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Consumer Purchasing Behaviors and Attitudes toward Shopping at Public Markets

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This paper identifies and empirically evaluates factors that explain the variations in consumers' attitudes toward shopping at farmers markets in general and public markets in particular. The analysis draws on data from a telephone survey conducted in Jefferson County, Alabama. Logit model results point to several factors that seem to be strongly correlated with consumer purchasing behaviors and attitudes toward shopping at public markets, including income, education, age of household head, household size, and price and quality of produce. The insights gained from the study should help farmers increase the profitability of their operations and improve the likelihood that they will continue farming.

In the past, farmers markets were the usual way of buying and selling rural produce (Brown 2002). With the advent of supermarkets, farmers markets all but disappeared in many countries. However, in countries such as France and Italy, which place a high priority on food provenance and regional specialization, farmers markets continued without a break, partly due to the presence of mechanisms in these countries to identify and promote locally grown foods (Erlich, Ruth, and Wahlqvist 2005). In the United States, farmers markets first started to reappear in the 1970s and have since spread to other nations such as Canada, Britain, Australia, and New Zealand. These have been called "new generation" farmers markets (Coster 2004); offering a shopping environment that contrasts with the air-conditioned uniformity of supermarkets. The most popular of these "new generation" farmers markets is the *public market*.

Public markets are different from the traditional farmers market in that, they operate on a daily basis and have a permanent indoor site. They offer a wide selection of locally produced farm-fresh produce, various specialty foods, craft and art shops, entertainment activities, and special events (Project for Public Spaces 2006). The permanent indoor site not only serves as a center of local community life and culture but also become a "must-see" tourist attraction. Some of the better known public markets in North America include the Pike Place Market in Seattle, the Granville Island Public Market in Vancouver, the Los Angeles' Farmers Market at the corner of Third Street and Fairfax Avenue, and the Faneuil Hall Market in Boston.

The number of farmers markets has been growing steadily in recent years. Cities throughout the world are taking an interest in developing farmers markets to add vitality to their public spaces, to redevelop their historic marketplaces, to revitalize neighborhoods, and to make fresh food available in areas underserved by supermarkets (Project for Public Spaces 2006). In the United States, for example, the number of farmers markets grew almost 77 percent in the last decade of the twentieth century, from 1,755 in 1994 when the U.S. Department of Agriculture began collecting data to 3,100 in 2002 (Wood 2006; Project for Public Spaces 2006; Kremen, Greene, and Hanson 2004). Their steady growth and popularity has been attributed to several features commonly sought by customers attending the markets, including freshness, high quality, fair pricing, pleasant social interaction with farmers and market shoppers, and locally grown foods (Lockeretz 1987; Hughes and Mattson 1992; Brown 2002). For vendors, small farmers cannot afford to invest in the costly marketing systems required for mass food retailing and distribution. Direct access to the consumer therefore offers an alternative source of revenue and immediate cash

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flow for small farmers/vendor.

Despite their continued growth and popularity however, there have been few structured studies of consumer behaviors and attitudes toward shopping at farmers markets in general and public markets in particular (Govindasamy and Nayga 1996; Govindasamy et al. 1998; Fisher 1999). Familiarity with consumers' motivation for shopping at public markets is important in order to determine how these contemporary markets might function to meet consumers' needs. This study empirically evaluates which socio-demographic characteristics and purchasing behaviors encourage consumers to shop at farmers markets in general and public markets in particular. The study draws on data from a broader feasibility study commissioned by the Alabama Farmers Market Authority.

The rest of the article is organized as follows. The next section provides a summary of literature review. Section Three describes the data collection procedure. Sections Four and Five describe the variables used in the analysis and model specification, and Section Six presents and discuss the results. Finally, Section Seven provides a summary and conclusions.

Literature Review

Following the passage of Public Law 94-463, the Farmer-to-Consumer Direct Marketing Act of 1976 (Brown 2001), farmers markets have been growing in number and popularity, providing valuable opportunities for thousands of full- and part-time farmers (Hinrichs 2001; Payne 2002; Kremen, Greene, and Hanson 2004). Various reasons for their continued growth have been advanced in the literature (Stephenson and Lev 1998; Hughes and Mattson 1992; Govindasamy and Nayga 1996; Govindasamy et al. 1998; Fisher 1999; Fitzgerald 2004) ranging from health conscious consumers purchasing more fresh fruits and vegetables (Hughes and Mattson 1992) to food safety concerns about foods brought in from distant parts of the country or from overseas (Fitzgerald 2004).

