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Factors Influencing the Purchase Decision for Milk Labelled rBST-free and Organic

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This research uses survey research to identify the demographics and attributes of milk that affect the purchase decision. The attributes of milk that drive purchase interest are fresh tasting, safe, high in quality, healthy, high in nutrition, flavorful, a good value for the money, and reasonably priced. The attributes that are the focus of the labels tested by this study are only slightly to somewhat desirable to the general milk-purchasing population while price and brand are somewhat desirable. Demographics are related to milk purchasing behavior. There is a niche group of consumers that purchases organic milk regularly.

This research uses consumer survey research to provide a preliminary analysis of why consumers spend more on organic and rBST-free milk as found by Dhar and Foltz (2005). Dhar and Foltz used revealed preference data by examining weekly scanner data of milk prices and sales in 12 cities at the brand level for the period March 9, 1997 through February 24, 2002. They observed average price differences per gallon of \$3.00 between organic and unlabeled milk and \$1.50 between milk labeled rBST-free and unlabeled milk. Dhar and Foltz hypothesized that avoiding milk from cows treated with rBST is worth \$1.50 to consumers. Furthermore, consumers are willing to pay an additional \$1.50 to purchase organic milk, milk from cows that are not treated with rBST and also received no antibiotics, were fed organic feeds, and were from small farms. An additional finding from the Dhar and Foltz study was that higher organic milk purchases were not associated with higher per-capita expenditures. It was hypothesized that this result may be related to higher per-capita expenditures among large families. Since Dhar and Foltz examined time-series data, these hypotheses could not be tested.

Along with price premiums such as those mentioned in the Dhar and Foltz study, the organic food industry is currently experiencing unique sales growth. Where mainstream food products

experience average sales growth of two to four percent annually, the organic industry experiences twenty percent annual growth (Paul 2003). From 1999 to 2000, annual sales of organic foods in the United States increased from \$6.5 billion to \$7.8 billion (Offner 2002). Such growth has not gone unnoticed. In 2004 the large U.S. food company Dean Foods acquired Horizon Organic. Horizon Organic markets the leading certified brand of organic milk in both the U.S. and the UK (PR Newswire 2004).

This paper identifies some of the important demographic characteristics of the survey population that purchases rBST-free milk and organic milk. One of the main objectives of this survey is to address some of the questions that have arisen in the literature about the characteristics of consumers and their preferences for different types of milk. Prior to the 1990s the milk market was differentiated mainly by brand and by consumer preferences for milk with different amounts of fat content (non-fat, low-fat, reduced-fat, and whole milk). Over the last ten years the milk market has become further differentiated by the introduction of organic milk and rBST-free milk. This recent differentiation of the milk market also has become much more of an issue for the dairy industry than were the previous types of differentiation that occurred. In the 1960's when the dairy industry recognized that consumers were making an issue of the fat content of milk, the industry responded by providing consumers with milk of varying fat content from non-fat to whole milk. The issue was not a major concern to the industry because fat removed from milk was still sold as a dairy product in the form of cream, but-

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ter, cheese, and a number of other dairy products. In other words, the dairy industry did not really care how the raw milk was differentiated because the components of the raw milk produced from cows (fat and solids-not-fat) were still sold as dairy products and the differentiation of the milk was kept "within the industry." There was little in the way of increased competition for either creameries or producers, and the price differential between the various types of milk was small and inconsequential for both industry and consumers. In fact, during the same period, the dairy industry as a whole was much more concerned about the increased competition that was occurring between milk and other beverages such as soft drinks, etc. (Although there was a period in the early 1990s when the dairy industry became concerned about the excessive amount of milk-fat that appeared to be stockpiling.)

