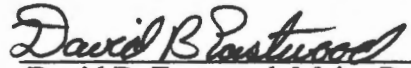


To the Graduate Council:

I am submitting herewith a thesis written by James Douglas Smith entitled "A Consumer Analysis of Store Features and Marketing Implications for Green Grocers: A Case Study of Six Outlets in Tennessee." I have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Agricultural Economics.

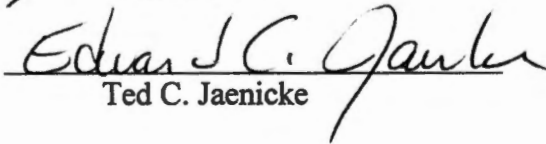


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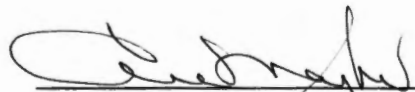


John R. Brooker



Ted C. Jaenicke

Accepted for the Council:



Interim Vice Provost and
Dean of The Graduate School

**A Consumer Analysis of Store Features and Marketing
Implications for Green Grocers: A Case Study of Six Outlets in
Tennessee**

**A thesis prepared
for the
Master of Science degree
The University of Tennessee, Knoxville**

**James D. Smith
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Abstract

There has been an increase in fresh produce consumption over the past few years, which has been good for many participants in the produce distribution system. However, due to the consolidation of the wholesale industry some smaller farmers are having problems selling the limited quantities. This study focused on an often overlooked outlet for small growers, the green grocers. A green grocer is a specialty store that emphasizes atmosphere, locally grown, and specialty produce. These outlets are more accessible in urban areas than farmers' markets.

Six outlets were selected for the study to represent the variety of green grocers operating in Tennessee. A questionnaire was distributed to shoppers at the six outlets. The survey gathered information about ideal and actual evaluations of store features (SERVQUAL) and socioeconomic characteristics. There were 24 feature statements in the SERVQUAL section which were broken down into eight feature group categories: Quality, Accurate Pricing, Employees, Hours, Information, Signs, Physical Features, and Other Products.

Analysis of the survey data focused primarily on these eight feature groups. The results of the surveys were used to develop marketing suggestions for green grocer outlets. The suggestions were based on using socioeconomic analysis of the feature groups to better meet customer demand.

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1. Introduction

Over the past decade there have been changes in the diets of Americans leading to increased consumption of fresh produce. This change is mainly due to increased public concern about nutrition and changing lifestyles. Increased demand has prompted changes in both the quality and the quantity of produce harvested and marketed in the United States.

As the concentration of food retailers continues to increase, so does the purchasing activity of produce wholesalers (Gallo; Kaufman). Supermarket consolidation has resulted in produce wholesalers needing large quantities delivered throughout the year. Technological changes, such as just-in-time delivery and electronic data interchange, have streamlined the distribution process for larger agents who can spread the technological costs over larger volumes. Requirements, such as bar coding, have had a similar effect. Larger farms have less trouble meeting the demands of the wholesalers, but smaller farms, like those prevalent in Tennessee, are finding it hard to market the more limited volumes that they produce. Buyers supplying the produce needs of major retailers prefer to purchase their items from large-scale shippers. Small-scale growers are confronted with situations that make it increasingly difficult for them to enter and participate in the commercial wholesale market (Brooker, Eastwood, Carver, and Gray; Karst).

Since wholesalers find it more costly to purchase these small and erratic quantities of produce, most small producers are forced either to leave the commercial segment or find alternative markets for their products. Farmers, Extension workers, and government

officials look to direct marketing as a means of identifying alternative income sources, preserving small farms, strengthening economic and social ties between farms and urban residents, and as an outlet for organic and specialty farm products (Gale).

Farmers' markets and co-operatives have been the traditional focus of demand expansion for locally grown fresh produce. For example, the Tennessee Department of Agriculture has successfully expanded the marketing opportunities of low-volume producers by contributing to the development and/or expansion of many direct-market outlets (Ball, Brooker, and Jenkins). There are now approximately 55 cooperatives or farmers' markets in Tennessee ranging from side-of-the-road and pick-your-own, to multi-million dollar facilities (www.localharvest.org). The 1997 Census of Agriculture shows the number of farms below 50 acres to have increased since 1992 (USDA, NASS).

This study focuses on an often overlooked outlet for small growers, the green grocers. A green grocer is a specialty store that emphasizes atmosphere and specialty produce. Since there are more green grocers in an urban area than farmers' markets, the former type of outlet has travel costs for customers that more closely approximate those of supermarkets. In addition, many consumers like the personal attention and quality afforded by the green grocers and the convenience of not having to search for the items that they desire. Green grocers allow growers to avoid the need of renting space and having their own sales people at farmers' markets. Their smaller sales volumes are more suitable for the production of smaller growers.

The market development problem for these types of outlets is to increase their customer bases at the same time they expand access to local growers who supply the

needed produce (Brooker, Eastwood, Carver, and Gray; Brooker, Eastwood, and Gray).

In order to develop an effective marketing strategy, both supply and demand must be addressed. This study focused only on the demand side issue.