Overall, previous studies concur that the growth in the number of farmers markets, in farmers using the markets, and in customers using the markets indicates that farmers markets are important to farmers, customers, and the communities in which the markets operate (Payne 2002). Among consumer studies, surveys of farmers market customers across the nation consistently portray them as above average in income, education, and age (Adrian 1982; Blackbum and Jack 1983; Buitenhuys, Kezis, and Kerr 1983; Estes 1985).

Previous studies have also concluded that prices at farmers markets are lower than prices at supermarkets (Sommer, Wing, and Aitkens 1980; Blake 1994; Ross 2002). For instance, in a farmers market survey in Northern California, Sommer, Wing, and Aitkens (1980) determined that prices were lower by 37 percent for vegetables and 39 percent for fruits. Their article also reviews the result of other studies, mostly from the East Coast, which indicate savings ranging from eight to 50 percent. They point out, however, that these other studies are not comparable, and that they suffer from ambiguity surrounding the term "farmers market." Using Sommer, Wing, and Aitkens' definition of a farmers market as a market certified by the California State Department of Food and Agriculture, Blake (1994) concluded that prices at farmers markets are mostly lower, though by how much varies by area.

Most researchers surveying customer shopping patterns report high levels of repeat patronage. Stephenson and Lev (1998) found that 46 percent of the population of two communities in Oregon visited farmers' markets between one and nine times per year and 13 percent visited more than ten times. Swanson and Lewis (1991) reported that 43 percent of urban Alaskans shop at farmers' markets or roadside stands several times per year. Roy and Jordan (1977) reported that white customers in Louisiana averaged 18 visits per year and black customers averaged 24. Yet Rhodus, Schwartz, and Hoskins (1994) found that Ohio patrons reported few multiple visits to farmers markets, preferring instead to visit roadside stands. The national dietary trend toward greater consumption of fresh fruit and vegetables by the middle-class is also thought to affect patronage of farmers markets (Capstick 1982; Cartier 1994; Connell, Beierlein, and Vroomen 1986; Eastwood, Brooker, and Gray 1995; Lockeretz 1987; Wynne and Roth 1997).

Although the relationship between farmers markets and the organic movement is not well documented (Gates 1996), one might argue that without an early commercial outlet for these products, producers and consumers would have been frustrated in their efforts to connect. Farmers markets were

certainly the most visible source of organic products until quite recently and they still remain one of the best sources of culinary exotica (Gates 1996). Indeed, farmers markets are thought to represent important testing grounds for new products and new technologies (Brenner 1999; Egan 1999; Kaminsky 1999). For some products, most notably extremely perishable products, such as edible flowers, farmers markets and other direct farmer-to-chef links remain virtually the only source of supply (Brenner 1999; Egan 1999; Kaminsky 1999).

In summary, it is imperative to note that while public markets are becoming a new phenomenon across the nation[1], there are few structured studies on public markets in the literature. Most studies in the literature, as summarized above, have focused on the traditional farmers market, thus making this paper an early piece that can serve as a guide for future studies on public markets.

Data

Data for this study were collected through a telephone survey of Alabama food shoppers. The survey, conducted by the Center for Governmental Services Survey Research Laboratory (CGSSRL) at Auburn University between July 6 and July 21, 2006, was part of a broader feasibility study commissioned by the Alabama Farmers Market Authority. As part of the feasibility study, a sample of households in Jefferson County was selected through random-digit dialing, a procedure that allows each household that has a telephone to have an equal chance of being selected for the sample. The survey targeted household residents in a ten-mile radius of the Birmingham Farmers Market.

The introductory section of the questionnaire provided respondents with background information including the institutions conducting the study, the objective of the survey, and a brief description of a public market and how a public market is different from a traditional farmers market. The household member who was the primary food shopper for the household was selected to answer the survey questions. Calls were made in evening from 5:00 to 9:00 p.m., and during the day on weekends (typically from 11:00 a.m. to 5:00 p.m. on Saturdays and 1:00 p.m. to 6:00 p.m. on Sundays). A total of 4,069 call attempts were made, resulting in 502 (12 percent) completed interviews. The average number of call attempts per telephone number was 2.26.

