrichemicals and pesticide residues and effects on children (FMI/Prevention, 1994, Public Voice, 1993). A recent survey by the Hartman Group (Hartman Group, 1996) identified six distinct groups of consumers by attitudes about the environment and

food: 1) True Naturals (7%), 2) New Green Mainstream (23%), The Affluent Healers (12%), Young Recyclers (10%), The Overwhelmed (30%) and The Unconcerned (18%). The True Naturals were somewhat older, highly educated and were driven by environmentalism. They were willing to pay and actively paying a premium for organic and earth-sustainable product. The New Green Mainstream group had a heightened interest in the environment and were concerned about impact of chemical pesticides and fertilizers on the food supply. Consumers in this group were likely to have purchased an “earth sustainable” product within the previous month. The core purchasing criteria of the remaining groups did not include sustainability of the earth and therefore were considered a challenge in marketing organic or “earth sustainable” products.

Information about demographic characteristics of the organic food shopper is available from consumer research studies (Fresh Trends, 1996; New Hope Communications; Packaged Facts, 1993). About 60% of organic food sales occur in the Northeast and Southwest region of the U.S., while sales in the Midwest account for about 13% of all organic food sales. The greatest growth in organic sales has occurred on the West and East coasts and in metropolitan areas such as Denver, Chicago, Minneapolis and Phoenix. It has been estimated that the San Francisco Bay area is the largest single market for organic products in the United States.

A nationwide phone survey (Fresh Trends, 1996) showed that consumers with higher household income levels purchased organic foods more often than those with lower incomes, and people in younger age categories purchased organic foods more often than those 60 years or older. Sixty percent of organic food shoppers are college-educated and under age 45 with a higher median income than other shoppers. Male respondents (29%) were more likely to indicate that they purchased organic products in the previous 6 months than female respondents (22%).

Results from survey research indicate that consumers buy organic products because they perceive organic products as having many positive attributes (e.g. being grown with fewer pesticides, being more nutritious, better tasting, and healthier for the environment) (Jolly et al. 1989; 1991, McWilliams et al., 1995). One-third of the consumer respondents in a California survey indicated they plan to buy organics in the next month (Jolly et al., 1989). Following the Alar on apples and Chilean grapes food safety episodes, three-fourths of the store managers surveyed in California indicated they would like to carry more organic produce (Jolly et al., 1991). Concern about pesticide residues and other food-related environmental concerns was a significant explanatory variable for organic food preference for a group of Washington state food cooperative members as well as residents from the same geographical region (Wilkins and Hillers, 1994).

Twin Cities focus group interviews conducted by the Midwest Organic Alliance identified positive and negative attributes for organic foods (MacWilliams et al., 1995). The women described organic foods using words such as healthy, fresh, natural, not altered, and containing no pesticides. The participants discussed some of the disadvantages of organic foods including concerns that their families may not enjoy organic foods because they taste and look like health food, have a shorter shelf life, and may be more difficult to prepare. The biggest disadvantage cited was that organic foods are too expensive. Availability of organic foods and accurate information are limiting factors to greater consumer use. Focus group participants identified a need for more information to: correct misperceptions, present organics as a choice, and provide positive reasons to make the organic choice (McWilliams et al., 1995).

Point of Purchase Technology

Definition and Extent of Use

In retail selling, consumers encounter displays, signs, structures and devices used to identify, advertise, and/or merchandise products at the point of purchase (POP) or point of sale (POS). In this report, the term POP will be used throughout to refer to in-store consumer promotion technology in the retail industry. In a grocery store, there are four major types of POP displays (end-of-aisle, front-of-the-store, in-aisle, and shelf-talker) (Blattberg and Neslin, 1990).

There has been double-digit growth in expenditures of POP displays in the last ten years (Shimp 1997), in part because marketing to consumers in their home is being augmented with an increased level of marketing in the store (Clayton/Curtiss/Cottrell Management Services, 1993). It has been suggested that the effectiveness of the media in reaching consumers has decreased as network television viewership and daily newspaper/consumer magazine readership has declined (Mathews, 1995). According to Mathews (1995), consumer promotions may be more efficiently targeted at the store rather than at the household level.

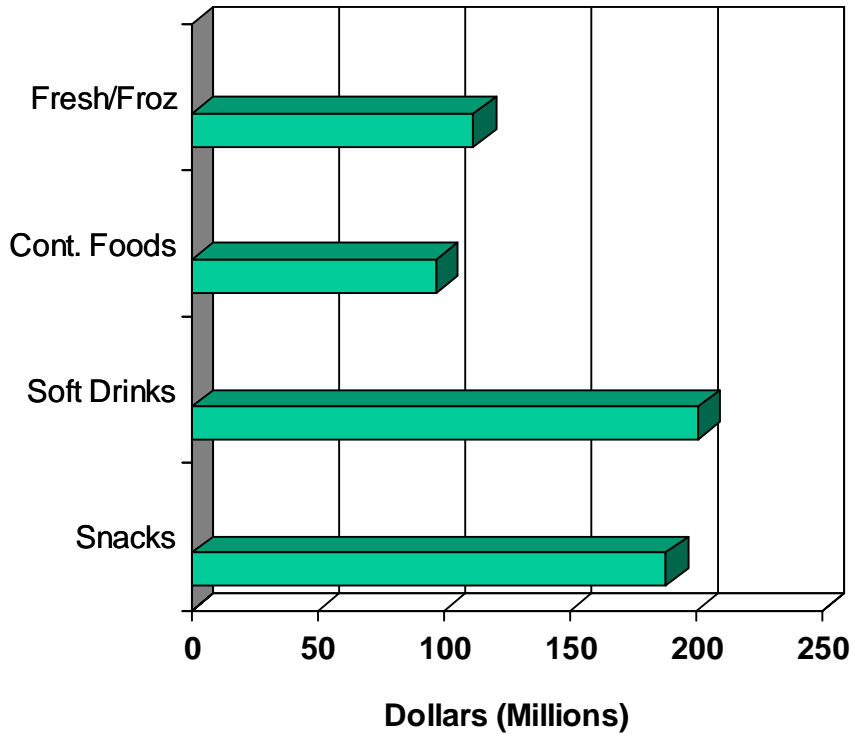
In 1995, 31% of product marketers interviewed in the POP Times Trends Survey reported increased use of in-store media. Some industry observers also predict that the use of in-store media may decrease as marketers learn how to reach consumers with new segmented media channels. The trend toward market fragmentation caused by demographic and lifestyle changes have forced marketers to discern the tastes, needs and values for numerous fragments (Nielsen Marketing Research, 1992). Retail food marketing has become more complex as the market becomes more fragmented, different retail store formats emerge, and the lines between retail trade channels become blurred.

Promotions represent a significant percentage of the marketing-mix budget, with POP techniques seen as an integrated part of the marketing strategy. A survey of packaged goods manufacturers in 1995 indicated that promotion efforts were divided among trade promotion (51%), media advertising (25%), and consumer promotion (24%) (Carol Wright Promotions/Cox Target Media, 1996). The POP Advertising Institute estimated that in 1995, the POP industry accounted for \$12 billion dollars in advertising volume for packaged products (POP AI, 1996). This dollar volume was divided into several segments: temporary or permanent displays designed to promote a specific product for less than 6 months, or for 6 months or more, respectively, and in-store media and signage used to promote specific products or brands. In-store media or signage includes printed signs, posters and cards, banners, mobiles, illuminated or electronic signs, coupon dispensers, in-store video and radio, and interactive kiosks. Of the total dollar volume spent on POP technology, about two-fifths is spent on in-store media/signage. The money spent on POP displays was estimated to exceed advertising expenditures for network TV (\$11.89 billion), newspapers (\$11.74 billion) and consumer magazines (\$8.46 billion) (Annual Report of the Promotion Industry, 1996). Industries that spend the most on POP displays include restaurants; food service; apparel/footwear; automotive; soft drinks; and snacks, candy, cookies and crackers. Figure 1 illustrates the dollar volume of in-store media/signage spent to promote various types of food products.

Effectiveness

POP techniques in the retail food industry are intended to influence consumer decisions on how to spend available resources. Consumer behavior is purposeful as consumers search for, purchase, use and evaluate products they expect will satisfy their needs. Theories of consumer

Figure 1. POP expenditures by end user type of industry (Fresh/froz = Fresh/frozen/refrigerated foods, Cont. foods = containerized foods, and Snacks = candy/snacks/cookies/crackers).



decision-making depend on assumptions made about the nature of humankind (Schiffman and Kanuk, 1994). A simple decision-making model considers psychological, social and cultural concepts with input, process and output variables. The marketing-mix activities that are part of the input component of the model include POP techniques. Retailers use POP techniques to communicate the benefits of a product and persuade consumers to buy and use the product.

At least two-thirds of purchasing decisions are made in-store (POPAI, 1996). POP techniques can affect consumer behavior by making the passing customer stop and walk in, link the POP materials with TV advertising, make potential customers buy, often on impulse, and make customers buy more of a particular product. A recent study conducted by the POPAI showed that

96% of supermarket shoppers make at least one purchase that is in some way affected by POP material (Bauer, 1995). Analysis of receipts and interviews with shoppers allowed the researchers to categorize supermarket purchases as one of four types:

1. specifically planned - planned to purchase a specific product and brand before entering the store
2. generally planned - planned to buy an item but not a particular brand
3. substitute - purchases in which either a brand or an item is substituted
4. totally unplanned.

About 70% of all supermarket purchases fit into the last 3 categories indicating the potential significance of POP materials in influencing decision-making. In a study by Fawcett, women were slightly more likely to make in-store decisions than men and younger shoppers had higher rates of in-store decision-making than older shoppers. Categories that were especially influenced by POP materials were fresh packaged sweet baked goods, salsa/dip, and shelf-stable prepared foods (Fawcett, 1995). Supermarket categories for which POP materials were not very influential included produce/meat/seafood, eggs, and poultry.

Displays are considered one of the most important forms of retail promotions and are known to greatly increase sales in some situations (Blattberg and Neslin, 1990). The empirical generalization that promotions significantly increase sales is important for business practice considering the dramatic growth of promotional spending in marketing budgets over the past decade. Because displays interact with other promotional activities, such as feature ads, and price discounts, it is challenging to isolate the effects of displays alone (Blattberg et al. 1995). Wittink et al. (1987) studied the multiplier effects of feature advertising and displays across markets and found that deal elasticities varied greatly. They suggested that this may be due to different frequency of trade deals,

different levels of retail competition, differences in consumer responsiveness and different market structures.