2. Objectives

The goal of this study was to create marketing strategies for more efficient marketing of smaller scale locally grown fresh produce through green grocers. Expanding the market opportunities depends in part on expanding sales at green grocers. A critical component of increasing sales is the provision of a positive shopping experience for customers. Therefore, an assessment of shoppers' perceptions of outlet features can be the building block for increased demand. Specific objectives to reach the goal are to:

- 1) select a representative sample of green grocers in Tennessee and ask them to participate in a study of their shoppers,
- 2) develop a survey instrument and sampling procedure,
- 3) sample respondents,
- 4) analyze survey results, and
- 5) develop marketing strategies based on the analysis.

3. Background

Although fresh produce consumption has increased, small volume growers have experienced market access problems (Calvin et al.). Some trade factors have been identified in order for small farmers to become a significant supply source for the wholesale industry. These factors include: grading and inspection, produce cleanliness, produce uniformity, low wholesale price, packaging, reliability of supply source, and pre-cooling (Alipoe, and Stallings; Lawless et al.; Williams). These practices and requirements are too costly and time-consuming for most small growers.

Many states have responded by promoting locally grown produce through state funded programs. Brooker and Eastwood (1991) found that 70 percent of the State Departments of Agriculture had such programs or were developing them. These programs have been analyzed for grocery stores, farmers' markets, and roadside stands (e.g. Brooker and Eastwood; Eastwood, Brooker, and Orr; Govindasamy et al.; Govindasamy, Italia, and Thatch).

Green grocers have not been evaluated as outlets for the production of small volume growers. Two desirable aspects of these stores are the following: the volume of sales are more in line with the output of small growers, and the stores are spread out in urban areas resulting in more convenient consumer shopping trips than to farmers' markets.

Studies of fresh produce demand have found common criteria used by food shoppers at grocery stores, farmers' markets, roadside stands, and on-farm locations (e.g. Brooker, Eastwood, and Orr, 1986, 1988; Eastwood, Brooker and Gray 1998;

Govindasamy and Nayga; Govindasamy, Italia, and Thatch; Packer Fresh Trends; Rhodus, Schwartz, and Hoskins; and Schatzear, Tilley and Mosel). Patrons at grocery stores rated convenience, selection, quality and value as most important. Farmers' markets, roadside stands, and on-farm locations typically indicated freshness, quality, value, and nutrition as important.

An implication is that consumers use similar criteria for evaluating produce. However, a person's satisfaction depends partially on the store features, experiences with employees, and with the checkout process (Dabholkar, Thorpe, and Rentz; Parasuraman et al.; and Zeithaml et al.).The initial SERVQUAL studies were based on service industries and were used to make an index for company to company comparison. The goal of this study was not to compare stores by way of an overall index, but to evaluate customers' perceptions of store features.

4. Methodology

The first phase of the project centered on a survey of green grocers in Tennessee. Several sources of information were used in an attempt to generate a 1999 census of green grocers in the state. Extension personnel, Yellow Pages, and a computerized directory of businesses, which can be sorted on the basis of SIC codes and location were used. A questionnaire was designed to obtain information about the physical characteristics of the outlets and sources of supply. Interviews with the owners/managers provided information about: operating characteristics of the facilities, physical characteristics of the sites, sales information, customer service, sources of supply, and customer satisfaction. Based on these data, seven outlets were chosen for the study described below to represent the variety of green grocers operating in the state.

Customers at these outlets were asked to complete a questionnaire to gather information about their perceptions of the respective stores.¹ The major emphasis of the questionnaire was a variation of the SERVQUAL survey (Zeithaml et al.). This type of survey consists of paired responses to statements about outlet features. One was to reflect their ideal ratings of the respective features, and the other was to be based on their last trip to the outlets. There were 24 statements about store features, which were intended to reflect the shopping experience associated with buying fresh produce at green grocers. The statements were based on those contained in the original instrument, which was for consumer services (e.g. banking) and a more recent questionnaire developed for retail

¹The questionnaire is in Appendix A.

goods, in particular nurseries (Behe and Barton; Zeithaml et al).

Ideal responses were on a five-point Likert scale, where 1 = "Not Very Important to Me" to 5 = "Very Important to Me". This allowed customers to show that the statement was not pertinent to them, as opposed to "strongly disagree" to "strongly agree" from the previous Likert scales. Actual responses also had a five-point Likert scale but were phrased in terms of the features meeting expectations on their last trips to the outlets. These ranged from 1 = "Not Very Well" to 5 "Very Well".

The second part of the questionnaire involved respondents allocating 100 points in each of three types of feature groups. One was features of green grocers. Another was features of fresh produce. The third focused on complementary product categories carried by the outlets. The last section collected socioeconomic information about the respondents. This section was based on prior surveys that analyzed produce buyers, grocery shoppers, and farmers' market consumers.

The 24 statements were grouped into related feature categories. Table 1 presents the groups as column headings. The groupings were done to facilitate analysis of the data and to provide specific areas for green grocers to address customers' needs. The numbers refer to the statement numbers on the questionnaire in the appendix. The number of statements in each group is a reflection of the dimensions that are relevant. For example, quality is considered to be a single feature, whereas there are several ways in which customers interact with employees.

The difference between an actual and ideal rating was the measure of interest. Since the Likert scales are bounded, they represent censored data, with 1 and 5 as the

Table 1 Feature Statement Groupings *

		Accurate				Physical	Other
Quality	Employees	Pricing	Signs	Hours	Information	Features	Products
18	3	7	4	12	14	1	5
	6	15	19		20	2	13
	9				21	8	23
	10				22		
	11						
	16						
	17						
	24						

* Feature statement numbers from the questionnaire are listed below their respective group name.

bounds. Consequently, differences were bounded between -4 and 4. Positive (negative) differences reflect a feature having a lower (higher) "meets expectations" rating than the respective ideal rating. Average differences by respondent by feature group were the measures used in subsequent analysis. A double censored tobit regression was used to estimate the feature group average as a function of demographics. The motivation was to estimate significant determinants of the differences in order to identify possible marketing strategies for improving customer perceptions. Separate equations for each feature group were estimated.