Survey Responses

The survey instrument contained questions related to respondents' socio-demographic characteristics, behaviors and attitudes toward shopping at public markets. The socio-demographic characteristics show that 53 percent of the respondents were Caucasian/white and 42 percent African-American/black. Another five percent were classified as other races. In terms of marital status, 53 percent of the respondents were married while 47 percent were single, divorced, or widowed. About 49 percent of the respondents lived in households with only one or two people; another 24 percent lived in three-person households, while 27 percent lived in households with four or more people.

The majority (61 percent) of the respondents indicated having no children under 18 living in the household. Approximately 55 percent of the respondents were between the ages of 26 and 55. The respondents are highly educated, with 68 percent of the total sample having at least some college education. Approximately 33 percent of those who responded to the income question reported household income of $50,000 or more. Table 1 shows that the sample demographics are fairly different from the statewide Alabama averages from U.S. Census Bureau statistics (U.S. Census Bureau 2000). For instance, 68 percent of those surveyed had some college level education or above, versus 45 percent for the state; 33 percent of the survey sample reported annual income above $50,000, versus 42 percent for the state; and 53 percent of the survey sample was white, versus 71 percent statewide.

For consumer behaviors and attitudes, a set of questions asked respondents about the time of day and portion of the week during which they do most of their grocery shopping. About 56 percent indicated shopping evenly between weekdays and weekends, with another 23 percent favoring weekdays. The most popular time of day was the mornings (before 11:30 a.m.), with about 28 percent selecting this period. Another 28 percent favored the afternoons (1:30 to 5 p.m.) for their most typi-

[1] Their popularity stems from their ability to create vibrant public spaces while also having broader social impacts—from community development, to health and nutrition, to preserving family farms (Project for Public Spaces 2006).

Table 1. Demographic Comparisons.

Variable	Survey sample statistics	State statistics (Census 2000)
Age	55% between 26 and 55 years	42% between 25 and 54 years
Race	53% white	71% white
Marital status	53% married	52% married
Education	68% some college and above	45% some college and above
Household income	33% $50,000 or more	42% $50,000 or more
Average household size	2.2 persons	2.35 persons
Children under 18 years	39% with children under 18	23% with children under 18

cal food-shopping period, and another 26 percent favored the early evening hours (5 to 8 p.m.). A small percentage of respondents (six percent) stated that lunchtime (11:30 a.m. to 1:30 p.m.) was their most favored shopping time of the day.

In terms of the most popular/first-choice grocery store among respondents (i.e. where they "do most of their shopping"), Wal-Mart attracted 27 percent of the responses. The next most popular grocery store was Publix, garnering 19 percent of the responses, followed by Piggly Wiggly, with 13 percent of the responses. Other popular grocery store destinations included Food World (11 percent), Winn Dixie (nine percent), and Bruno's (seven percent).

Two reasons for selecting the first-choice store were accepted from each respondent and tabulated in combination as well as separately. When looking at the combined frequency of answers, "selection" accounted for the most popular reason, with 25 percent of responses. Selection of produce, organic products, and meat were important among those who chose their primary grocery store based on selection. "Convenient to home" accounted for the next most popular reason, with 24 percent of responses. "Prices" accounted for the third most popular reason, with a combined 16 percent of responses selecting this factor. "Quality of merchandise" was the fourth most-frequently mentioned reason, with a combined count of 11 percent of all responses.

The survey results also suggest that freshness and quality, followed by price, are the most important factors that draw shoppers of all income levels to public markets. Lower-income consumers appear to be more interested in the basics of quality and price than are middle class consumers, who more often cited "atmosphere," "variety of produce," and "buying from the farmer." Both middle- and lower-income consumers were interested in organically grown produce; 78 percent of all respondents said that they would be willing to spend more for organically grown produce. However, the questionnaire did not explore how much more they would be willing to pay. Finally, the average household is open to shopping at public markets and lives within four to six miles of the Birmingham Farmers market.