The introduction of organic milk and rBST-free milk in the early 1990s has created a different type of competition for the dairy industry that is much more difficult for them to embrace in any sort of unified manner. These products have, in effect, made milk a much more "political" issue. While both alternative milks are still very small components of the entire milk market, both are growing in very different directions, and with quite different impacts on the market. First, both alternative milks have much larger price differentials than did the previous differentiated milks—the average price differential between milks with various fat contents is a matter of a few cents. Second, the two alternative milk markets have grown from completely different roots. The organic dairy market has grown from a small but rapidly growing base of dairy producers who have committed themselves to producing milk from cows that are born and raised from "organic" cows, fed only organic feeds, and who graze only on organic pastures. On the other hand, rBST-free milk, is produced by conventional dairy producers who do not use, or have contracted and are paid a premium for *not* using the synthetic growth hormone recombinant bovine somatotropin (rBST). (In many states, creameries were not permitted to label their milk rBST-free for several years after the introduction of rBST in 1994. It is possible that organic milk sales may have been influenced by the lack of rBST-free milk in these

markets). Third, according to the national study by Dhar and Foltz (2005), the very presence of one or both of these alternative milks has created a competitive effect that has effectively reduced the price of all three milks (regular, organic, and rBST-free), and has provided substantial benefits to milk consumers even if they do not purchase any of the two alternative milks.

Methodology

The research uses a survey instrument and a concept exposure that were administered through the use of personal interviews with 423 randomly selected respondents at food stores in the winter of 2004 in San Luis Obispo County, California. San Luis Obispo was found to be the best of 3,141 counties to represent a microcosm of the United States based on 33 statistical indicators and was designated the best test market in the United States by *Demographics Daily* (Jackoway 2001).

Demographics

Foltz and Dhar (2003) pose three questions that they suggest need further examination:

1. Is the relationship between milk expenditure and income positive or negative?
2. Do families with more children have higher per-capita expenses on milk?
3. Do small families with no children have higher organic milk consumption?

Income

This research finds that self-reported weekly expenditures on milk vary by income level. Respondents who have a household income under \$30,000 spend less on milk than do those with income levels over \$30,000. However, those who have a household income of \$30,000 to \$69,999 spend the same weekly amount on milk as do those who have a household income over \$69,999. Although the lower-income households spend less each week on milk, per-capita expenditures on milk are similar between those who have a household income under \$30,000 and those with an income over \$69,999, while those within the middle household-income range spend more per-capita on

milk each week. Self-reported share of packages by type of milk (regular, rBST-free, and organic) were compared by income level. There was no difference in the share of packages allocated to regular (81 percent) and organic milk (12 percent) by income level. However, there was a weak relationship observed with the over-\$69,999 group allocating a slightly higher than average share of packages, seven percent, to rBST-free milk.

Presence of Children and Gender

The mean household size of respondents with children is 3.7, and 2.0 for those without children. Households with children spend approximately \$2.81 more each week on milk than do those without children. Furthermore, households with children purchase approximately 2.5 more gallons each month than do those without children. The presence of children does not affect the monthly level of gallons purchased per person in the household. However, households with children spend approximately \$0.86 less each month per person in the household than do those without children. This finding is different from that hypothesized by Dhar and Folz (2005). It appears that households with children are more economical shoppers. Households with children allocate 62 percent of their purchases to the more-economical gallon sizes, while households without children allocate only 49 percent of their purchases to gallon containers. Households with children allocate a smaller proportion of packages purchased to regular milk and a larger proportion of packages to rBST-free milk. However, both groups allocate the same proportion of packages to organic milk.

Female respondents are more likely to purchase rBST-free and organic milk than are males. They allocate more than twice the share of packages to rBST-free and organic milk than do males. Females allocate approximately three-fourths of their milk packages to regular milk, while males allocate 89 percent.

Milk-Purchasing Attitudes

Twenty characteristics that describe milk were rated by consumers to determine the attributes of milk that affect the purchase decision. Consumers were asked the following question:

“Please rate the following characteristics you look for when shopping for milk where: 5 = Extremely Desirable; 4 = Very Desirable; 3 = Somewhat Desirable; 2 = Slightly Desirable; 1 = Not At All Desirable.”

Analysis of the mean ratings of the interval data indicates that the characteristics are divided into four groups: extremely desirable characteristics, very desirable characteristics, somewhat desirable characteristics, and somewhat to slightly desirable characteristics. The attributes that are extremely desirable to milk consumers are fresh tasting and safe. Thus consumers must perceive the milk to be fresh tasting and safe in order for them to purchase it. The very desirable characteristics of milk are high in quality, healthy, high in nutrition, flavorful, a good value for the money, and reasonably priced. The characteristics of milk that rated somewhat desirable are inexpensive, low in fat, hormone-free, from a recognizable brand, all-natural, good for the environment, from happy cows, and from cows not treated with antibiotics. The characteristics rBST-free, from organically fed cows, organic, and from small farms are slightly to somewhat desirable. The attributes that are the focus of the labels tested by this study are only slightly to somewhat desirable to the general milk purchasing population, while price and brand are somewhat desirable. This may explain why consumers allocate only 19 percent of their purchases to organic and rBST-free milk.