The sampling was done in the summer of 2000. Seven representative stores were selected to participate from the 1999 list of Tennessee green grocers, and 1,000 surveys were distributed to each store. The stores then distributed the surveys to their shoppers. The shoppers mailed back the survey in a postage paid envelop, which was done to

encourage consumer response. Enough surveys were received from six stores to be included in the analysis. Too few were returned from the seventh to be included in the analysis. Altogether 1,118 questionnaires were returned for a response rate of 19 percent, which is typical for mail back surveys. Some reasons for low response rates are lost surveys, surveys not distributed, surveys thrown out by respondents, and surveys completed , but never mailed.

5. Results

Analysis of the consumer surveys serves as a basis for assessing green grocer outlets' features. Green grocers can then use this as a blueprint for providing shopping experiences that can attract and retain customers.

Socioeconomic Characteristics

Appendix B shows the percent distributions of respondents by store by socioeconomic categories of: Age, Gender, Education, Household Status, Household Size, and Household Income. Highlighted percentages represent significant differences of the respective characteristic's store average from all store averages.

Age

Figure 1 displays the age distribution of respondents. Approximately 79 percent of the sample is 45 and older. This is typical of the fresh produce consumer (American Institute of Food Distribution, Inc). Store 5 was significantly higher in the 45 to 54 range with 37 percent of respondents falling within this age group (Appendix Table 1).



Figure 1 Age Distribution of Shoppers

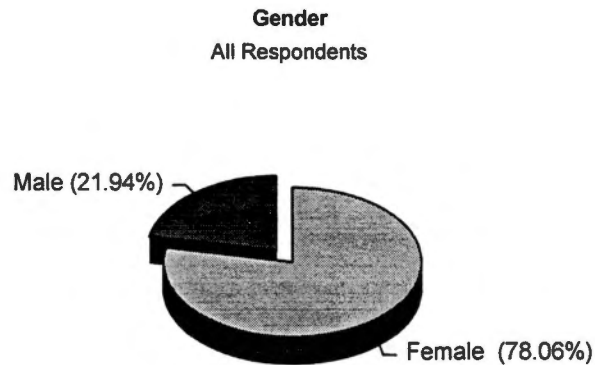


Figure 2 Gender Distribution of Shoppers

Gender

The gender breakdown of respondents is presented in Figure 2. The majority of respondents, 78 percent, were female, which is consistent with most food shoppers being women. There were no significant differences between stores.

Education

The majority of respondents, 71 percent, had some college or were college graduates (Figure 3). Store 3 had significantly more college graduates, 71 percent (Appendix Table 1). This reflects, in part, the presence of a state university near by.

Household Status

The percentage distribution of household status for all stores is shown in Figure 4. There were only three significant differences among the 24 comparisons to the all stores averages.² Store 1 had no single respondents with dependents. Store 5 had a larger

² There are four status categories and six stores.

Educational Distribution of Shoppers
All Respondents

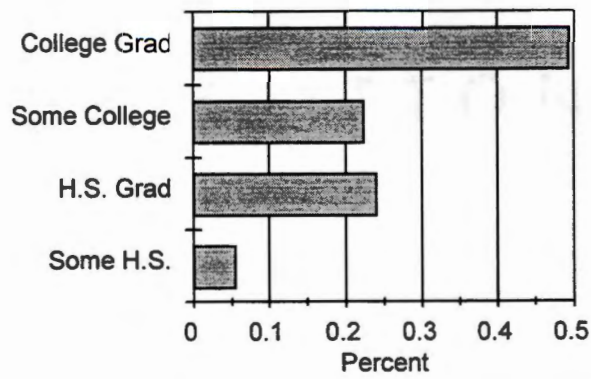
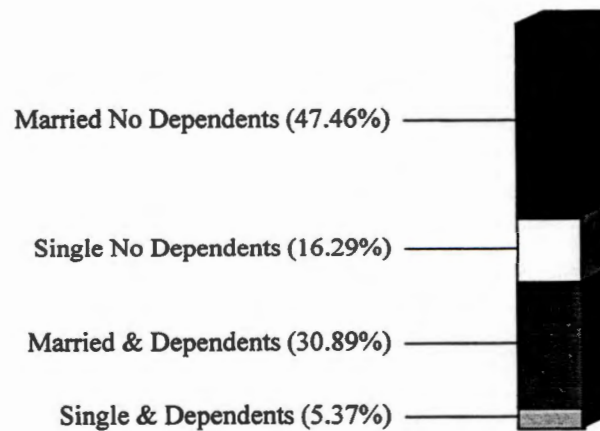


Figure 3 Education Distribution of Shoppers

Household Status of Shoppers
All Respondents



percentage of married with dependents respondents (48 percent). Store 6 had the largest percentage of single respondents with dependents (15 percent).

Household Size

The percentage distribution of household size is found in Figure 5. Over half the sample was composed of two person households, and 30 percent had three or more members. Less than one percent had seven or more people living in their households. There were no significant differences among the stores.