Econometric Model

A review of existing studies revealed no widely accepted theoretical or empirical guidelines for evaluating the impact of socio-demographic and behavior factors in the likelihood of shopping at public markets. We specified a logit model to examine the factors that are correlated with respondents' decision to shop at public markets because the asymptotic characteristic of the logit model constrains the predicted probabilities to a range of zero to one. Also, since the survey provided individual rather than aggregate observations, maximum-likelihood estimation (Gujarati 1992) was used to obtain consistent and asymptotically efficient parameters (Pindyck and Rubinfeld 1991).

By adopting the logit regression, the following model was developed to predict the likelihood of an individual shopping at a public market:

(1) $\text{Prob} = \alpha k + \varepsilon$,

where Prob = 1 if the response is Yes and 0 otherwise, k is a vector of explanatory variables, and α is a set of parameters to be estimated. The model was tested under the specification

$$(2)\ \text{Prob} = \alpha_0 + \alpha_1 AGE2 + \alpha_2 AGE3 + \alpha_3 RACE + \alpha_4 MARITAL + \alpha_5 CHILDREN + \alpha_6 EDUC2 + \alpha_7 EDUC3 + \alpha_8 INCOME2 + \alpha_9 INCOME3 + \alpha_{10} HHSZIE + \alpha_{11} LOCATION + \alpha_{12} SHOPPER + \alpha_{13} SELECTION + \alpha_{14} QUALITY + \alpha_{15} PRICE + \alpha_{16} PARKING + \alpha_{17} DISTANCE2 + \alpha_{18} DISTANCE3 + \varepsilon.$$

The dependent variable (Prob) is coded as 1 if respondents' answered yes to the question ("If there was a public market in Birmingham would you shop there?") and 0 otherwise. Sixty-eight percent of respondents answered yes, with a standard deviation of 0.467. Equation 2 was estimated in LIMDEP 7.0 statistical software (Greene 2000). For estimation purposes, one classification was eliminated from each group of variables to prevent perfect collinearity. The base group of individuals and omitted variables are given in Table 2.

From Equation 2, the parameter estimates (α_i) do not directly represent the effect of the independent variables. Therefore, to obtain the estimator for qualitative discrete variables in the logit model we estimated the change in probability brought about by a change in the independent variable as

$$(3)\ \Delta P_i = \alpha_k P_i (1 - P_i),$$

where P_i is the estimated probability of an individual shopping at a public market evaluated at the mean and α_k is the estimated coefficient of the kth variable. The change in probability (ΔP_i) is a function of the probability, and when multiplied by 100 gives the percentage change in the probability of the event occurring given a change in the variable, all things being equal.

Results

The results are presented in Table 3, including the log-likelihood coefficient, the Nagelkerke R^2 and chi-square statistics, and the model's prediction success. The measures of goodness of fit indicate that the model fits the data fairly well. The logit model chi-square statistics was significant at the 0.005 level, clearly rejecting the null hypothesis that the set of explanatory variables were together insignificant in predicting variation in the dependent variable. Although the R^2 value is low—which is the norm in logistic regression (Hosmer and Lemeshow 2000)—the tabulation of prediction success shows that with a 50-50 classification scheme approximately 74 percent (369 out of 502) of the individuals in the sample were correctly classified as those who would shop at public markets.

In the case of the explanatory variables, the estimated results are interpreted using the change in probability (Equation 3). From Table 3, the logit regression has 11 coefficient estimates that are statistically significant, including race (+), age2 (+), educ2 (+), educ3 (+), income3 (+), shopper (+), household size (+), selection (-), quality (+), price (+) and distance3 (-), all consistent with expectations.

The model revealed that, ceteris paribus, white respondents are more likely to shop at public markets than are non-white respondents. The estimated change in probability coefficient (0.023) suggests that white respondents are 2.3 percent more likely to shop at public markets than are non-white respondents. Also, in agreement with the literature (Blackbum and Jack 1983; Buitenhuys, Kezis, and Kerr 1983; Connell, Beierlein, and Vroomen 1986), the age variables are estimated with the expected sign and one of the two explanatory age variables (age2) was found to be significant, implying that, ceteris paribus, household heads 35–55 years of age demonstrated a higher probability of shopping at public markets than did household heads under the age of 35.

In line with expectations, larger households are found to significantly increase the likelihood of shopping at public markets; those with three or more members are more likely to shop at public markets than are those with less than three members. A possible reason for this may be attributable to the propensity of those responsible for purchasing groceries for many other people to look for lower prices. Previous studies (Sommer, Wing, and Aitekens 1980; Blake 1994; Ross 2002) have consistently shown farmers market prices to be lower than supermarket prices. This sentiment is reinforced by the highly significant result for the

Table 2. Descriptive Statistics for Explanatory Variables.

