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# Using State Logos to Increase Purchases Of Selected Food Products

by

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## Abstract

The use of a state sponsored logo to enhance sales of locally grown or processed foods was examined at the retail level. The impact of socioeconomic variables on thirteen logo attitude statements was evaluated with a probit formulation. The results indicated that a single logo should not be used to identify both fresh and processed foods. Significantly higher proportions of respondents gave positive answers to the fresh produce statements of the logo's effects on purchase decisions and willingness-to-pay slightly higher prices than to those for processed foods.

## Introduction

Branding of food products has increased in recent years as agribusiness firms struggle to expand sales in an increasingly competitive environment [Vance Publishing Co., 24 Jan. 87 and 31 Jan. 87]. Processing and packaging provides the processor with the opportunity to establish brand loyalty [Rhodes]. Opportunities for differentiation by fresh produce item are much more limited. Some large wholesalers have intensified efforts to label fresh products in retail stores. Recently several states have attempted to increase their market shares through promotion of their major commodities [Northdurft].

State-level involvement in marketing in the United States is certainly not new. What is relatively new is the attempt by state departments of agriculture to affect the purchases of states' agricultural products. Some of this interest was generated by the recent furor created over "alternative crops" [Estes]. The Tennessee Department of Agriculture, for example, has developed a promotional logo to be used by handlers of fresh produce grown in Tennessee and manufacturers of foods processed in a Tennessee facility.

## Objectives and Procedure

This study focused on the potential for enhanced sales of locally generated products, fresh or processed, in local retail stores through the use of a state sponsored logo. The logo had been developed but not promoted, so consumers' attitudes could be surveyed without any influence.

The data used in this analysis were obtained from a mail survey of Knox County, Tennessee consumers using the total design method.<sup>1</sup> Questionnaires were mailed to 750 residential addresses, with two follow-ups at two-week intervals to non-respondents. A total of 240 questionnaires were returned.

The socioeconomic characteristics of the respondents were examined to determine if the

sample was representative of Knox County, at least when compared to the 1980 census. Notably, the average income of the survey respondents was slightly higher (adjusted for inflation), the proportion of male respondents was lower, the average educational level was higher, and family household size was slightly larger. These differences are not unusual for mail surveys. Mail surveys are typically over represented by higher income and more highly educated individuals [Miller]. Sample characteristics are consistent with individuals who are more likely to be consumers of these commodities [Blaylock and Smallwood].

Statistical tests were used to determine if the time when the survey questionnaires were returned affected the responses. Results led to the inference that there was no systematic relationship among the set of household characteristics or attitudes and the time that the questionnaires were returned.

## Results

The first question asked the food shoppers if they thought the same logo should be used for both fresh produce and processed foods. Of the respondents answering this question, 74 percent said no, the same logo should not be used (Table 1). The Tennessee fresh produce logo would be somewhat to very useful for 88 percent of the respondents. This interest in seeing the locally grown produce identified by a logo sticker is consistent with 39 percent of the sample feeling that local produce had "better quality" and another 44 percent who said they would purchase it "just because it was locally grown."

Nearly all of the respondents, 93 percent, felt that a logo should be used to identify locally grown fresh produce. A slightly smaller number of respondents, 89 percent, would like information about fresh produce origin in supermarkets. However, 95 percent said a supermarket would be helpful if it identified locally grown fresh produce. Another positive attitude response was exhibited by the 86 percent who reported they would be influenced in their purchase decision by the presence of a fresh produce logo.

Based on the responses to these six fresh produce attitude questions it would seem the adoption of a logo-oriented promotion could be effective in helping to increase sales of locally grown produce in metropolitan supermarkets. However, one negative attitude was the response regarding the cost of the program. Less than two-thirds of the respondents said they were

willing to pay a "slightly higher price to cover the logo cost." Apparently, many feel positive about the additional information the logo would provide, but they do not value it enough to express a willingness to pay for the information.

Responses to the use of a Tennessee processed foods logo were not as positive as those for the fresh produce logo (see Table 1). Those surveyed were nearly equally divided among feeling the logo would be "very useful," "somewhat useful," and "not useful." While the percentage of respondents that reported they would buy the in-state processed foods because of better quality was 19 percent, more than half said they would purchase the product "just because it was processed in-state."

Eighty-four percent of the respondents reported it would be "useful information" to know the origin of processed foods in the supermarket. Seventy-six percent reported that they would be influenced in their food purchase decisions by the presence of an in-state processed logo. Similar to responses for the fresh produce logo, a much lower percentage, 55 percent, said they would be willing to pay a slightly higher price to cover the logo cost.