Household Income

The percentage distribution of household income is found in figure 6. Over 60 percent of all respondents had household incomes between \$25,000 and \$74,999 annually. Only 15 percent made less than \$25,000 annually. Nearly 18 percent made between \$75,000 and \$99,999 annually. The prevalence of higher income respondents is consistent with expenditures on fresh fruits and vegetables increasing with income (American Institute of Food Distribution, Inc.). There were only two instances for which the percent of respondents in a category for a store were significantly different from the respective overall average, and both occurred with store 5. In both instances, the store had a higher percentage of respondents.

The make-up of the sample follows closely the make-up of fresh produce consumers (U.S. Department of Labor). The majority of consumers were 35 and older. They are predominantly college educated individuals. Most had no dependents, and the majority were married. Over 50 percent had incomes of \$25,000 to \$75,000.

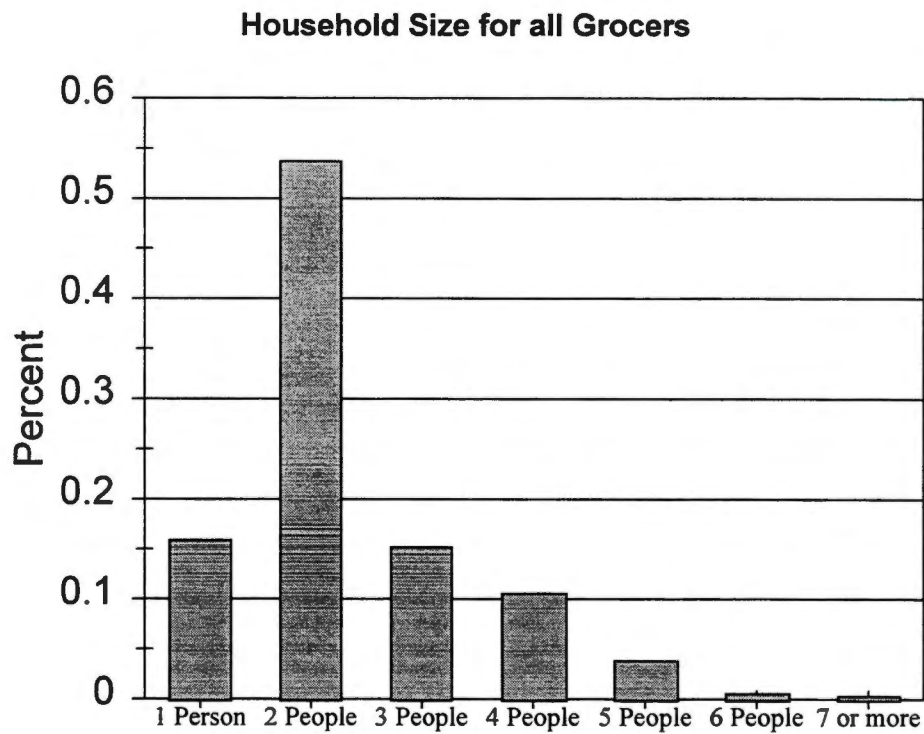


Figure 5 Household Size Distribution of Shoppers

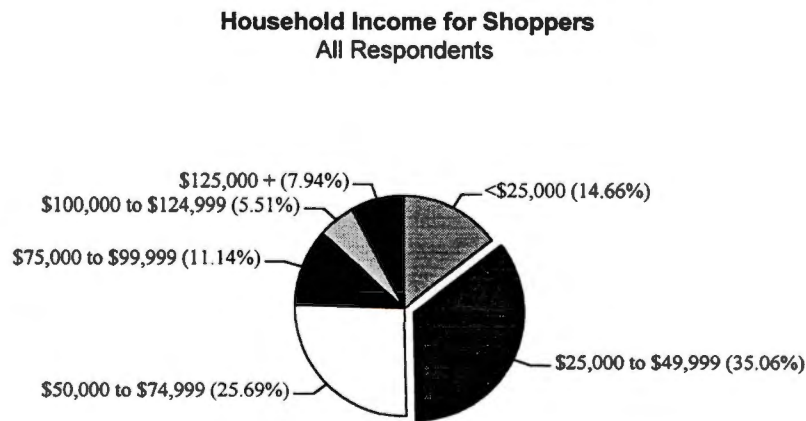


Figure 6 Income Distribution of Shoppers

Ideal Rankings

The average ideal rankings of the 24 statements are displayed in Table 2. The table also shows the arithmetic averages for the six groups that had two or more statements. Shaded numbers denote instances for which there are significant group differences between the average ideal rating for the stores' respondents versus the overall sample. The last column shows the ranking of the group averages. There are only six significant group differences among the 32 feature groupings and the respective overall averages. This suggests respondents were fairly consistent across outlets with respect to their ideal feature assessments.