Variable	Description	Percentage	SD
RACE	= 1 if white; 0 otherwise	0.53	0.49
AGE1*	= 1 if less than 35 years; 0 otherwise	0.20	0.35
AGE2	= 1 if 35 to 55 years; 0 otherwise	0.45	0.50
AGE3	= 1 if above 55 years; 0 otherwise	0.35	0.48
MARITAL	= 1 if married; 0 otherwise	0.53	0.50
CHILDREN	= 1 if there are children under 18 in the household; 0 otherwise	0.39	0.49
What is the highest level of education you have completed?			
EDUC1*	= 1 if less than four-year college degree; 0 otherwise	0.53	0.50
EDUC2	= 1 if completed four-year college degree; 0 otherwise	0.29	0.45
EDUC3	= 1 if at least graduate degree; 0 otherwise	0.18	0.36
What was the combined annual income for your entire household last year?			
INCOME1*	= 1 if less than $35,000; 0 otherwise	0.22	0.39
INCOME2	= 1 if $35,000 to $50,000; 0 otherwise	0.45	0.32
INCOME3	= 1 if more than $50,000; 0 otherwise	0.33	0.47
How many people live in your household including yourself?			
HHSIZE1*	= 1 if less than 3 people, 0 otherwise	0.49	0.50
HHSIZE2	= 1 if 3 or more people; 0 otherwise	0.51	0.50
Would the location (Finley Avenue) influence your interest in visiting the public market, and if so, would it be a positive or negative influence?			
LOCATION	= 1 if positive influence; 0 otherwise	0.56	0.50
Are you the primary household grocery shopper?			
SHOPPER	= 1 if yes; 0 otherwise	0.81	0.73
How important are the following when deciding where to shop for groceries?			
SELECTION	= 1 if selection of produce is very important; 0 otherwise	0.25	0.38
QUALITY	= 1 if quality is very important; 0 otherwise.	0.11	0.38
PRICE	= 1 if price is very important; 0 otherwise.	0.16	0.26
PARKING	= 1 if availability of free parking is very important; 0 otherwise	0.24	0.13
How many minutes does it usually take you to get from (home or workplace) to your preferred store?			
DISTANCE1*	= 1 if less than 5 minutes; 0 otherwise	0.28	0.35
DISTANCE2	= 1 if 5 to 20 minutes; 0 otherwise	0.60	0.50
DISTANCE3	= 1 if more than 30 minutes; 0 otherwise	0.12	0.49

*Refers to omitted category in the logit regression.

Table 3: Logit Model Results.

Variable	Coefficient	Std. error	t-ratio	P-value	Change in probability
RACE	0.420***	0.168	2.497	0.013	0.023
AGE2	1.861**	0.768	2.422	0.015	0.011
AGE3	1.203	1.236	0.973	0.330	0.014
MARITAL	-0.086	0.107	-0.804	0.421	-0.003
CHILDREN	-0.020	0.207	-0.097	0.922	-0.001
EDUC2	1.308**	0.677	1.931	0.054	0.014
EDUC3	0.614*	0.340	1.809	0.070	0.039
INCOME2	-0.721	0.464	-1.555	0.120	-0.013
INCOME3	0.414***	0.168	2.455	0.014	0.022
HHSIZE2	0.316**	0.142	2.232	0.026	0.009
LOCATION	-0.331	0.464	-0.714	0.475	-0.016
SHOPPER	0.647***	0.141	4.597	0.000	0.042
SELECTION	0.635*	0.349	1.818	0.069	0.041
QUALITY	0.989***	0.349	2.834	0.005	0.086
PRICE	1.183***	0.369	3.203	0.001	0.120
PARKING	0.260	0.233	1.117	0.264	0.012
DISTANCE2	-0.467	0.634	-0.737	0.461	-0.011
DISTANCE3	-1.651**	0.763	-2.164	0.030	-0.012
CONSTANT	-3.229***	1.067	-3.027	0.002	
Log-L	-279.854				
Chi-Square	68.701				
Nagelkerke R^2	0.038				
Model Prediction	0.735				
Sample Size	502				

*: significant at the 0.10 level.
**: significant at the 0.05 level.
***: significant at the 0.01 level.

shopper variable, suggesting that, ceteris paribus, primary household food shoppers are four percent more likely to shop at public markets than are non-primary food shoppers.