## Shopper Attitudes Regarding Logos

An implication is that a logo-oriented promotional campaign could have a positive effect on in-state sales of locally grown or processed agricultural products. Limited funding naturally creates the need to identify those food shoppers who have the greatest potential of increasing consumption of the state's food products. In order to identify the appropriate target groups, there is a need to relate the socioeconomic characteristics of food shoppers to logo attitudes that reflect positive feelings toward these foods. Based upon the existing literature, hypotheses are constrained with respect to causal relationships among socioeconomic measures and logo attitudes.

There are thirteen logos attitude statements (Table 1): seven for fresh produce, five for processed foods, and one involving both. Although each pertains to slightly different dimensions of attitudes, responses to eleven situations involve positive and negative reactions. The other two situations have a neutral category. Because the dependent variables are qualitative, a probit formulation was used. McKelvey and Zavoina have developed the model used in this study.<sup>2</sup>

Table 1

Consumer Responses to Questions Used as Dependent Variables in the Probit Regressions

Variable	Question and measure	Response <sup>a</sup>		
		Category	Number	Percent
SAME-LOGO	Do respondents want the same logo for fresh produce and processed foods(1=no, 2=yes).	1	148	74
		2	53	26
FRESH-USE	How useful a Tennessee fresh produce logo would be when shopping (1=not useful, 2=somewhat useful, 3=very useful).	1	23	12
		2	69	34
		3	109	54
FRESH-QUAL	Feeling about buying Tennessee-grown fresh produce (1=no difference, 2=just because TN-grown, 3=better quality for TN).	1	33	17
		2	89	44
		3	78	39
FRESH-IDEN	Should logos be used to identify Tennessee-grown fresh produce (1=no, 2=yes).	1	14	7
		2	186	93
FRESH-INFO	Would information about fresh produce origin in supermarkets be useful (1=no, 2=yes).	1	22	11
		2	179	89
FRESH-HELP	Is a supermarket helpful if it identifies Tennessee-grown fresh produce (1=no, 2=yes).	1	10	5
		2	190	95
FRESH-PURCH	Would you be influenced by a fresh produce logo (1=no, 2=yes).	1	28	14
		2	172	86
FRESH-COST	Would you be willing to pay a slightly higher price to cover the logo cost (1=no, 2=yes).	1	78	39
		2	122	61
PROC-USE	How useful a Tennessee processed foods logo would be when shopping (1=not useful, 2=somewhat useful, 3=very useful).	1	61	31
		2	73	36
		3	67	33
PROC-QUAL	Feelings about buying Tennessee-processed foods (1=no difference, 2=just because TN-processed, 3=better quality for TN).	1	57	29
		2	104	52
		3	38	19
PROC-INFO	Would information about processed foods' origin in supermarkets be useful (1=no, 2=yes).	1	33	16
		2	167	84
PROC-PURCH	Would you be influenced by a processed food logo (1=no, 2=yes).	1	48	24
		2	153	76
PROC-COST	Would you be willing to pay a slightly higher price to cover the logo cost (1=no, 2=yes).	1	89	45
		2	110	55

<sup>a</sup>Sample size totals vary due to different response rates.

One difference may occur in the results that ought to be recognized from the outset. Results from the previous section indicate that attitudes toward Tennessee processed foods are expected to have lower measures of overall fit and estimated coefficients may be different, although of the same sign as with fresh produce. The socioeconomic measures collected in the present survey (Table 2) and the hypotheses derived here are based upon the work of Adrian and Daniel; Blaylock and Burbee; Buse; Capps; Eastwood, Brooker, and Orr; Searce and Jensen; and Smallwood and Blaylock. Space limitations preclude provision of explicit hypotheses, but discussion of significant results presented below makes reference to whether hypotheses were supported.

#### **Estimation of Attitude Models**

Data from the survey that are used in the probit regressions are described in Tables 1 and 2. Notice that higher numbered categories of the dependent variables are associated with more positive logo feelings, so that positive coefficients are interpreted as greater likelihood of positive attitudes toward a promotional strategy.

Initial probit equations for each of the dependent variables identified in Table 1 were calculated using all the independent variables shown in Table 2. As expected, many of the coefficients had insignificant asymptotic *t*-values, and the computed chi squares are less than the respective critical values. Results obtained from these regressions were used to delete variables from subsequent equations.