Quality was the most important attribute that consumers looked for in a green grocer with an ideal score of 4.80. There were no significant differences between stores based on the average ideal quality ranking. Accurate Pricing was tied for second most important group with an average ideal ranking of 4.59, with no significant differences among the stores. This ordering is consistent with other surveys of produce shoppers which found quality then price as the two most important criteria (Brooker, Eastwood, and Orr). The Employees group was the other group tied for the second most important attribute that consumers looked for in a green grocer. There were no significant differences between stores for the average ideal Accurate Pricing and Employees rankings. The Hours statement was the fourth most important feature with an ideal ranking of 4.54. Once again there were no significant differences between the stores. The next three groups formed a cluster somewhat below Hours. Information, Signs, and Physical Features were 5th, 6th, and 7th in order of importance with respect to average ideal

Table 2 Average Ideal Rankings

Group/ Statement		Store						All Stores	Group** Rank
Quality*		1	2	3	4	5	6		
18		4.81	4.83	4.71	4.81	4.80	4.78	4.80	1
Accurate Pricing									
7		4.58	4.65	4.41	4.59	4.43	4.48	4.56	
15		4.58	4.67	4.57	4.68	4.54	4.58	4.63	
Average		4.58	4.66	4.49	4.63	4.49	4.53	4.59	2
Employees									
3		4.74	4.81	4.66	4.71	4.73	4.66	4.73	
6		4.71	4.71	4.58	4.59	4.67	4.40	4.63	
9		4.70	4.81	4.67	4.71	4.75	4.60	4.76	
10		4.64	4.72	4.47	4.62	4.65	4.39	4.61	
11		4.46	4.53	4.03	4.15	4.48	4.01	4.30	
16		4.59	4.72	4.54	4.60	4.67	4.52	4.63	
17		4.49	4.62	4.43	4.48	4.59	4.37	4.52	
24		4.48	4.64	4.50	4.56	4.55	4.52	4.56	
Average		4.60	4.70	4.48	4.55	4.64	4.43	4.59	3
Hours									
12		4.63	4.51	4.47	4.58	4.54	4.59	4.54	4
Information									
14		4.32	4.47	4.28	4.48	4.25	4.20	4.39	
20		3.92	4.05	3.69	3.85	3.69	3.83	3.88	
21		3.36	3.76	3.47	3.77	3.56	3.82	3.70	
22		3.74	3.64	3.18	3.61	3.88	3.24	3.56	
Average		3.83	3.98	3.65	3.93	3.85	3.77	3.88	5
Signs									
4		3.40	3.40	2.95	3.36	3.34	3.59	3.34	
19		4.40	4.45	4.38	4.50	4.09	4.35	4.41	
Average		3.90	3.92	3.66	3.93	3.71	3.97	3.87	6
Physical Features									
1		2.75	3.08	2.51	3.02	2.66	3.44	2.95	
2		3.70	3.61	3.32	3.89	3.64	4.01	3.69	
8		4.07	4.12	3.97	4.31	3.93	4.52	4.17	
Average		3.51	3.60	3.27	3.74	3.41	3.99	3.60	7
Other Products									
5		3.04	2.42	3.34	3.58	1.96	2.99	2.96	
13		2.86	3.02	2.68	3.02	2.26	2.77	2.87	
23		1.79	1.86	1.70	1.92	1.36	1.84	1.80	
Average		2.56	2.43	2.57	2.84	1.86	2.53	2.54	8

* Feature groups are arranged according to respondents' "ideal" ranking of the store features.

** Group rankings are based on respondents' "actual" ranking of the store features.

*** Shaded numbers show significant differences.

rankings. These groups had lower scores, below 4, than the first 4 groups. Other Products ranked last, which was not unexpected because patrons presumably were at the outlets to buy fresh produce.

Comparisons on a column-by-column basis suggest there were no significant differences between stores 1, 2, and 6. Store 3 had significant differences in three groups: Signs, Information, and Physical Features (see highlighted scores in Table 2). Its average ideal ranking for Signs was 3.66, significantly lower than the sample average of 3.87. The average ideal ranking for Information was 3.65, also significantly lower than the sample average of 3.88. The average ideal ranking for Physical Features was 3.27, significantly lower than the sample average of 3.60. Store 3 customers did not place as much emphasis on these three groups as the other stores in the sample.

Stores 4 and 5 also had significant differences from the sample average. Store 4 had the highest average ideal ranking for Other Products with a ranking of 2.84, significantly above the sample average of 2.54. Store 5 had significant differences in two groups: Physical Features and Other Products. The average ideal ranking for Physical Features was 3.41, significantly lower than the sample average of 3.60. The average ideal ranking for Other Products was 1.86, significantly lower than the sample average of 2.54.

For half of the groups (Quality, Employees, Accurate Pricing, and Hours) there are no significant differences among the stores, and the first three of these have the highest average ideal ratings. In two instances (Signs and Information) there is only one significant store difference (store 3). Physical Features and Other Products have two outlets with significantly different ideal averages versus the entire sample. An implication

is respondents were similar across outlets with respect to the importance of the feature groups. With a few exceptions, the ideal rankings were very close across the stores in the survey.

Actual Rankings

The actual rankings for the 24 statements are based on the respondents' last trips to the respective outlets. Table 3 shows a breakdown of the average actual rankings by store and group. Shaded numbers denote instances for which there are significant group differences between the average actual rating for the stores' respondents versus the overall sample. The last column shows the ranking of the group averages.

Quality ranked fourth as a group in the actual rankings with an average score of 4.42. Employees, Accurate Pricing, and Hours were the top three, respectively, in the actual ranking. Employees had the highest average actual score at 4.56, and there were significant differences between the stores. There were significant differences in all the groups for the average actual scores, except for Physical Features. This result was not unexpected, as the selection of outlets was to reflect the range of green grocers operating in the state.

Two stores stood out when compared to the other stores. Store 2 had above average ratings in: Quality, Accurate Pricing, Employees, and Information. Store 6 was below the overall average for every group except Physical Features, where it was above average actual ranking. Store 1 was below the group average in Accurate Pricing, Information, and Other Products. Store 3 was below the group average in Information, and Other Products.