Research regarding the impact of POP displays is limited in the academic literature and most cited work was completed before 1990. Some academic research involves the “attention-reinforcement hypothesis” to explain the effects of special POP displays. This is based on the finding that consumers ignore most in-store information while shopping (Jacoby et al. 1977; Bettman 1979). Special POP displays draw attention to the featured brands increasing the likelihood that the product will be considered for a purchase (Curhan 1974; Phillips and Bradshaw 1993; Janiszewski 1996). POP displays may also support the customer perception that a special deal is being offered (Woodside and Waddle 1975; Inman and McAlister, 1993; Curhan 1974).

In general, it appears that special retail displays and increases in normal shelf space increase sales in some situations and have little or no effect in others (Areni et al., 1996). Studies that support increased sales of featured brands as a result of increases in shelf space and special POP displays were reported by Curhan (1972, 1973) and Wilkinson et al. (1981).

In a recent survey, retailers indicated that they consider vendor-supplied POP materials important for supporting introduction of new products (Editors, P-O-P & Sign Design, 1995). The survey also showed that about 38% were using scanner data to measure the effectiveness of in-store displays. Retailers rated displays below price reductions and newspaper/TV/in-store circular advertising for effectiveness in increasing sales, but above coupons, in-store demonstrations, on-pack promotions and event sponsorships. In one study, store level data indicated that displays alone resulted in 10% - 145% higher sales of a selected cereal product than in stores without the displays (Gogos 1996).

The impact of POP factors on consumer behavior was recently studied using a unique approach, a computer-simulated or virtual supermarket (Burke, 1996; Andrews, 1995). Shoppers were asked to take seven trips through a virtual store, shopping in four product categories to determine which promotions encourage consumers to try new products more quickly. Competitor's promotional activities such as price reductions had a negative impact on consumers' responses to the introduction of new product with NEW! signage, SALE signage, additional shelf space or no special promotion. Purchasing of the new product occurred most often with price promotions.

A national consumer study (A.C. Nielsen) examining factors driving grocery shoppers' decisions found that about 80% of the respondents know which brands they will buy before entering the store, 66% read the newspaper to find sale items before going grocery shopping and 75% said they are influenced by TV advertising and have purchased products after seeing a commercial for the product (Hogan 1996). Nearly 80% of the survey respondents indicated that they notice special displays when grocery shopping and 61% said they pick up store fliers to look for opportunities to save money. About 55% reported often buying items on impulse.

It has been suggested that overly focused efforts to maximize results of in-store marketing may lead to a stripped down retail environment and provide little entertainment value for shoppers (Leeds, 1994). A balanced approach has been advocated ensuring that the customer does not feel overwhelmed, the entertainment objective has been accomplished, appropriate messages reinforce the image of the particular store, and the in-store approach is reinforced in targeted ways through media channels.

Promotions represent a significant percentage of the marketing-mix budget and are known to have a significant positive impact on sales. The marketing-mix involves many different types of

promotional activities, including displays, feature advertising, and price discounts. The effectiveness of each type of promotional activity alone or in synergy with another is not well known. Manufacturers and retailers want to know the impact of individual in-store marketing techniques on sales of particular products. Sales effectiveness research and awareness or recall measurements are important in assessing the overall effectiveness of various POP techniques.

Shelf Labeling and Nutrition Education

Various state and university public health research and promotion staff have conducted studies using the supermarket as a conduit for nutrition information to promote healthy food choices. A recent comprehensive review (Contento et al., 1995) summarized the results of nutrition interventions in supermarkets that utilized POP techniques. The POP techniques usually involved large posters, shelf signs and brochures or computer-based interactive nutrition education delivery systems. The criterion for evaluating these programs involved improvement in dietary intake or physiological parameters, changes in knowledge or awareness, and sales of labeled products. Houston and Rothchild (1980) suggest that effects of in-store information programs should be measured using a hierarchy-of-effects model including awareness, comprehension, attitude, and good will generated.

In one study, Tidyman Grocery Stores initiated a shelf labeling program to help consumers identify and locate low and high fat food products. Customers were concerned with the amount of fat in their products but did not want to take the time to read nutrition labels. Shelf labels, called "FATsignal" marked products with a red or green light according to the fat content of the food (Supermarket News, 1995). Russo et al. (1986) used a similar approach and posted a comparison of the nutrition information for certain foods for each brand and displayed it on a sign in a condensed

form. Nutrition knowledge, attitudes and awareness of nutrition information significantly increased in intervention stores. The signs produced the most dramatic changes when products were compared based on a perceived negative ingredient such as added sugar, rather than on a positive attribute, such as vitamins. Comparisons of added sugar in breakfast cereals resulted in a 2.7 point increase in the market share of low sugar cereals from a baseline of 43.4 and a 2.3 point decrease in the market share of high-sugar cereals from a baseline of 18.2. To produce the effects described, Contento (1995) concluded, advertising expenditures are substantial and the intervention must run for long periods of time since the effects disappeared almost immediately after the removal of the signs.

The Minnesota Heart Health Program (MHHP) used shelf labels to promote particular low-fat and low-sodium products in various food categories (Mullis et al., 1987). In addition to shelf labels, other educational materials were used to alert customers (e.g. flyers inserted in grocery bags, shopping lists with selected products listed, and a publication which contained nutrition information on various products). Of those customers indicating they were aware of the program (approximately 40%), 25-41% reported that the signs influenced their choices. Researchers suggested that the impact could be enhanced by involving grocers in the planning process, training all grocery store personnel, and setting up quality controls for program monitoring.

Jeffrey et al. (1982) measured the effectiveness of posters, shelf labels and brochures on consumer knowledge of foods that lower the risk of cardiovascular disease (CVD). No clear trends in sales volume were observed. The authors suggest that education campaigns should be based on many ideas such as price, convenience factors, and taste instead of promoting one specific idea (i.e. lower risk of CVD). They also note that many other stimuli such as promotion price discounts and tasting demonstrations compete with health messages. Another major intervention in 90 Giant Food

stores in the Washington, DC/Baltimore area in the late 1980's used POP materials to influence consumers' selection of heart healthy foods (Ernst et al., 1986). No significant differences were observed in sales data for select items and results of tests of nutrition knowledge were inconclusive.

Carsky and Fern (1994) studied the relationship between POP information and consumer purchasing and satisfaction. They found that most previous information studies support the conclusion that awareness and use of in-store information is related to consumers' interest in health and nutrition. Studies involving nutrition and health information in general, did not alter purchasing patterns, but affected awareness, comprehension, attitudes, and generated good will.

In summary, POP nutrition materials in grocery stores are likely to be most effective in influencing purchasing behavior when 1) comparisons similar to those consumers are likely to make between products or brands are also made in the intervention, 2) the messages are appealing, games are involved and incentives are used, 3) the POP materials are available for a long period of time, and 4) the POP materials are used to encourage the purchase and consumption of particular food items. Additional research is needed to determine how POP materials can be most responsive to the information search and decision process to maximize effectiveness (Contento et al., 1995).

Conclusion

The organic food industry is flourishing, fueled by the demand for environment-friendly, healthful and wholesome products by relatively younger consumers. Now that organic products are becoming more predominant in mainstream grocery stores, organic food marketers are looking for marketing tools that identify their product, persuade consumers of the benefits over conventional products, and positively influence sales. There is relatively little information available in the published

literature about the effectiveness of POP techniques in influencing sales or customer awareness or recall for organic food products. POP materials as a part of the marketing-mix of promotion activities may be an appropriate way to influence customer perceptions and sales related to organic foods.

CHAPTER 2: STUDY DESIGN AND METHODS

Background

In conversations between the marketing director of Midwest Organic Alliance (MOA) and the vice president of an upscale grocery chain in the Twin City metropolitan area, a need was identified for objective data on customers' interest in and response to organic foods and the effect of point of purchase (POP) signage on customer perceptions and purchasing behavior. MOA contacted The Retail Food Industry Center about the possibility of initiating a study on this topic. Funds were awarded the Department of Food Science and Nutrition to conduct the study.

Research Questions

To determine the benefits of POP labeling technology to promote organic foods:

What are customers' perceptions in response to POP shelf labels for organic foods?

Do customers recall seeing signage?

Does seeing signage change customers' purchasing behavior?

Is there a threshold for effect?

Does level of shelf labeling (moderate versus high) make a difference?

Are the store environment (discount/warehouse supermarket versus upscale supermarket) and customer demographics (age, gender, household size) associated with reactions to shelf labels?

Are POP shelf labels used in Twin Cities retail grocery stores effective in increasing the sales of organic food products?

Design

To answer the research questions an experimental study was designed to be replicated in two different grocery environments--an upscale grocery chain and a discount/warehouse chain. Control and two levels of POP signage were designated--high signage and moderate signage. The intervention, described below, required identification of organic foods with standard channel strip labels and some additional POP information for customers. After organic foods and signage were in place, customer perceptions and behaviors were surveyed and sales data were tracked. By comparing control and signed stores, the effect of POP signage on customer perceptions and sales in two different grocery store environments could be estimated. In addition, two levels of signage in the upscale setting made it possible to investigate the potential for a threshold effect related to the amount of signage.

As a condition of participation, stores agreed to stock organic foods, to allow customer intercept interviews of 400 customers over a 1-2 week period, and to report weekly sales data for 14 selected organic food items for a six week period. Store managers also agreed to have their stores randomly assigned to either the intervention or control situation. However in the final plan, stores were matched by characteristics of size and the demographics of their service area and customers and then assigned to intervention or control condition for the study.

Sample

Supermarket chains were selected based on interest in the effects of point of purchase signage and promotion on sales of organic foods, and on differences in grocery store environments. In the upscale chain, 6 of 12 stores were identified to participate by the vice president for retail operation.

In the discount/warehouse environment, four independently own stores affiliated with the chain by franchise were invited to participate based on previous MOA contacts with store managers.