Once a reduced equation was found, modified for multicollinearity, a nested hypothesis test was conducted. The null hypothesis was the omitted variables had coefficients of zero, and likelihood ratio tests were performed. In every instance the results were consistent with using the reduced model.

#### ***SAME-LOGO***

Four variables have significant effects on the probability of respondents feeling that the same logo should be used (Table 3). In addition, the computed chi square leads to the inference that a significant overall relationship exists. Two-person households and more than two-person households were less likely to feel that the same logo should be used. Food shoppers over the age of 55 (age 3) tended to prefer a single logo, and this also applied to

respondents from the highest income households.

#### ***FRESH-USE***

Respondents' opinions about the usefulness of a fresh produce logo had several significant determinants and a significant chi square. As the proportion of teenagers increases, households were less likely to feel a logo is useful. Food shoppers 35 years of age and older were more inclined than those under 35 to reply that a logo is useful. A negative attitude toward usefulness occurred with the highest income group.

#### ***FRESH-QUAL***

The trinomial probit regression dealing with opinions about the quality of Tennessee produce had a significant chi square. Households having more than two persons were more apt to buy fresh produce because it had been grown in Tennessee or because they felt Tennessee fresh produce was better. Similarly, respondents over the age of 35 had greater probabilities of being Tennessee-oriented. Attending college had a negative impact.

#### ***FRESH-IDEN***

Attitudes about whether fresh produce logos should be used resulted in three significant variables and chi square. Two-person households had higher probabilities than single-person households in thinking that logos should be used. Food shoppers between the ages of 35 and 54 tended to feel that labels were desirable. Males were less inclined to respond positively to this question.

#### ***FRESH-INFO***

In addition to a significant chi square, there were five significant variables which affected whether respondents would like origin information about fresh produce. Blue collar workers were more inclined to want the information, as were the more than two-person households and female shoppers over the age of 55. Households with incomes of at least \$20,000 had greater probabilities of wanting the information.

#### ***FRESH-HELP***

No significant overall relationship was found for respondents' opinions regarding the

**Table 2**

**Socioeconomic Variables Hypothesized to Influence Consumer Behavior in the Probit Regressions**

<u>Variable</u>	<u>Measurement<sup>a</sup></u>	<u>Distribution of respondents<sup>b</sup> percent</u>
<u>Respondent's income</u>		
Income 1 <sup>c</sup>	\$0-\$19,999	31
Income 2	\$20,000-\$39,999	34
Income 3	\$40,000 and over	35
<u>Respondent's education</u>		
College	attended	64
<u>Respondent's occupation</u>		
Occupation 1 <sup>c</sup>	white collar	33
Occupation 2	blue collar	26
Occupation 3	other	41
<u>Respondent's age</u>		
Age 1 <sup>c</sup>	15-34	25
Age 2	35-54	39
Age 3	55 or over	36
<u>Respondent's sex</u>		
Male	male	32
<u>Number in specific age groups</u>		
Proportion 1 <sup>c</sup>	10 and under (omitted)	14
Proportion 2	11-18	13
Proportion 3	19 or over	75
<u>Household size</u>		
Size 1 <sup>c</sup>	one person	20
Size 2	two persons	32
Size 3	three or more persons	48

<sup>a</sup> All variables entered as 1 or 0.

<sup>b</sup> Frequency of 1's for the respective independent variables for the entire sample.

<sup>c</sup> Omitted from regression models to avoid singularity.

**Table 3**  
**Results of Probit Regressions:**  
**Directional Influence of Variables Significant at the .05 Level**

Independent Variables <sup>a</sup>	Dependent variables <sup>b</sup>													
	SAME LOGO	USE	QUAL	IDEN	FRESH INFO	HELP	PURCH	COST	USE	QUAL	INFO	PROCESSED PURCH	COST	
Income 2														+
Income 3	+	-												-
College				-										-
Occupation 2														+
Occupation 3														-
Age 2			+	+	+				+	+	+			+
Age 3	+	+	+			+				+	+			+
Proportion 2				-										
Proportion 3														
Size 2	-				+				+	+		+	+	+
Size 3	-			+		+					+	+	+	+
Male					-				-					
Chi Square	*	*	*	*	*	*			*	*	*	*	*	*

<sup>a</sup> See Table 1. <sup>b</sup> See Table 2. <sup>c</sup> A +, -, or \* indicates significance at the .05 level.