Table 3 Average Actual Rankings

Group/ Statement	Store						Group
Quality*	1	2	3	4	5	6	All Stores Rank
18	4.34	4.63	4.28	4.38	4.52	4.06	4.42 4
Accurate Pricing							
7	4.43	4.67	4.40	4.43	4.50	4.20	4.49
15	3.87	4.57	4.51	4.51	4.18	4.28	4.42
Average	4.15	4.62	4.45	4.47	4.34	4.24	4.45 2
Employees							
3	4.72	4.89	4.69	4.57	4.71	4.22	4.68
6	4.68	4.84	4.62	4.52	4.69	4.02	4.62
9	4.70	4.86	4.64	4.52	4.70	4.28	4.66
10	4.62	4.74	4.38	4.27	4.64	4.13	4.49
11	4.58	4.73	4.30	4.21	4.65	3.80	4.43
16	4.60	4.75	4.58	4.54	4.68	4.24	4.60
17	4.57	4.70	4.46	4.42	4.64	4.09	4.52
24	4.46	4.70	4.45	4.43	4.65	4.05	4.50
Average	4.62	4.78	4.52	4.43	4.67	4.10	4.56 1
Hours							
12	4.40	4.53	4.36	4.48	4.58	4.16	4.45 3
Information							
14	3.86	4.46	4.36	4.44	4.17	4.11	4.33
20	3.60	4.13	3.23	3.60	3.54	3.24	3.68
21	3.33	4.02	3.21	3.63	3.50	3.42	3.64
22	3.69	3.87	3.10	3.84	4.06	2.57	3.64
Average	3.62	4.12	3.47	3.88	3.82	3.34	3.82 7
Signs							
4	3.75	3.76	3.59	3.75	3.92	3.57	3.73
19	4.07	4.57	4.28	4.49	3.63	3.89	4.32
Average	3.91	4.16	3.93	4.12	3.77	3.73	4.02 5
Physical Features							
1	3.66	3.82	3.55	3.69	3.75	3.74	3.72
2	3.78	3.92	3.75	3.96	3.96	3.84	3.89
8	4.05	4.32	4.09	3.75	4.07	4.48	4.10
Average	3.83	4.02	3.79	3.80	3.92	4.02	3.90 6
Other Products							
5	4.38	3.98	4.34	4.60	3.40	3.80	4.22
13	3.49	4.16	3.72	4.28	3.75	2.71	3.93
23	2.37	2.82	2.22	3.16	2.47	2.27	2.69
Average	3.41	3.65	3.43	4.01	3.20	2.93	3.61 8

* Feature groups are arranged and ranked according to respondents' average "ideal" scores for the store features.

** Shaded numbers show significant differences.

Two important points emerge from inspection of Table 3. First, the ordering of the group averages differs from the ideal ranking. Most notably Employees came the closest to meeting the respondents' ideal, followed by Accurate Pricing and Hours. Quality was fourth. The second point is that there appear to be more significant differences among stores. Store 6 seems to be consistently below average and store 2 above. In a few instances, stores 1, 3, 4, and 5 have significant differences, and in each case they are below average. One should bear in mind however, that despite being significantly below, these average scores still suggest the outlets are meeting customer expectations.

Differences Between Actual and Ideal Rankings

The differences between the actual and ideal scores are presented in Table 4. The formula used was $\text{actual} - \text{ideal} = \text{difference}$, therefore a negative number implies there is a gap to fill to reach the respondent's ideal. Differences were calculated for each question for each respondent. They were then averaged by respondent for the six groups with more than one statement to obtain an average group feature difference by respondent. Table 4 reports average group differences across respondents. Shaded numbers indicate significant group differences for a store versus the overall average. Negative differences suggest features for which there is room for improvement. Positive differences indicate the respective feature more than meets patron expectations. It is important to remember that while a store may be below the customers' ideal rating for a feature statement, all the stores in the survey received positive actual ratings for the feature statements. The last column of the table shows the ranking of the group differences.