Selected organic food items were selected by MOA to represent the range of product lines in which organic products are available including: dairy (skim milk, eggs, and butter), breakfast cereal (whole grain flake cereal), baby food (pureed fruit blend), snack foods (chips and salsa or dip), canned and bottled goods (pinto beans, fruit juice or nectar and spaghetti sauce), pasta (whole wheat spaghetti), produce (peeled baby carrots), bakery products (deli bread), and coffee (whole bean coffee). The list of foods was reviewed by store managers and some modifications were made based on product availability to each chain. The final list of selected food items was identified by UPC for each chain. Actual products tracked in the study are listed in Table 1.

Table 1. Selected organic food products tracked in study

<u>Upscale</u>	<u>Discount/Warehouse</u>
skim milk	skim milk
butter	butter
large eggs	large eggs
blue corn chips	blue corn chips
salsa	bean dip
canned pinto beans	canned pinto beans
spaghetti	spaghetti
chunky pasta sauce	marinara pasta sauce
deli bread	deli bread
peach nectar	apple juice
heritage flake cereal	multigrain flake cereal
french roast coffee beans	french roast coffee beans
apple/banana puree baby food	apple/banana puree baby food
fresh peeled baby carrots	fresh peeled baby carrots

Four hundred shoppers at each participating grocery store were to be interviewed using a customer intercept survey method. The sample size was calculated to detect a 5 percent difference in response to the dichotomous question of "do you expect to purchase organic foods in the future?". Interview times were determined with each store manager in order to sample a range of homemakers, retired elderly citizens, and employed men and women. This involved scheduling day time, early evening, weekday and weekend interview periods. Any adult (over age 18) waiting in the check out line was eligible and was approached by interviewers on a "next available customer" basis.

The study design and procedures were reviewed and approved by the University of Minnesota Committee on Human Subjects in Research.

Intervention

Organic food products were ordered by each store and placed on shelves. Stores were encouraged to expand their offerings to include a wide variety of organic items; however they were required, at a minimum, to carry the 14 selected organic products selected by MOA and agreed upon by the participating store managers. Within each chain, all stores charged the same price for food items.

After the products were in place, MOA worked in collaboration with the store personnel to place signs throughout the store in accordance with the intervention level. **Control stores** had no new signage added. In **moderate signage stores**, channel strip labels stating "ORGANIC EARTH FRIENDLY" with the MOA logo were placed beside the UPC channel strip for all organic products throughout the store; in addition 3 X 5 inch fact cards with information defining "organic" were placed by 10 items, and a plastic holder with a take home brochure on organic foods was placed in

one location at the front of the store. The channel strips and fact cards are illustrated in Appendix 1. In the **high signage condition**, channel strip labels were used to identify all organic products. In addition, signage was increased by adding fact cards by every selected item plus six to eight other organic products, and displaying eight to ten 4 X 8 Earth-Friendly Organic logo signs and brochure holders at five to seven locations throughout the store.

In the discount/warehouse chain, only the high level of signage was used because the organic signs had to compete with heavy signage routinely in use in that environment. In contrast, the upscale chain had a policy limiting the use of signage. Current signage consisted of channel labels on shelves, minimal end-aisle promotions, and labels in the produce section .

To assure the ongoing integrity of the intervention, the pricing coordinator at each store verified that products were in stock and appropriate signage was in place. Tattered or missing fact cards or channel strips were replaced and brochures restocked. Food items not available were restocked within 24 hours. (Once all the selected organic items were on shelves, stocking problems were only noted for carrots.)

Measurement Instruments and Procedures

After stores were identified, meetings were held with store managers to discuss the purpose of the study, present intervention plans, review the customer intercept survey questions and procedures, discuss the availability of organic food items and agree upon a list of 14 selected foods to be stocked and tracked for sales. Their input was used to refine procedures and to assure they were acceptable and workable in the supermarket setting.

Customer Intercept Survey

Questions included in the survey evolved from meetings with corporate chain persons about their interests in customer perceptions. Interview questions were designed to assess customers' perceptions of the store as a purveyor of organic products; to determine their past and current organic food purchasing behavior and future intent to purchase organic foods; to assess their recall of point of purchase signage about organics and their reaction to signage; and to determine if they could discriminate between the Earth-Friendly Organic logo, a fictitious logo, and the widely disseminated Five-A Day for Better Health logo.

Intercept survey procedures and questions were pilot tested at a non-study upscale store to assess customers' ability to answer questions, interviews' training needs, time to conduct, and store mechanics. The interview took less than two minutes and could be completed while customers waited in the check out line.

Following the pilot test, one question was slightly revised and the procedure was finalized to intercept customers as they waited in the check out line. At the request of discount/warehouse store managers, questions were added to collect data on customer's definitions of "organic" and "natural." Copies of the Customer Intercept Survey form used in each store environment are in Appendices 2 and 3.

Interviews were conducted by food science and nutrition students who were trained by the investigators. Customer intercept interviews continued in scheduled time periods at each store until 100 interviews were complete or until the scheduled interview period (usually 2 hours) came to an end. Survey forms were reviewed for completeness at midpoint of each session and at the end of the day with feedback given to the interviewers.

Sales Data

Effect of signage on organic food sales was tracked for a period of six weeks, beginning one week after all stores had foods and signage in place. The pricing coordinator at each store recorded sales data for selected organic products, designated by UPC number using scanner data. Sales data were recorded on standard data collection forms which were sent weekly to investigators.

The six week sales data collection period ran from the last week of July through the first week of September in the upscale stores and from the second week of September through the fourth week of October in the discount/warehouse stores. Intercept interviews were conducted in early August and late September in the upscale and discount/warehouse stores, respectively.

Summary of timeline for intervention and data collection

Steps	Timeline	
	Upscale stores	Discount/warehouse stores
Stock products	Week 1	Week 1
Signage placed in stores	Week 2	Week 2
Intercept interviews completed	Week 4-6	Week 3-4
Sales data collected	Week 2-7	Week 2-7

Variables--Independent, Intervening, and Dependent Variables

Table 2 outlines specific kinds of data that were collected and analyzed in the study. The dependent variables or items to be explained, are types of consumer responses to signage. Explanatory variables are things that could cause or affect consumer responses. The explanatory variables relate to POP signage level, store environment and personal characteristics of the consumers.

Table 2. Study variables

Explanatory variables (Independent variables)

intervention--high or moderate level of signage or control
environment--upscale or discount/warehouse

Intervening/descriptor variables

customer age category, gender, household size
primary store, organic shopper
past and current (today's) organic food buying behavior

Dependent variables - Items to be explained

perception of store as source of organic foods
future intent to purchase organic foods
see signage
recognize MOA logo
reported effect of signage on behavior
average weekly sales of 14 organic food items

Analysis

Customer Intercept Survey

Survey forms were coded and keyed for analysis using Statistical Analysis System (SAS). Responses to opened-ended questions were coded into response categories created after review of customer responses.

Descriptive variables were summarized for each store and each intervention level (high, moderate, control). Chi square analysis was used to determine the association of the intervention level with reported seeing signs about organic foods, reported effect of signage on behavior, recognition of MOA logo, purchase of organic product today, and future intent to purchase organic foods. Additional analysis explored the association of age category, gender and household size with report seeing signs, recognition of MOA logo and purchasing behavior.

Sales Data

The units of each selected food item sold each week by store during the six week data collection period was entered for analysis. Average weekly sales by store and signage level within grocery chain were computed. Repeated measures analysis of variance (ANOVA) was used to determine the effect of signage level, store, and week for each food product and for food categories including dairy foods, snack foods, same aisle foods (selected study items located in the same aisle) and total foods. Separate analyses were done for each grocery chain environment. This ANOVA controlled the potential effect of store variation and weekly variation on sales results.

Contrasts were examined to determine significant differences between control and signed stores in the upscale and discount environments and between high and moderate level signage in the upscale environment. Analysis was also done to determine if products that were integrated throughout the store had different levels of sales compared to products located in a special section.

For the upscale chain, average weekly sales for each food at each store were adjusted for the average weekly total sales of the store. This analysis was not conducted for the discount/warehouse chain because total sales figures for stores were not made available.

A critical level of .05 was used to determine significance of all statistical tests.

CHAPTER 3: RESULTS

Customer Intercept Survey Results

A total of 3,807 customers were interviewed while in the check out lines of upscale (n=2,272) or discount/warehouse (n=1,535) grocery stores in the Twin Cities during August and September of 1996. Respondents represented each store's customers. Few approached individuals declined to participate (declines were estimated at less than 5%).

Demographic characteristics of respondents are presented in Table 3. Store personnel preferred that the survey instrument exclude questions about gender and age, therefore this data was obtained by having the interviewer estimate approximate decade of age and gender. Because the age data is based on a visual estimation, it is presented by both decade and by combining respondents estimated to be in their 30's/40's and 50's/60's (Table 3).

Most of the customers interviewed in the study were women (78%). There was a slightly higher proportion of women interviewed in the discount stores than the upscale stores. The majority of those interviewed were estimated to be in their 30's to 60s', with a somewhat younger clientele in the discount stores. Most of those interviewed reported being in households that had 2-3 or more members. Customers interviewed at the discount stores were more likely to report having more household members compared to those interviewed at the upscale stores.