In order to examine why consumers purchase different types of milk, respondents were separated into three groups based on their past ten purchases of milk. The average allocation of purchases to regular milk was 81 percent, with the remaining 12 percent and seven percent allocated to organic and rBST-free milk products, respectively. Those who allocated all purchases to regular milk—that is, milk not labeled as organic, rBST-free—or other milk are grouped together for this analysis and identified as “Regular 100%” consumers. The label “Organic 40%” refers to those consumers that allocate at least 40 percent of their purchases to organic milk. The remaining group purchases “All Other” allocations of milk purchases. The Organic 40% group allocates approximately 70 percent of its milk purchases to organic packages, 21 percent to regular milk, and the remainder to

rBST-free milk. The "All Other" group allocates the highest proportion of purchases to rBST-free packages, 26 percent. However, they allocate two-thirds of their purchases to regular milk.

The desirability of characteristics in milk is compared across the consumer groups Regular 100%, All Other, and Organic 40%. Organic consumers appear to appreciate most characteristics of milk more than do the other groups. They tend to be less concerned with the price of milk. Organic consumers rate the following characteristics as more desirable than do the other groups: safe, healthy, hormone-free, all-natural, good for the environment, from happy cows, from cows not treated with antibiotics, rBST-free, organically fed cows, organic, and from small farms. Thus the Dhar and Foltz hypothesis that organic consumers pay more for organic milk to consume milk from cows that are not treated with rBST, received no antibiotics, were fed organic feeds, and were from small farms appears to be true. However, the All Other group, which allocated one-quarter of their purchases to rBST-free milk, do not rate rBST-free higher than do those who do not purchase rBST-free milk. Thus the hypothesis that consumers are willing to pay more to avoid milk from cows treated with rBST is not observed by this research. Price is more important than rBST-free to the consumers of the rBST-free milk. Perhaps the hypothesis is not observed because approximately one-third of the respondents do not understand the term *rBST-free*. One-third of consumers disagree with the statement, "rBST is a supplement that allows dairy farmers to produce more milk with fewer cows."

The consumers who allocate at least 40 percent of their purchases to organic milk have very different attitudes toward milk than do the other two groups. All groups agree that fresh tasting and safe are the two most important attributes of milk. However, the organic consumers rate hormone-free as the fourth most important attribute, while it is rated the 15th most important attribute by the group that purchases rBST-free milk and 13th by those who only purchase regular milk. The organic purchasers are less concerned with value for the money, since they rated it the 14th attribute, while the group that purchases rBST-free milk rated it the seventh and those who only purchase regular milk rated it eighth. Regular milk consumers rate

reasonably-priced the fourth most important attribute of milk. Thus price sensitivity seems to drive regular milk purchases. Brand is relatively less important to the organic consumers.

Conclusion

Demographics are related to the type of milk purchased. The presence of children in the family does not affect the allocation of milk purchases to organic milk. However, it does relate to a reallocation of purchases from regular milk to rBST-free milk. Female respondents are more likely to purchase rBST-free and organic milk than are males.

The attributes of milk that drive purchase interest are fresh tasting, safe, high in quality, healthy, high in nutrition, flavorful, a good value for the money, and reasonably priced. The attributes that are the focus of the labels tested by this study are only slightly to somewhat desirable to the general milk-purchasing population, while price and brand are somewhat desirable. This may explain why consumers allocate only a small proportion of their purchases to organic and rBST-free milk.

There is a niche group of consumers who purchase organic milk regularly and are less concerned with price. Organic consumers rate most characteristics as more desirable than do the other groups. Organic consumers pay more for organic milk to consume milk from cows that are not treated with rBST, received no antibiotics, were fed organic feeds, and were from small farms. However, the regular consumers rated rBST-free to have the same desirability as did those who consumed rBST-free milk. Thus it is not evident why consumers purchase rBST-free milk. Additional research is needed to understand why consumers purchase milk labeled rBST-free at higher prices.

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