Table 4

Food Products the Respondents Selected as Important Commodities  
For Identification with the State's Logo

Commodity		Selected by respondents		Commodity		Selected by respondents	
	Number	Percent		Number	Percent		Percent
Fresh: n=178 <sup>a</sup>			Processed: n=140 <sup>a</sup>				
Tomatoes	114	64	Meats	58	41		
Sweet Corn	38	21	Milk	36	26		
Green Beans <sup>b</sup>	30	17	Cheese	22	16		
Vegetables <sup>b</sup>	96	54	Dairy Products <sup>b</sup>	32	22		
Apples	22	12	Vegetables <sup>c</sup>	21	15		
Strawberries	21	12	Fruits <sup>c</sup>	64	46		
Peaches <sup>b</sup>	6	3	Bread	6	4		
Fruits <sup>b</sup>	46	26	Flour	3	2		
			Honey	2	1		

<sup>a</sup> Respondents that reported a logo-sticker on the product would be useful to them were asked to identify the two most important fresh and/or two most important processed products they would like identified with a logo.

<sup>b</sup> Responses for other particular products in this category and for this product category in general when no specific item listed.

<sup>c</sup> Canned.



helpfulness of a supermarket identifying state-grown fresh produce.

#### *FRESH-PURCH*

A significant overall relationship was obtained for the influence of a fresh produce logo on purchase decisions. Food shoppers between the ages of 35 and 54 were more likely to be influenced positively. Male respondents indicated they were less inclined to be affected by such logos. Two-person households had a greater likelihood of being influenced by a logo.

#### *FRESH-COST*

The final fresh produce attitude relationship pertains to willingness-to-pay part of the logo cost. Those over 35 years old had greater willingness than did younger food shoppers. Two-person households were more likely to be willing to pay part of the cost.

#### *PROC-USE*

Three household characteristics affect food shoppers' attitudes toward perceived usefulness of a state processed food logo. Respondents aged 35 and over tended to have more positive attitudes. Households with at least \$40,000 in income were apt to feel the logo is not useful.

#### *PROC-QUAL*

Blue collar workers and those not gainfully employed had a greater likelihood of buying in-state processed foods because they were processed in the state or because they had better quality. Two or more person households also had positive feelings about state processed foods. Food shoppers who had at least attended college were less inclined to have favorable attitudes toward state logos on processed foods.

Probit regression estimates for the processed foods logo attitude measures yielded two instances where computed chi square was not significant: PROC-INFO and PROC-PURCH.

#### *PROC-COST*

Willingness-to-pay for processed foods logos resulted in four significant socioeconomic variables. Two-person households and three or more person households were more likely to be willing to pay a somewhat higher price. Food shoppers 35 and older had higher probabilities of being willing to pay.

#### **Marketing Implications**

Overall, several conclusions can be drawn from the fresh produce attitude models. Males are less interested in fresh produce logos than are females. Respondents aged 35 and over tend to have positive attitudes toward them. Larger households also are more likely to have responded favorably.

Across the processed food attitude responses, a varied pattern of significant variables is observed. Two and three or more person households have positive effects on Tennessee-logo attitudes in two of the three equations that have significant chi squares. Similarly, the age of the respondent between 35 and 54 and 55 and over has positive, significant coefficients in two instances. Households with incomes of \$40,000 or more, blue collar workers, and having attended college are significant once in the equations.

A single logo should not be used to identify both fresh produce grown in the state and food processed in the state because such a high proportion of those surveyed indicated preferences for separate logos. Significantly higher proportions of respondents gave positive answers to the fresh produce statements of the logo's effects on purchase decisions and willingness-to-pay slightly higher prices than to those for processed foods.

Consumers' perceived helpfulness on the part of supermarkets suggests a logo promotion strategy could increase sales, especially for fresh produce. However, supermarkets must bear in mind that consumers are not willing to pay much of a premium for local produce. Eastwood, Brooker, and Orr found that local tomatoes have the best consumer image and that consumers do not know how other local produce compares to out-of-state. Thus, the use of logos could include advertising focusing initially on the freshness of local tomatoes. Then the promotion could be expanded to other local produce. Respondents were asked to identify fresh produce commodities they would like labelled. Table 4 shows the results, and it suggests an order for logo expansion beyond tomatoes.

Processed foods logos are less important to food shoppers. Logo promotions should emphasize state pride and care in processing that leads to increased quality. Table 4 contains a list of processed foods consumers wanted labelled with a state logo.

## Endnotes

<sup>1</sup>For a more detailed explanation of the survey procedure, see Eastwood, Brooker, and Orr.

<sup>2</sup>For a detailed explanation, see Eastwood, Brooker, and Orr.

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