Customer Reactions to Shelf Labels for Organic Foods

About 21% to 28% of customers reported that had they observed shelf labels identifying organic foods on the day of the interview (Table 4). In upscale stores with shelf labels, customers were more likely to report observing signs on shelves identifying organic foods than customers in

Table 3. Demographic information for intercept survey respondents

	Upscale Stores		Discount Stores	
	Control	Intervention	Control	Intervention (high)
Gender % of total in each of control or intervention group (number interviewed)				
Female	76.6 (578)	75.3 (1142)	80.3 (620)	84.0 (641)
Male	23.4 (177)	24.7 (375)	19.7 (152)	16.0 (122)
		p<.504		p<.058
Age % of total in each of control or intervention group (number interviewed)				
20's	5.8 (44)	6.1 (92)	12.0 (93)	3.5 (27)
30's	20.3 (155)	20.6 (313)	38.6 (299)	31.7 (243)
40's	27.4 (209)	34.4 (522)	29.6 (229)	31.5 (241)
50's	21.5 (164)	18.6 (283)	11.6 (90)	20.0 (153)
60's	17.4 (133)	14.5 (220)	6.9 (53)	9.4 (72)
70's +	7.7 (59)	5.8 (88)	1.3 (10)	3.9 (30)
		p<.008		p<.000
Age category % of 30's and 40's in each of control or intervention group (number interviewed)				
30's & 40's	55.1 (364)	62.4 (835)	78.7 (528)	68.3 (484)
50's & 60's	44.9 (297)	37.6 (503)	21.3 (143)	31.7 (225)
		p<.164		p<.000
Number in household % of total in each of control or intervention group (number interviewed)				
1	18.3 (147)	18.5 (293)	8.3 (67)	8.2 (66)
2 to 3	58.2 (467)	55.0 (873)	48.3 (388)	49.4 (400)
4 +	23.4 (188)	26.5 (421)	43.4 (349)	42.4 (343)
		p<.225		p<.893

p<.05 indicates statistical significance throughout the table.

stores without signage (28% vs. 23%). Customers reporting seeing signs on shelves identifying organic foods in stores without the Earth-Friendly Organic signage may have been referring to product labels on the organic food product itself, remembered signage from an earlier time in the year when Earth-Friendly Organic shelf labels were used during a short roll-out period or to signage observed in other stores. When asked to describe what they had observed, customers in both types of stores most often reported seeing signs identifying organic foods in the produce area.

Customers in both types of stores were more likely to respond positively to a general question about ever having observed anything that called their attention to organic foods rather than on the

day of the intercept interview. About 27%-40% of customers reported having seen something in the store that called their attention to organic foods at some point in time. Respondents in the stores with Earth-Friendly Organic signage were more likely to report ever having seen anything that called their attention to organic foods (38% with signage vs. 27% without in the discount stores and 37% with signage vs. 31% without in the upscale stores). Of those customers who indicated that they had observed signage identifying organic foods that day or ever calling attention to organic foods, 17% - 22% responded positively when asked if seeing the signage caused changes in their shopping behavior. Of those who responded positively, the most common responses were that signage caused them to notice, examine, or purchase the product.

Recognition of Logo

During the intercept survey, customers were asked whether they had seen any of three product logos: the 5-A-Day for Better Health logo, the Earth-Friendly Organic logo, and a logo for a fictitious product line called Fresh Country. Overall, about 11% -17% of total customers indicated that they had seen the Earth-Friendly Organic logo. There was a statistically significant increase in those reporting having seen the Earth-Friendly Organic logo in the discount stores that had organic signage compared to those without signage (Table 5). The Earth-Friendly Organic logo has only been in existence for about a year. The percentage of customers recognizing the logo (15% - 17%) in the stores with signage is considered impressive compared to the recognition rate for the 5-A-Day for Better Health logo (48% - 60%) which has been in many grocery stores nationwide for about 5 years. Very few customers reported seeing the fictitious logo (2% -3%). When these respondents were deleted from the statistical analysis, the percentages of respondents reporting having seen the

Table 4. Reactions to shelf labels by signage

	Upscale Stores		Discount Stores	
	Control	Intervention	Control	Intervention (high)
Reported seeing signage today % of total in each of control or intervention group (number interviewed)				
Yes	22.5 (180)	28.0 (444)	21.2 (170)	22.4 (180)
No	77.5 (620)	72.0 (1143)	78.8 (633)	77.6 (624)
		p<.004		p<.554
Reported ever seeing anything calling attention to organic foods % of those responding no to whether saw signage today in each of control or intervention group (number interviewed)				
Yes	31.2 (194)	37.4 (432)	27.0 (171)	37.9 (240)
No	68.8 (428)	62.6 (724)	73.0 (463)	62.2 (394)
		p<.009		p<.000
Description of what was observed % of those reporting seeing signage today or ever seeing anything calling				
Don't remember	16.9 (62)	15.9 (132)	13.2 (43)	22.7 (88)
Saw something in an area where a study product was located	15.0 (55)	15.4 (128)	11.9 (39)	16.2 (63)
Saw something in the produce area	51.6 (189)	53.1 (442)	36.1 (118)	36.9 (143)
Saw something in the dietetic/health foods aisle	2.2 (8)	3.1 (26)	9.8 (32)	7.0 (27)
Saw a sign other than Earth-Friendly Organic	9.0 (33)	9.3 (77)	22.6 (74)	14.2 (55)
Named a specific product	5.2 (19)	3.3 (27)	6.4 (21)	3.1 (12)
		p<.605		p<.000
Reported changed behavior after seeing signage % of those describing what was observed in each of control				
Yes	21.0 (77)	22.4 (179)	17.4 (58)	18.8 (77)
No	79.0 (289)	77.7 (622)	82.6 (275)	81.2 (332)
		p<.616		p<.621
Behavior change after seeing signage % of those reporting changed behavior in each of control or intervention				
Purchase product	60.3 (47)	49.1 (84)	39.6 (21)	39.3 (24)
Notice product	10.3 (8)	19.3 (33)	7.6 (4)	13.11 (8)
Examine product	21.8 (17)	25.7 (44)	36.9 (19)	27.9 (17)
Consider too expensive	7.7 (6)	5.9 (10)	17.0 (9)	19.7 (12)
		p<.208		p<.678

p<.05 indicates statistical significance throughout the table.

Table 5. Recognition of logos by signage

	Upscale Stores		Discount Stores	
	Control	Intervention	Control	Intervention
% of total in each of control or intervention group (number interviewed)				
Five A Day logo				
Yes	51.0 (408)	47.7 (757)	59.6 (478)	49.1 (396)
No	49.0 (392)	52.3 (829)	40.4 (324)	50.9 (410)
		P<. 131		p<.000
Earth-Friendly Organic logo				
Yes	14.9 (119)	17.0 (270)	10.6 (85)	14.9 (120)
No	85.1 (682)	83.0 (1318)	89.4 (716)	85.2 (688)
		P<.180		p<.011
Fictitious logo				
Yes	2.9 (23)	2.8 (44)	3.3 (26)	2.1 (17)
No	97.1 (779)	97.2 (1539)	96.8 (775)	97.9 (788)
		p<.902		p<.159
Where observed the Earth-Friendly Organic logo only those recognizing the Earth-Friendly Organic logo in each of control or intervention group(number interviewed)				
Don't remember	48.6 (52)	38.8 (88)	54.4 (43)	47.4 (54)
In an area where a study product was located	1.9 (2)	10.6 (24)	11.4 (9)	17.5 (20)
In produce area	7.5 (8)	8.4 (19)	7.6 (6)	10.5 (12)
Area in store with no product in study	5.6 (6)	18.5 (42)	6.3 (5)	12.3 (14)
Other grocery store	26.2 (28)	11.5 (26)	7.6 (6)	5.3 (6)
Coop	10.3 (11)	12.3 (28)	12.7 (10)	7.0 (8)
		p<.000		p<.332

p<.05 indicates statistical significance throughout the table.

Earth-Friendly Organic logo did not change. When those responding positively to whether they had seen the Earth-Friendly Organic logo were asked where they saw the logo, most said they did not remember the location.

Past, present and future purchase of organic foods

At the beginning of the interview, customers were asked if they ever buy organic foods. At the end of the interview, customers were asked whether they had purchased organic foods today and if they expected to buy organic foods in the future (Table 6). About a third of the customers at the discount stores indicated that they buy organic foods, while close to one-half of the customers in the upscale stores indicated that they buy organic foods. In both types of stores, there was a statistically significant increase in those reporting buying organic foods in stores with signage identifying organic foods (31% vs. 36% for discount stores and 42% vs. 49% for upscale stores). About 5% - 9% of customers reported buying organic products on the day of the interview, with significantly more customers in stores with signage reporting purchasing organic products than customers in stores without signage. About 36% - 51% of customers reported having intentions to purchase organic foods in the future. There was a small but statistically significant increase in percentage of customers reporting intentions to buy organic foods in the future in stores with signage identifying organic foods compared to stores without signage (39% vs. 36% in discount stores and 51% vs. 48% in upscale stores).

Effects of Level of Signage on Customer Reactions

In the environment where two levels of signage were used (moderate and high), the proportion seeing signage identifying or calling attention to organic foods today increased from control to moderate to high signage (22.5%, 26.0%, 30.0%, respectively) (Table 7). Most customers who indicated seeing signs reported seeing them in the produce area of the store. When asked a more general question of whether they had ever seen anything in the store that called attention to

Table 6. Product purchasing behavior by signage

	Upscale Stores		Discount Stores	
	Control	Intervention	Control	Intervention
% of total in each of control or intervention group (number interviewed)				
Ever buy organic				
Yes	42.1 (338)	48.7 (773)	31.3 (251)	35.9 (286)
No	57.9 (465)	51.3 (813)	68.0 (545)	63.4 (505)
		p<.002		p<.052
Did buy organic today				
Yes	6.6 (53)	9.3 (147)	6.5 (52)	5.1 (41)
No	93.0 (745)	89.9 (1427)	87.8 (705)	94.2 (761)
Don't know	0.4 (3)	0.9 (14)	5.9 (47)	0.7 (6)
		p<.025		p<.000
Plan to buy organic				
Yes	47.6 (378)	50.7 (801)	36.4 (289)	39.0 (314)
No	20.8 (165)	22.9 (362)	25.2 (200)	25.6 (206)
Maybe	31.5 (250)	26.4 (418)	36.5 (290)	30.2 (243)
		p<.033		p<.000

p<.05 indicates statistical significance throughout the table.

organic foods, positive responses increased with the level of signage (31.2%, 36.2%, 38.6%). The level of signage was not related to reported changes in shopping behavior as a result of having observed signs identifying or calling attention to organic foods.

Recognition of the Earth-Friendly Organic logo was also not related to level of signage (Table 8). Approximately 15% of customers in upscale stores recognized the Earth-Friendly Organic logo; the proportion of customers in the control store was just slightly smaller than signed stores. The 5-A-Day logo which has been in stores for three to five years was recognized by about half of interviewed customers, while 3% reported recognizing the fictitious logo.