Table 4 Average Differences

Store* Feature	Statement Number	Stores						All Stores	Group** Rank
		1	2	3	4	5	6		
Quality	18	-0.47	-0.20	-0.43	-0.43	-0.28	-0.72	-0.38	1
Accurate Pricing	7	-0.15	0.03	-0.01	-0.16	0.07	-0.28	-0.07	
	15	-0.71	-0.09	-0.06	-0.17	-0.36	-0.30	-0.21	
	Average	-0.43	-0.03	-0.04	-0.17	-0.15	-0.29	-0.14	2
Employees	3	-0.03	0.08	0.03	-0.14	-0.02	-0.44	-0.05	
	6	-0.03	0.13	0.04	-0.06	0.01	-0.38	-0.01	
	9	0.01	0.04	-0.03	-0.18	-0.05	-0.32	-0.10	
	10	-0.02	0.02	-0.08	-0.35	-0.01	-0.26	-0.12	
	11	0.12	0.20	0.27	0.06	0.17	-0.21	0.13	
	16	0.01	0.04	0.04	-0.06	0.01	-0.28	-0.02	
	17	0.07	0.08	0.04	-0.06	0.06	-0.28	0.00	
	24	-0.02	0.06	-0.05	-0.13	0.10	-0.47	-0.06	
	Average	0.01	0.08	0.03	-0.12	0.03	-0.33	-0.03	4
Hours	12	-0.23	0.02	-0.11	-0.10	0.04	-0.43	-0.09	3
Information	14	-0.46	-0.02	0.08	-0.04	-0.08	-0.09	-0.06	
	20	-0.31	0.08	-0.46	-0.25	-0.15	-0.59	-0.20	
	21	-0.03	0.27	-0.25	-0.13	-0.06	-0.39	-0.06	
	22	-0.04	0.22	-0.09	0.23	0.17	-0.68	0.08	
	Average	-0.21	0.14	-0.18	-0.05	-0.03	-0.44	-0.06	5
Signs	4	0.35	0.36	0.64	0.38	0.58	-0.02	0.39	
	19	-0.33	0.12	-0.10	-0.01	-0.46	-0.46	-0.09	
	Average	0.01	0.24	0.27	0.19	0.06	-0.24	0.15	6
Physical features	1	0.91	0.75	1.03	0.67	1.09	0.30	0.77	
	2	0.08	0.31	0.43	0.07	0.31	-0.17	0.20	
	8	-0.02	0.20	0.12	-0.56	0.13	-0.04	-0.06	
	Average	0.32	0.42	0.53	0.06	0.51	0.05	0.30	7
Other Products	5	1.34	1.57	1.00	1.02	1.43	0.82	1.26	
	13	0.64	1.14	1.05	1.26	1.49	-0.06	1.06	
	23	0.58	0.96	0.52	1.24	1.11	0.43	0.89	
	Average	0.85	1.22	0.86	1.17	1.34	0.40	1.07	8

* Feature groups are arranged according to respondents' "ideal" ranking of the store features.

** Group rankings are based on the difference between respondents' "actual" and "ideal" ranking of the store features.

*** Shaded numbers indicate significant differences

Statement 18, the Quality statement, had the highest negative difference for all stores combined at -.38. This was the largest gap between customer ideal and actual ratings. An implication is that quality is the leading feature of green grocers and operators should make every effort to ensure the best quality that is available to make the gap as small as possible. Accurate Pricing, with less than half the difference of Quality, came closer to meeting patron expectations, but still had a difference of .14. This result suggests care should be taken in pricing produce in terms of signage and accuracy at the cash register. Hours, Employees, and Information average actual ratings were similar to respondent's average ideal values. The positive Other Products difference suggests typical respondents are not looking for milk, eggs, bakery products, or coffee to be sold at green grocers.

Respondents' experiences at stores 2 and 5 met or exceeded their ideal valuations in every feature group. Store 6 for the most part was the opposite of store 2. It had negative differences in every feature group. Stores 1, 3, and 4 had relatively few significant differences, but none that was extreme.

Regression Analysis

Results of an applied regression analysis of the difference between respondents' actual and ideal group feature ratings are presented. The Likert scales used in the ideal and actual rankings have lower (=1) and upper (=5) bounds. That is, some respondents may have wanted to give even lower or higher rankings. Assume the integer responses represent points on continuous rating scales and the distribution of the scales across respondents are normally distributed. Then, the ideal and actual ratings represent double-

censored variables. The difference between actual and ideal is also double-bounded at -4 and 4. Because the difference is a linear combination of the actual and ideal ratings, the difference is also normally distributed. Consequently, double censored tobit models for the feature groups are used (Greene).

Rather than dealing with 24 statement regressions, the analysis focuses on the 8 groups of features. The average difference for each group was modeled as a function of respondents' socioeconomic characteristics and the store at which the person received the questionnaire. Socioeconomic characteristics are included to reflect the possibility that ideal ratings, actual experiences, and the differences are determined by age, gender, education, household status, household size, and income. Table 4 suggests there are differences among stores in terms of features provided at the various outlets, so dummy variables for the stores were used as well.

Double-censored tobit regressions were estimated for each of the groups. This was an exploratory study, and there was no reason to assume a common set of independent variables affected the various feature group differences. Therefore, the eight groups were estimated separately, rather than estimating the relationship for an overall index. In addition, some variables may have a sequential impact while others may have only a significant sub-category (e.g. educational attainment versus the presence/ absence of a particular level of education). The independent variables used in the equations are defined in Table 5.

Education took on values one to four where one equaled some high school and four was a college or technical school graduate. Income took on values one through six,