Connell, Beierlein, and Vroomen (1986) suggested that offering a wide variety of produce and non-produce items may increase patronage at farmers markets because shoppers appreciate wide selection. In agreement with this sentiment, the selection variable was estimated with the expected positive sign and was statistically significant, indicating that, ceteris paribus, shoppers who attach greater importance to the availability of a wide variety of produce and non-produce items are four percent more likely to shop at public markets than are their counterparts.

Of all explanatory variables, those that attach greater importance to price and quality had the greatest effect on shopping at public markets. Respondents to whom price was very important are 12 percent more likely to shop at public markets, and those to whom quality was very important are

nine percent more likely to shop at public markets. The results also suggest that, price has a greater effect than quality on respondents' likelihood to shop at public markets in Alabama. This finding may be attributable to the fact that 67 percent of the respondents are low-income earners (i.e., reported less than $50,000 annual incomes). Previous studies indicate that low-income consumers are more concerned with the price of the produce, while those in higher income brackets are more concerned with quality factors when shopping at farmers markets (Buitenhuys 1983; Hughes and Mattson 1992).

Based on previous farmers market literature and consumer-behavior literature, those with higher education and higher annual incomes were expected to be frequent public market shoppers (Adrian 1982; Blackbum and Jack 1983; Buitenhuys, Kezis, and Kerr 1983). While both explanatory education variables are significant and have the expected positive sign, only one of the two explanatory income variables (income3) is significant and has the expected positive sign. In agreement with the literature, those with a four-year college degree are 1.4 percent more likely to shop at public markets than are those with less than a four-year college education. Similarly, those with a graduate degree are four percent more likely to shop at public markets than are those with less than four years of college. Households with $50,000 or more annual income are two percent more likely to shop at public markets than are those with annual incomes below $35,000.

Location, distance, and parking can be considered measures of convenience. The estimated coefficients for location and parking are insignificant. For distance, the variables are estimated with the expected negative sign and one of the two explanatory distance variables (distance3) was found to be significant. Ceteris paribus, respondents who live more than 30 minutes away from the market are less likely to shop at the market than are those who live less than five minutes away from the market. However, the variable's estimated change in probability coefficient (-0.012) is fairly small; this could be an indication that farmers market patrons may be willing to travel longer distances. As one reviewer noted, the inconclusive findings may arise from the respondents' ambiguous understanding about these two distribution channels (i.e., farmers market versus public markets). Although the interviewers described the difference between farmers markets and public markets, ambiguity in understanding the differences among respondents is conceivable.

The coefficients for marital status and presence of children under the age of 18 in the household are contrary to the hypothesized positive effects and are statistically insignificant. The probability coefficient changes for those variables (estimated at –0.003 and –0.001 for marital status and presence of children, respectively) are very small, suggesting that whether or not an individual is married would not significantly influence their decision to shop at a public market. The lack of significance for the presence of children reflects the earlier finding of relatively small change in probability coefficient for the household size variable.

Conclusions

The successful operation of farmers markets in general and public markets in particular depends on many factors, but customers are a critical element. This study identifies the effect of consumer characteristics on the likelihood of shopping at public markets in Alabama. The results point to several factors that seem to be strongly correlated with shopping at public markets: household income, age of household head, household size, and price and quality of produce. The results have some implications for public market vendors. First, these characteristics should aid vendors in developing a profile of likely customers or individual socio-demographic groups. Second, the finding that price and quality have the greatest effect suggests that by focusing on improving price and quality attributes, public market vendors may attract traditional large-supermarket customers.

While the findings of this study highlight several significant variables, some limitations should be noted. Specifically, the small sample size and coverage area warrant some caution when extending the results to other geographic areas. Also, while some aspects of purchasing behavior have been discussed, other relevant purchasing behavioral factors such as shopping habits (e.g., time of day, frequency of purchase, purchasing in small bulk or small lots, brand, paying in cash or credit, etc.) and attitudes were not included. Amidst these limitations, the findings may be useful for vendors to increase the profitability of their operations and improve the likelihood that they would continue farming.

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