The number reporting ever buying organic foods significantly increased with signage. The number reporting buying organic foods today was higher in signed compared to control stores, but

Table 7. Reactions to shelf labels by level of signage

Upscale Stores	Control		Intervention	
	No signage	Moderate signage	High signage	
Reported seeing signage today % of total by level of signage (number interviewed)				
Yes	22.5 (180)	26.0 (205)	30.0 (239)	
No	77.5 (620)	74.0 (584)	70.1 (559)	p<.003
Reported ever seeing anything calling attention to organic foods % of those responding no to seeing signage today (number interviewed)				
Yes	31.2 (194)	36.2 (213)	38.6 (219)	
No	68.8 (428)	63.8 (375)	61.4 (349)	p<.024
Description of what was observed % of those responding yes to seeing signage today or ever seeing anything calling attention to organic foods (number interviewed)				
Don't remember	16.9 (62)	15.2 (61)	16.5 (71)	
Saw something in an area where a study product was located	15.0 (55)	17.0 (68)	13.9 (60)	
Saw something in the produce area	51.6 (189)	50.4 (202)	55.7 (240)	
Saw something in the dietetic/health foods aisle	2.2 (8)	3.5 (14)	2.8 (12)	
Saw a sign other than Earth-Friendly Organic	9.0 (33)	10.2 (41)	8.4 (36)	
Named a specific product	5.2 (19)	3.7 (15)	2.8 (12)	p<.644
Reported changed behavior after seeing signs % of those describing what was observed (number interviewed)				
Yes	21.0 (77)	26.0 (95)	19.3 (84)	
No	79.0 (289)	74.0 (271)	80.1 (351)	p<.068
Behavior change after seeing signs % of those reporting changed behavior (number interviewed)				
Purchase product	60.3 (47)	54.7 (52)	42.1(32)	
Notice product	10.3 (8)	20.0 (19)	18.4 (14)	
Examine product	21.8 (17)	20.0 (19)	32.9 (25)	
Consider too expensive	7.7 (6)	5.3 (5)	6.6 (5)	p<.181

p<.05 indicates statistical significance throughout the table.

Table 8. Recognition of logos by level of signage

Upscale Stores	Control		Intervention	
	No signage	Moderate signage	High signage	
	% of total by level of signage (number interviewed)			
5 A Day logo				
Yes	51.0 (408)	46.4 (367)	49.1 (390)	
No	49.0 (392)	53.6 (424)	50.9 (405)	
			p<.183	
Earth-Friendly Organic logo				
Yes	14.9 (119)	16.5 (131)	17.5 (139)	
No	85.1 (682)	83.5 (661)	82.5 (657)	
			p<.359	
Fictitious logo				
Yes	2.9 (23)	2.5 (20)	3.0 (24)	
No	97.1 (779)	97.5 (769)	97.0 (770)	
			p<.835	
Where observed the Earth-Friendly Organic logo only those recognizing the Earth-Friendly Organic logo (number interviewed)				
Don't remember	48.6 (52)	45.5 (51)	32.2 (37)	
In area where study product was located	1.9 (2)	10.7 (12)	10.4 (12)	
In produce area	7.5 (8)	8.0 (9)	8.7 (10)	
In area in store where no study product was located	5.6 (6)	15.2 (17)	21.7 (25)	
In other grocery store	26.2 (28)	10.7 (12)	12.2 (14)	
In coop	10.3 (11)	9.8 (11)	14.5 (17)	
			p<.000	

p<.05 indicates statistical significance throughout the table.

the increase was not proportional to level of signage (Table 9). Level of signage was not a significant factor in responses related to intentions to buy organic foods in the future.

Table 9. Product purchasing behavior by level of signage

Upscale Stores	Control		Intervention	
	No signage	Moderate signage	High signage	
	% of total for each level of signage (number interviewed)			
Ever buy organic				
Yes	42.1(338)	48.5 (382)	49.3 (391)	
No	57.9 (465)	51.4 (404)	50.7 (402)	
			p<.006	
Did buy organic today				
Yes	6.6 (53)	9.9 (78)	8.8 (69)	
No	93.4 (745)	90.1 (710)	91.2 (717)	
			p<.094	
Plan to buy organic				
Yes	47.7 (378)	51.3 (407)	49.9 (394)	
No	20.8 (165)	23.0 (182)	22.8 (180)	
Maybe	31.5 (250)	25.6 (203)	27.2 (215)	
			p<.142	

p<.05 indicates statistical significance throughout the table.

Association of Customer Demographics and Store Environment with Reactions to Shelf Labels

In discount stores, there were no differences between reactions to shelf labels by age category. However, in upscale stores with and without signage, younger customers (30’s and 40’s) were more likely to report buying or planning to buy organic foods in the future compared to older customers (50’s and 60’s) (Table 10). Women were more likely to report seeing signs that identified organic foods than men in discount stores with and without signage. In upscale stores with signage, there was a significant association of gender with ever buying or planning to buy organic foods (Table 11). The size of the household was not associated with customer reactions in discount stores; but in upscale stores with signage, customers in larger households were more likely to report seeing signs and planning to buy organic foods (Table 12).

Table 10. Seeing signs and buying organic foods - by age

Discount Stores	Intervention (high signage)		Control	
	30's and 40's	50's and 60's	30's and 40's	50's and 60's
% of total by age category in each of control or intervention group (number interviewed)				
Reported seeing signage today				
	25.8 (124)	16.1 (36)	22.0 (116)	18.9 (27)
		p<.004		p<.418
Reported ever seeing anything calling attention to organic foods only those responding no to seeing signage today (number interviewed)				
	40.4 (146)	38.2 (73)	28.0 (115)	27.6 (32)
		p<.612		p<.933
Ever buy organic foods				
	36.8 (175)	36.7 (81)	31.6 (166)	26.6 (38)
		p<.977		p<.251
Did buy organic foods today				
	6.0 (29)	3.1 (7)	6.6 (35)	5.6 (8)
		p<.224		p<.774
Plan to buy organic foods				
Yes	41.4 (200)	34.2 (77)	38.3 (199)	31.5 (45)
Maybe	29.0 (140)	31.6 (71)	35.8 (186)	36.7 (52)
		p<.196		p<.347
Upscale Stores	Intervention (moderate & high signage)		Control	
	30's and 40's	50's and 60's	30's and 40's	50's and 60's
% of total by age category in each of control or intervention group (number interviewed)				
Reported seeing signage today				
	28.5 (237)	25.8 (129)	24.8 (90)	21.6 (64)
		p<.272		p<.339
Reported ever seeing anything calling attention to organic foods only those responding no to seeing signage today (number interviewed)				
	43.5 (262)	32.1 (121)	36.6 (101)	29.0 (67)
		p<.000		p<.071
Ever buy organic foods				
	52.7 (438)	44.8 (225)	48.1 (175)	38.1 (113)
		p<.005		p<.010
Did buy organic foods today				
	9.6 (80)	8.4 (42)	9.9 (36)	3.4 (10)
		p<.474		p<.004
Plan to buy organic foods				
Yes	55.6 (464)	43.7 (220)	52.6 (191)	42.4 (126)
Maybe	24.4 (204)	29.0 (146)	28.9 (105)	34.0 (101)
		p<.000		p<.034

p<.05 indicates statistical significance throughout the table.

Table 11. Seeing signs and buying organic foods - by gender

Discount Stores	Intervention (high signage)		Control	
	Female	Male	Female	Male
% of total by gender in each of control or intervention group (number interviewed)				
Reported seeing signage today				
	24.0 (153)	14.2 (17)	22.8 (142)	14.5 (22)
		p<.018		p<.022
Reported ever seeing anything calling attention to organic foods only those responding no to seeing signage today (number interviewed)				
	40.2 (198)	29.5 (31)	26.5 (127)	28.7 (37)
		p<.040		p<.622
Ever buy organic foods				
	37.0 (233)	33.1 (40)	31.6 (195)	28.5 (43)
		p<.404		p<.463
Did buy organic foods today				
	4.8 (31)	4.9 (6)	6.8 (42)	5.9 (9)
		p<.059		p<.268
Plan to buy organic foods				
Yes	39.8 (255)	32.5 (39)	37.3 (228)	34.0 (51)
Maybe	30.3 (194)	28.3 (34)	37.3 (228)	34.0 (51)
		p<.185		p<.449
Upscale Stores	Intervention (moderate & high signage)		Control	
	Female	Male	Female	Male
% of total by gender in each of control or intervention group (number interviewed)				
Reported seeing signage today				
	28.7 (326)	24.5 (92)	23.4 (135)	19.3 (34)
		p<.118		p<.256
Reported ever seeing anything calling attention to organic foods only those responding no to seeing signage today (number interviewed)				
	40.5 (333)	27.8 (79)	31.1 (138)	29.6 (42)
		p<.000		p<.735
Ever buy organic foods				
	50.6 (575)	42.2 (157)	41.7 (241)	42.9 (76)
		p<.005		p<.770
Did buy organic foods today				
	8.2 (93)	12.3 (46)	6.6 (38)	7.3 (13)
		p<.054		p<.195
Plan to buy organic foods				
Yes	52.8 (602)	42.4 (159)	45.6 (263)	51.4 (91)
Maybe	26.0 (296)	28.3 (106)	32.8 (189)	27.7 (49)
		p<.002		p<.306

p<.05 indicates statistical significance throughout the table.

Table 12. Seeing signs and buying organic foods - by number in household

Discount Stores	Intervention (high signage)			Control		
	1	2-3	4+	1	2-3	4+
% of total by household size in each of control or intervention group (number interviewed)						
Reported seeing signage today	15.2	20.4	26.1	11.9	21.4	22.7
	(10)	(81)	(89)	(8)	(83)	(79)
			p<.061			p<.141
Reported ever seeing anything calling attention to organic foods	only those responding no to seeing signage today (number interviewed)					
	26.3	35.7	43.1	28.8	26	29.4
	(15)	(115)	(110)	(17)	(75)	(79)
			p<.032			p<.401
Ever buy organic foods	41.5	37.2	33.3	28.4	32.0	31.1
	(27)	(147)	(112)	(19)	(124)	(108)
			p<.340			p<.830
Did buy organic foods today	6.1	4.5	5.5	3.0	6.2	7.5
	(4)	(18)	(19)	(2)	(24)	(26)
			p<.053			p<.497
Plan to buy organic foods						
Yes	27.7	38.0	42.2	31.8	33.6	40.5
	(18)	(152)	(144)	(21)	(130)	(138)
Maybe	32.3	30.8	29.0	39.4	37.0	35.5
	(21)	(123)	(99)	(26)	(143)	(121)
			p<.339			p<.260

Table 12 (Continued)

Upscale Stores	Intervention (moderate & high signage)			Control		
	1	2-3	4+	1	2-3	4+
% of total by household size in each of control or intervention group (number interviewed)						
Reported seeing signage today						
	21.3 (62)	28.7 (250)	30.8 (129)	16.3 (24)	23.2 (108)	25.5 (48)
			p<.016			p<.114
Reported ever seeing anything calling attention to organic foods only those responding no to seeing signage today (number interviewed)						
	31.7 (73)	38.9 (245)	38.6 (113)	20.3 (25)	32.2 (115)	38.0 (54)
			p<.141			p<.007
Ever buy organic foods						
	45.6 (133)	50.8 (441)	46.9 (196)	41.5 (61)	42.4 (198)	41.5 (78)
			p<.197			p<.968
Did buy organic foods today						
	6.1 (18)	9.8 (85)	10.2 (43)	5.4 (8)	5.4 (25)	10.6 (20)
			p<.270			p<.113
Plan to buy organic foods						
Yes	44.7 (131)	52.5 (458)	49.6 (209)	42.9 (63)	47.8 (223)	49.2 (92)
Maybe	26.3 (77)	24.8 (216)	29.7 (125)	39.5 (58)	28.5 (133)	31.6 (59)
			p<.043			p<.214

p<.05 indicates statistical significance throughout the table.

Store Environment Differences in Customer Reactions

There were significant differences in customer reactions to shelf labels when the two store environments were compared (Table 13). Over 20% of customers in all stores reported seeing signage calling their attention to organic foods. However in signed stores, upscale customers were significantly more likely than discount customers to report seeing organic signage. In general, more customers in the upscale stores regardless of signage, reported ever buying or planning to buy

Table 13. Reactions to shelf labels by store environment

	Discount Stores			Upscale Stores		
	Unsigned	Signed	Total	Unsigned	Signed	Total
	% of total or total in each of control and intervention group (number interviewed)					
Reported seeing signage today						
	21.2 (170)	22.4 (180)	21.9 (343)	22.5 (180)	28.0 (444)	25.7 (597)
				p<.677	p<.009	p<.007
Reported ever seeing anything calling attention to organic foods only those responding no to seeing signs today (number interviewed)						
	27.0 (171)	37.9 (240)	32.3 (398)	31.2 (194)	37.4 (432)	35.1 (610)
				p<.124	p<.929	p<.119
Recognize Earth-Friendly logo						
	10.6 (85)	14.9 (120)	12.7 (199)	14.9 (119)	17.0 (270)	15.8 (367)
				p<.034	p<.231	p<.007
Ever buy organic foods						
	31.3 (251)	35.9 (286)	33.4 (516)	42.1 (338)	48.7 (773)	46.5 (1076)
				p<.000	p<.000	p<.000
Did buy organic foods today						
	6.5 (52)	5.1 (41)	6.0 (91)	6.6 (53)	9.3 (147)	8.4 (193)
				p<.843	p<.000	p<.006
Plan to buy organic foods						
Yes	36.5 (289)	39.0 (314)	38.9 (584)	47.6 (378)	50.7 (801)	49.1 (1134)
Maybe	36.5 (290)	30.2 (243)	34.6 (520)	31.5 (250)	26.4 (418)	28.3 (654)
				p<.000	p<.000	p<.000

p<.05 indicates statistical significance throughout the table.

organic foods. In signed stores, an upscale store environment accounted for a greater proportion of customers reporting buying organic foods on the day of the interview. More customers reported recognizing the Earth-Friendly Organic logo in upscale unsigned stores compared to discount unsigned stores.

Sales of Organic Products

Tables 14 and 16 report the mean and (S.D.) standard deviation of the units sold per week of selected organic food items in signed and control stores in the discount/warehouse and upscale environments. The average number of units sold each week ranged from less than one for coffee to 12 or more for milk, eggs, chips, and carrots. The effect of point of purchase signage on sales is indicated by the p values reported under the "Signage vs. Control" columns in these tables and is described for each grocery store environment. For example, a p value of .0172 for skim indicates that there is a statistically significant difference between mean units sold/week in stores with signage compared to stores without signage. The mean units sold/week was calculated from a 6 week data collection period after the signage was in place. The standard deviation represents an idea of the range of units sold that was used to calculate the mean.

Sales Results: Discount/Warehouse Grocery Store Environment

The study was initiated in four discount/warehouse stores--two designated as high level signage and two as control. One of the signed stores was unable to consistently stock the selected organic food products during the study period and was eliminated from the analysis. Data reported in the table reflect weekly product sales for the remaining three stores.

Signage appears to have a significant effect on sales of organic food products in the discount/warehouse grocery store environment. However, analysis by individual food product and groups of foods indicates that the effect is not uniform across the 14 organic foods tracked in this study. Signage in the dairy section appears to positively influence volume of sales of skim milk, butter and eggs. The number of units sold per week in the signed store was approximately two times

Table 14. Organic food sales and effects of signage in a discount/warehouse grocery store environment

Organic Food Item	Mean Units Sold /Week + S.D.		Effect of Signage
	High Signage	Control Stores	Signage vs. Control p value
Skim milk	18.7 ± 6.9	10.2 ± 5.6	.0172*
Butter	3.3 ± 2.5	1.4 ± 1.0	.0099*
Eggs	28.2 ± 10.9	4.3 ± 2.4	.0001*
Dairy foods	50.2 ± 16.1	15.9 ± 6.6	.0002*
Chips	17.2 ± 3.3	17.4 ± 10.9	.9522
Bean dip	0.5 ± 0.8	2.1 ± 2.8	.1379
Snack foods	17.7 ± 3.9	19.5 ± 11.1	.6464
Canned pinto beans	4.8 ± 2.9	4.7 ± 4.4	.9035
Spaghetti	1.8 ± 1.6	0.7 ± 0.9	.0522*
Marinara sauce	0.5 ± 0.6	0.3 ± 0.5	.4608
Same aisle foods	7.2 ± 4.3	5.7 ± 5.5	.4010
Deli bread	11.8 ± 3.3	0.5 ± 1.7	.0001*
Apple juice	1.5 ± 0.8	1.8 ± 5.5	.9147
Flake cereal	1.0 ± 0.9	0.3 ± 0.5	.0459*
Coffee	0.5 ± 0.6	0.3 ± 0.6	.4956
Pureed baby food	5.3 ± 2.6	3.6 ± 3.5	.3237
Fresh carrots	34.5 ± 24.6	2.6 ± 3.8	.0053*τ
Total (no carrots)	95.2 ± 21.7	47.4 ± 12.9	.0001*
Total (with carrots)	129.7 ± 37.8	49.2 ± 13.8	.0001*
* p<.05 indicates a significant difference between signed store and control stores.			
τ Based on 14 observations, all other analyses on 18 observations.			

greater than the control stores for milk and butter, and over six times higher for organic eggs. Deli bread and carrots were dramatically higher in the signed store compared to the control stores. Because of problems stocking organic carrots, the result for carrots should be applied with caution.

(Carrots were unavailable in week 6 in one control store and weeks 4-6 in the other control store--the reported mean is the average sales for the weeks carrots were available.) No differences were observed for the volume of chips and salsa sold. Among other grocery items, there was a significant effect attributed to signage for flake cereal and spaghetti. However, very low volume of sales makes interpretation of the data for these two products questionable. Sales were equally low in the signed and control stores.

In the discount/warehouse grocery environment, signage and information about organic foods appears to influence sales of organic foods. However, this effect is not uniform across product lines. There appears to be a strong effect for dairy foods (milk, butter and eggs), deli bread, and carrots, as well as a detectable effect for spaghetti and flake cereal. Other tracked foods, with the exception of snack items (chips and salsa), show a trend toward higher sales when signs are used to cue customers, but differences were not statistically significant.

Columns 1 and 2 of Table 15 show the results of the analysis of variance (ANOVA) examining potential effects of individual store and study week on sales of food items. A value less than 0.05 indicates a significant effect on sales results caused by store differences (store) or weekly fluctuations during the six weeks of the study (week). There was a significant study week effect for butter; no other food in the discount environment had a study week effect. A significant store effect, independent from presence of signage, was found for chips, canned pinto beans, and pasta sauce. This reflects differences in volume of sales for these products between the two control stores. One control store sold more than two times the volume of chips and pasta sauce, while the other store sold four times the amount of pinto beans. Since all stores charged the same price for each food item, price is excluded as an explanation for store differences.

Table 15. Effect of store and week on organic food sales

Food product	Discount/warehouse Grocery Stores		Upscale Grocery Stores		Upscale with Adjusted \$ Volume	
	Store	Week	Store	Week	Store	Week
Skim milk	0.1117	0.6735	0.0024*	0.0585	0.2923	0.0496*
Butter	0.8157	0.0346*	0.0150*	0.8558	0.0962	0.8529
Eggs	0.8700	0.5903	0.0001*	0.5836	0.0022*	0.4728
Dairy foods	0.3583	0.8337	0.0001*	0.1962	0.0139*	0.1554
Chips	0.0186*	0.7174	0.0030*	0.6343	0.0074*	0.6640
Dip/salsa	0.0520	0.2704	0.5152	0.6680	0.5811	0.4923
Snack foods	0.0057*	0.8878	0.0022*	0.6715	0.0096*	0.6800
Canned pinto beans	0.0031*	0.1406	0.1623	0.3593	0.1481	0.4410
Spaghetti	0.3013	0.2477	0.0423*	0.0730	0.0421*	0.0551
Pasta sauce	0.0240*	0.4651	0.8033	0.6522	0.4167	0.6234
Same aisle foods	0.0031*	0.1406	0.0774	0.3281	0.1682	0.4065
Deli bread	0.5172	0.7775	0.0001*	0.6943	0.0001*	0.5795
Nectar/juice	0.2557	0.5197	0.2665	0.8354	0.5881	0.8726
Flake cereal	0.6703	0.5473	0.0168*	0.5727	0.0023*	0.4633
Coffee	0.6917	0.9212	0.3548	0.1375	0.4275	0.0877
Pureed baby food	0.1024	0.9339	0.1251	0.8068	0.0470*	0.8068
Carrots	0.4359	0.3153	0.0035*	0.8993	0.0340*	0.8695
Total sales (no carrots)	0.0720	0.3832	0.0001*	0.4839	0.0001*	0.2852
Total sales (with carrots)	0.5021	0.4697	0.0001*	0.2886	0.0043*	0.4903

*p<.05 indicates statistical significant effect of store or week.

In the discount stores, flaked cereal, salsa and juice were not integrated throughout the store in the control stores but were integrated in the signed store. Blue corn chips were always placed in the special natural food section. One control store placed carrots in a separate organic produce section. All other foods were integrated. It was not possible to determine if placement of organic foods had an impact on sales in this study.

Sales Results: Upscale Grocery Store Environment

Six upscale stores participated in the study; two as control and four with point of purchase signage. In the upscale environment, there was a trend toward increased sales of skim milk and butter in the presence of signage, but these effects were not significant (Table 16). There was a statistically significant effect of signage for eggs and deli bread; however the effect was in a negative direction. A similar negative trend was observed for salsa.

Of the 14 tracked organic foods, milk, eggs, chips, and carrots had the greatest volume of sales. Milk and eggs were always integrated with their traditional counterparts. One moderate and one high level signage store had chips in a separate natural food section. Carrots were in an organic section at one control store and in one moderate level signage store the location of carrots was shifted during the data collection period. We are unable to draw any conclusions about the effect of integrated versus non-integrated placement of organic foods from this data.

In the analysis, the weekly mean number of units of each item sold at each store was adjusted for the store's overall dollar volume of sales during the six week period. The adjusted analysis produced changes in the above findings: a highly significant effect of signage on skim milk sales was found while the effects for eggs was lost. POP labeling of carrots became highly significant. A significant effect was also identified for spaghetti and peach nectar. After volume adjustment, the analysis for the effect of signage on total sales became stronger but still failed to reach statistical significance. When carrots were dropped from the analysis (because they were not available several study weeks in one store) a significant effect of signage compared to control was found.

As shown in Table 15, the analysis including store and study week as factors revealed a

significant study week effect for milk only after adjustment for volume of sales. This suggests that weekly fluctuations in milk sales may affect the study results. A significant store effect (independent from signage effect) was found for skim milk, butter, eggs, chips, spaghetti, deli bread, flake cereal and carrots. After adjustment for overall volume of sales, pureed baby food was added and milk and butter deleted from the list of foods with a significant store differences. These findings substantiate different sales patterns for organic products among stores after taking into account signage level. Because all stores charged prices set by the corporate office, price was eliminated as a potential explanatory factor for store differences.

Stores in the upscale environment appear to have unique patterns of organic food product sales which, with the exception of milk, carrots, spaghetti and peach nectar, were not positively affected by the presence of point of sale channel strip labels and information signage during the limited period of this study.

To answer the research question regarding the possibility of a threshold effect of POP signage, sales effects were compared in the upscale stores between the moderate level and high level of signage. These results are shown under the moderate versus high columns on Table 16. The values presented in Table 16 are the mean units sold per week \pm the S.D. (standard deviation). For example, for skim milk sales in stores with moderate signage, an average of 25.6 cartons were sold each week. This is based on sales data collected for 6 weeks after the signage was in place. In the columns titled "Effect of signage on Units Sold", p values are presented. A p value $<.05$ indicates statistically significant differences between mean units sold/week in moderate compared to high signage stores (Mod vs. high) and between stores with signage and those without (Sign vs. control).

Table 16. Organic food sales and effect of signage in an upscale grocery store environment

Organic food item	Mean Units Sold/Week			Effect of signage on Units Sold		Effect with Adjusted \$ Volume	
	Moderate signage	High signage	Control stores	Mod vs high p value	Sign vs control p value	Mod vs high p value	Sign vs control p value
Skim milk	25.6 ± 8.3	26.3 ± 9.1	22.3 ± 7.8	.7956	.1088	.0056*	.0005*
Butter	4.1 ± 4.0	3.8 ± 3.2	2.4 ± 1.6	.8261	.1264	.1804	.0993
Eggs	14.3 ± 8.6	10.7 ± 7.9	18.2 ± 9.8	.1875	.0197*	.8167	.7090
Dairy foods	43.9 ± 18.6	40.8 ± 16.0	42.8 ± 16.6	.5057	.9030	.0710	.0225*
Chips	14.3 ± 17.9	5.8 ± 2.7	11.1 ± 10.0	.0447*	.7764	.1981	.1908
Salsa	0.4 ± 0.7	0.8 ± 1.2	1.6 ± 2.3	.6212	.0954	.2061	.9665
Snack foods	14.8 ± 17.9	6.6 ± 3.3	12.7 ± 9.8	.0553	.5747	.2870	.1923
Canned pinto beans	8.8 ± 10.1	10.3 ± 14.0	6.0 ± 3.6	.6852	.2995	.3693	.1536
Spaghetti	0.5 ± 0.8	1.3 ± 1.2	0.6 ± 1.4	.0506*	.3519	.8911	.0020*
Pasta sauce	1.0 ± 1.5	1.3 ± 1.0	1.7 ± 2.4	.6520	.4366	.6322	.4297
Same aisle foods	10.3 ± 10.1	13.0 ± 14.4	8.3 ± 5.3	.2495	.0126*	.5837	.2943
Deli bread	5.8 ± 3.8	4.3 ± 4.7	8.2 ± 5.8	.2495	.0126*	.5837	.2943
Peach nectar	0.3 ± 0.6	1.3 ± 1.4	0.8 ± 1.3	.0413*	.9246	.5271	.0316 *
Flake cereal	1.9 ± 0.9	0.9 ± 1.2	1.7 ± 1.6	.0401*	.5376	.1285	.1801
Coffee	0.3 ± 0.5	0.6 ± 0.7	0.7 ± 1.2	.2912	.3593	.2524	.1693
Pureed baby food	6.5 ± 6.4	4.8 ± 4.7	6.2 ± 8.0	.5151	.8209	.8960	.4989
Fresh carrots	4.6 ± 8.2	20.3 ± 18.5	16.3 ± 6.0	.0023*	.3440	.0712	.0015*
Total (no carrots)	83.7 ± 46.2	72.3 ± 26.0	81.3 ± 35.1	.2886	.9647	.3651	.0008*
Total (with carrots)	88.3 ± 47.6	92.6 ± 31.8	97.6 ± 35.3	.2599	.7044	.0845	.1257

* p<.05 indicates statistically significant differences found.

The columns titled “Effect with Adjusted \$ Volume” contains p values which indicate whether there are statistically significant differences between adjusted mean units sold/week in moderate compared to high signage stores (Mod vs high) and between stores with signage and those without (Sign vs.

control). The standard deviation represents an idea of the range of units sold that was used to calculate the mean. Before adjustment, significant differences were found for five foods, but the direction of effect was mixed. More chips and flake cereal were sold in stores with moderate level signage, while more carrots, spaghetti and peach nectar were sold in high signage stores. After adjustment for overall sales volume of store, the only significant effect found was for milk, where the high signage stores had greater adjusted sales than moderate level signage stores.

Conclusion from the Sales Results

Based on the sales data, we conclude that, in the discount/warehouse grocery environment, POP signage of organic food products has a positive impact on sales of dairy products, specifically skim milk, butter and eggs, as well as, spaghetti, deli bread, flake cereal, and fresh carrots. While a positive trend was observed for all other tracked foods except chips and salsa, a statistically significant effect was not found. Additional study in more stores, over a longer time period and including more food items is recommended to confirm and possibly extend the list of food items for which signage has an effect in the discount/warehouse grocery environment.

On the other hand, in an upscale grocery environment where customers are not accustomed to seeing signage used, organic food labeling appeared to have a mixed effect. Although, after adjustment for the overall volume of sales, significant effects attributed to POP signage did emerge for milk, spaghetti, peach nectar, and carrots. Before adjustment, no positive advantage could be attributed to the presence of signage near organic food products. For the two foods, eggs and deli bread, where there was a significant difference between the control and signed stores, signage appeared to reduce sales. The comparison between moderate and high level signage failed to produce

a pattern. Five items were significantly different--two (chips and flake cereal) showed an advantage for moderate level signage and three (spaghetti, peach nectar and carrots) showed an advantage for high level signage. It is possible that the duration of the intervention was too short and the number of signed organic food items too few to impact the purchasing habits of upscale grocery store customers who are unaccustomed to POP signage. Additional investigation of perceptions and behaviors of customers in upscale stores seems warranted.

CHAPTER 4: DISCUSSION

A strength of the study was the opportunity to contrast both customer perceptions and organic food sales in grocery chains representing two very different retail grocery store environments. The sales data reflect the behavior of all customers during a six week period, while the intercept interviews represent a subsample of each store's customers.

The intercept interview method was well suited to the objectives of the study. Customer intercept surveys achieve high response rates and can be sensitive to measure awareness or recall of POP materials (POPAL, 1994). However, careful training of interviewers is required to select a sample that is representative of the customers at a particular store. In the current study, University of Minnesota students were hired and trained to conduct the intercept interviews. The interviewers were encouraged to approach customers in a random fashion without regard to age, gender or ethnicity. In addition, interviews were scheduled throughout the week, based on times of day suggested by store managers to provide access to many different types of customers.

Striking differences were identified in customer perceptions and intent to purchase organic products, and in the effect of shelf labels and information signage (POP) on sales in the two environments. Compared to discount/warehouse grocery store customers, higher proportions of customers at the upscale stores reported buying organic food in the past, and planned to purchase them in the future. In contrast to reported behavior, actual sales data showed a stronger positive effect of POP signage in the discount/warehouse chain.

The two chains have different store environments, merchandising philosophies and shopper profiles which may account for some differences in results. The profile of the typical shopper in the upscale stores is generally a well-educated shopper who may be less cost-conscious and have more

discretionary income which allows for purchases of expensive foods. Education and environmental concern may explain the interest in organic food products (Wilkins and Hillers, 1994). Reports also link concerns about pesticide and fertilizer contamination of water supplies, conservation of non-renewable natural resources, protection of farm workers, and preservation of the balance of nature with preferences for organic food products (Wilkins and Hillers, 1994; Goldman and Clancy, 1992).

The organic food customer has been characterized as being younger, well-educated and having a higher median income than other customers (Fresh Trends, 1996). In the upscale chain control and intervention stores, shoppers in their 30's and 40's were more likely to say they buy or plan to buy organic products than those in their 50's and 60's. Women respondents in the upscale stores with signage were also more likely to say they buy or plan to buy organic products than men.

The percentage of customers reporting ever purchasing organic foods (31% - 40%) and those reporting intentions to purchase (36% - 51%) were higher than results obtained in a nationally representative household (Fresh Trends, 1996). In the Fresh Trends survey, 14% - 33% of households say they purchased organic produce in the 6 months prior to the survey; and 20% reported being extremely or very likely to purchase organic produce in the 6 months following the survey. While the Fresh Trends survey was concerned only with organic produce, the current study attempted to measure purchasing behavior and intentions to purchase many types of organic products which may account for the higher percentages reported in the current study.

Many customers connect the term "organic" with produce. When customers were asked where they had seen signage identifying organic foods, they often cited the produce area even though only one of the 14 selected organic items labeled with Earth-Friendly Organic signage was a produce

item (peeled baby carrots). This finding is not surprising considering the fact that 80 percent of grocery store customers pass through the produce department (POPAI News, 1991).

The participating discount/warehouse stores were part of a chain which featured a large natural food section in some stores. While such stores were not included in the study, it could be that discount/warehouse chain customers were not consciously aware that numerous organic foods were distributed throughout the large facility. People interested in organics may shop in the natural food section (not being fully aware of the distinction between "natural" and "organic") and "tune out" awareness of organic products and messages in the rest of the store. In the discount/warehouse stores, shoppers were asked if they thought there was a difference between the terms "organic" and "natural". Sixty percent of respondents did not think there was a difference indicating that most shoppers do not make the distinction between "organic" and "natural". Most customers correctly reported that the term "organic" meant that the food was produced without using pesticides, chemicals/sprays or additives/preservatives.

Signage was effective in enhancing recognition of the Earth-Friendly Organic logo in both chains, with 15% - 17% of upscale respondents and 11% - 15% of discount/warehouse respondents indicating they had seen the logo. The accuracy of recall was tested by including a fictitious logo for which only 2% - 3% of the respondents claimed they had seen. When the responses from these 2% - 3% of shoppers were deleted, the percentages for those having seen the Earth-Friendly Organic logo did not change. Because the logo was in place in most stores for less than 3 weeks before the intercept interviews were conducted, 15% - 17% of total customers recognizing the logo suggests a meaningful impact. However, 10% - 15% of customers interviewed in control stores also recognized the Earth-Friendly Organic logo. This could be because many shop in several stores and

may also reflect the impact of other organic food promotions by the Midwest Organic Alliance that took place at the same time, but not in-store.

Fewer customers reported recognizing the logo in the discount/warehouse type of stores. This may be explained by the competition for attention by numerous other shelf labeling and signage that was present in the discount stores. The upscale stores typically did not use shelf labeling and used limited signage for customer promotions.

A short promotion of organic products using the same Earth-Friendly Organic logo was initiated in upscale stores during February 1996. A slight carryover in exposure to signage may be an additional reason why more of those interviewed in upscale control stores recalled seeing something that called their attention to organic foods or recognized the Earth-Friendly Organic logo.

In this study, a three week exposure produced about a 15 percent recognition rate. A useful comparison is the recognition rate for the 5-A-Day logo which has been in use for 5 years. The 5-A-Day for Better Health campaign involves many strategies and channels to increase awareness of the need to eat five servings of fruits and vegetables each day for better health. In-store strategies typically involve a logo that is printed on produce bags, banners and posters. A Food Marketing Institute/Prevention survey measured awareness in 1995 and 1996, documenting an increase in 13 percentage points in one year to 34% of customers knowing about the 5-A-Day program with about one in every four customers reporting having seen any 5-A-Day information in their grocery store (FMI/Prevention, 1996). In our study, we found approximately 50% of customers in both grocery environments recognized the 5-A-Day logo.

POP information can change the lift index (measurement of promotional effectiveness by comparing daily unit sales over a 7 day period with the forecasted baseline established for the specific

item) (Gogos 1996). This study compared intervention stores to control stores since most products were new additions and had no established in-store baseline.

Sales data were collected over a short period of time--six weeks; and involved only 14 organic food products. While some foods (milk, eggs, bread) are staples which are purchased on “stock-up”, “routine” and “fill-in” shopping trips (POPAI, 1994); many of the tracked organic products could be purchased only occasionally by shoppers. A longer list of foods or a different selection of items could produce different results.

In previous field studies of the effectiveness of POP technologies, a number of problems have been encountered including inaccurate and incomplete scanner data, insufficient quantities of promoted products (Gogos, 1996), and lack of cooperation of retailers (POP and Sign Design Editors, 1995). Problems with stocking of organic products at one discount/warehouse store resulted in exclusion of that store’s sales data from the analysis. It is possible that this biased the study in favor of more significant differences in the discount/warehouse environment due to less variability in the intervention condition.

A number of factors could impact the sales of organic foods, including 1) past and concurrent exposure to messages about organic foods via other channels, 2) the effectiveness of POP technology in the store, and 3) customer characteristics and the culture of the store and its surrounding neighborhoods. Few studies have found significant sales effects of information signage (Carsky and Fern, 1994). Day (1976) has proposed a hierarchy of effects model in which awareness and knowledge levels increase along with good will; while sales impacts follow later. It could be that discount/warehouse customers were already sensitized to organic and natural foods so that new

signage triggered purchase behavior; while in the upscale environment more customers' responses are still at the awareness and knowledge level.

The inconsistent effects in the upscale store (milk and carrots increased in intervention stores while sales dropped for deli bread and eggs) may also be indicative of mixed reactions to the attribute of being "organic". Areni et al. (1996) noted that POP can increase the salience of normally non-salient attributes. When this occurs, sales may diminish. This could explain the negative effect for some foods.

The nine stores that provided sales data seemed committed to proper implementation of the study. Spot checks by study personnel verified the presence of products and signage. However the difficulty of locating items in the large grocery stores underscored that the "high" POP intervention was actually very minimal. Customers would need to be very attentive shoppers who traveled the whole store to be sufficiently exposed to the POP signage on organic products. According to the Food Marketing Institute, consumers spend an average of 24 minutes in the supermarket on each trip and shop, on average, 41 percent of the stores (POPAI News, 1991). Given this, the low recall of the Earth-Friendly Organic logo and minimal effect on sales is not surprising.

Our intervention was limited to printed signs and take home brochures. Additional POP technologies including displays, tasting booths, videos, price incentives, and other strategies may be necessary to increase awareness and trigger a trial behavior of purchasing organic products. There may be a "learning curve" by which customers need repeated exposures to organic food signage and the opportunity to purchase organic products and make a personal assessment of the benefits experienced. According to adoption of innovations theory (Rogers 1983), such exposure

and trial behavior can lead to increased attention to organic food labeling and expanded organic food purchases in future shopping trips.

When behavior change is a goal (i.e. purchasing and eating organic foods), stages of change theory (Prochaska et al., 1994) suggests that interventions will be most effective if matched to the receptivity and motivation of the consumer. In this model, individuals move through various stages, progressing from not being aware of the need to make a change (precontemplation), becoming aware (contemplation), beginning to take action (preparation and action), to the final stage of incorporating the change into one's lifestyle on a long-term basis (maintenance). Since we know that the percentage of customers buying or planning to buy organic products is relatively small, it seems likely that many consumers may be in the precontemplation or early stages of change related to purchasing organic products. The Hartman Report (Hartman Group, 1996) classified about 30% of survey respondents as Overwhelmed, not interested in sustainable food production or modifying their diet, and another 18% as Unconcerned, not socially or environmentally conscious. Respondents in these categories may be unaffected by organic shelf labeling. However, the New Green Mainstream (23%) could be very receptive to POP signage about organic products. Shelf-labeling will be most effective if it catches customers' attention, makes them aware of organic foods, and triggers them to recognize action options (e.g. to select organic milk rather than the traditional product). Movement toward behavioral change is facilitated by an increase in awareness and attitude change.

This study underscores differences between retail grocery environments and verifies expanding interest of a range of consumers in organics. Simple POP technology, low cost shelf labels, appeared to increase sales of half of the tracked products in the discount/warehouse environment, but had mixed effects in the upscale environment. To be effective, POP must be available at the point of

decision and must include information that is important to customers and is easily assimilated (Carsky and Fern, 1994). POP information about organics could simplify decision-making for those aware of and interested in organics and could increase awareness among other segments.

Surveys indicate retailers have a high level of interest in POP technology including shelf talkers and signs (POP & Sign Design Editors, 1995). However, their follow-through is key to POP effectiveness. Retailers must assemble and maintain signs and displays and must assure proper location of products that match the POP promotion. Retailers should be cautioned that sales increases will not immediately follow POP signage. Consumers need time to become aware of information and perceive it to be useful. Then they will begin to use it in purchase decisions.

Conclusion

Promotion of organic food products offers a significant opportunity for retailers who want to stay at the forefront of consumer trends. A significant portion of customers are interested in organics and many have purchased organic foods. While availability of organics is currently an unlikely factor influencing store selection for many people (Hartman Group, 1996), customers' perceptions of good will can be an important impact of carrying organics. This good will may help increase sales of organics and other product lines. Consumer interest is present in both the discount/warehouse and upscale grocery environments. However, the benefits of organics may be less salient to customers in the upscale environment. POP technology including signs and information brochures, can aid customers who are searching for organic food alternatives. Additional use of complementary POP strategies such as display and price incentives may be necessary to stimulate awareness and interest among other customers. Interest in organics could translate into

increased sales with time.

The challenge in this study was to use POP to promote an attribute—organic—rather than a brand or a specific product. This was accomplished using a simple, relatively low cost POP strategy (shelf labels, signs and take home information brochure). In view of the challenge, the results are very encouraging.

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APPENDICES

- 1 - Earth-Friendly Organic signage
- 2 - Customer Intercept Survey form - Upscale stores
- 3 - Customer Intercept Survey form - Discount/warehouse stores