Table 5 Independent Variable Definitions

Variable	Definition
Education	Highest level of education completed where 1= Some high school, 2= High school graduate, 3= Some college/technical school, and 4= College/technical graduate.
Ed 1	= 1 if Ed=1, 0 = otherwise
Ed 2	= 1 if Ed=2, 0 = otherwise
Ed 3	= 1 if Ed=3, 0 = otherwise
Ed 4	= 1 if Ed=4, 0 = otherwise
Age	Respondent age category where 1= 15-24 years of age, 2= 25-34 years of age, 3= 35-44 years of age, 4= 45-54 years of age, 5= 55-64 years of age, and 6= 65 years of age and older
Age 1	= 1 if Age=1, 0 = otherwise
Age 2	= 1 if Age=2, 0 = otherwise
Age 3	= 1 if Age=3, 0 = otherwise
Age 4	= 1 if Age=4, 0 = otherwise
Age 5	= 1 if Age=5, 0 = otherwise
Age 6	= 1 if Age=6, 0 = otherwise
Status	Household status and marital status where 1= Single adult & dependents, 2= Married & dependents, 3= Single & no dependents, and 4= Married & no dependents
Status 1	= 1 if Status=1, 0 = otherwise
Status 2	= 1 if Status=2, 0 = otherwise
Status 3	= 1 if Status=3, 0 = otherwise
Status 4	= 1 if Status=4, 0 = otherwise
Gender	Gender of respondent where 1= Female, and 0= Male
Size	Number of people living in household (Ranged from 1 to 7 people)
Income	Household before tax income where 1= Less than \$25,000, 2= \$25,000-\$49,999, 3= \$50,000-\$74,999, 4= \$75,000-\$99,999, 5= \$100,000-\$124,000, and 6= \$125,000 or more.
Inc 1	= 1 if Inc=1, 0 = otherwise
Inc 2	= 1 if Inc=2, 0 = otherwise
Inc 3	= 1 if Inc=3, 0 = otherwise
Inc 4	= 1 if Inc=4, 0 = otherwise
Inc 5	= 1 if Inc=5, 0 = otherwise
Inc 6	= 1 if Inc=6, 0 = otherwise
Store1	= 1 if Store=1, 0 = otherwise
Store2	= 1 if Store=2, 0 = otherwise
Store3	= 1 if Store=3, 0 = otherwise
Store4	= 1 if Store=4, 0 = otherwise
Store5	= 1 if Store=5, 0 = otherwise
Store6	= 1 if Store=6, 0 = otherwise

where one equaled \$25,000 or less, and six equaled \$125,000 or more. The other alternative was to have separate dummy variables denoting the presence / absence of each education or income category.

Initial regressions were estimated using dummy variables for stores, age categories, gender, and size. Education and income were initially included, and if their respective coefficients were insignificant, they were replaced with dummy variables for the presence/absence of the categories. Then, as variables with insignificant coefficients were deleted, the log-likelihood values were compared. In addition, the coefficients and standard errors of the remaining variables were compared to those of earlier regressions. The process of identifying the equations reported in Table 6 involved trade-offs among possible omitted variable biases and the inclusion of extraneous variables. The chi-square values refer to the significance of the overall fit of the respective equation.

The R^2 s are low for each of the feature groups, which is typical for cross-section data that measure individual behavior. The computed chi squares for each equation lead to inferences that significant overall fits have been found. The signs of the coefficients reflect the direction of causality. A positive (negative) significant estimate leads to the inference that the presence (versus absence) of the respective independent variable has increased the gap between the actual and ideal feature group ratings. Since none of the independent variables is continuous, no marginal effects are presented.

Quality

Three variables had significant negative effects on the difference between ideal and actual ratings. They are Education, Age 2, and Store 6. As educational attainment

Table 6 Regression Equations

	Quality	Accurate Pricing	Employees	Hours	Information	Signs	Physical features	Other Products
Constant	-0.29	-0.56	-0.16	-0.47	-0.39	-0.38	0.10	0.75
Std. Error	0.14	0.20	0.08	0.22	0.28	0.18	0.22	0.39
Education	-0.06	-0.01	-0.01	-0.04	-0.03	0.07	0.08	
Std. Error	0.03	0.03	0.02	0.04	0.04	0.03	0.03	
Ed 3								0.27
Std. Error								0.14
Ed 4								0.42
Std. Error								0.13
Age		0.01		0.08	0.01		-0.07	-0.12
Std. Error		0.02		0.03	0.03		0.02	0.04
Age 2	-0.22							
Std. Error	0.12							
Age 3						0.23		
Std. Error						0.09		
Status 2		-0.03			-0.21		-0.12	0.24
Std. Error		0.12			0.16		0.13	0.24
Status 3		-0.03			-0.30		0.06	0.11
Std. Error		0.13			0.17		0.14	0.25
Status 4		-0.10			-0.38		0.01	0.34
Std. Error		0.12			0.16		0.12	0.23
Gender	0.12	0.10	0.04	0.08	0.02	0.04	-0.03	-0.02
Std. Error	0.06	0.06	0.04	0.07	0.08	0.07	0.07	0.12
Size	0.01	0.03	0.02	0.05	0.03	0.02	0.09	-0.01
Std. Error	0.03	0.03	0.01	0.03	0.05	0.03	0.04	0.07
Income	-0.02		0.01	-0.02	0.02	-0.28	-0.01	0.01
Std. Error	0.02		0.01	0.02	0.03	0.12	0.02	0.04
Inc 5		0.35						
Std. Error		0.11						
Store 2	0.16	0.32			0.62	0.32		0.34
Std. Error	0.06	0.07			0.10	0.12		0.13
Store 3		0.33			0.44	0.28		
Std. Error		0.08			0.12	0.13		
Store 4		0.23	-0.11		0.47	0.25		0.33
Std. Error		0.07	0.04		0.10	0.12		0.13
Store 5	0.19				0.48	0.19		0.42
Std. Error	0.10				0.13	0.14		0.20
Store 6	-0.35		-0.34	-0.41		-0.29	-0.38	-0.78
Std. Error	0.09		0.05	0.10		0.14	0.09	0.19
Log Likelihood	-884.28	-827.63	-562.18	-990.85	-1051.03	-1019.62	-1032.04	-1246.91
Chi Square	47.07	46.36	47.11	31.33	50.66	48.18	45.11	70.62
McFadden R2	0.03	0.03	0.04	0.02	0.02	0.02	0.02	0.03
Sample Size	784	793	870	782	785	799	864	739

increased, ideal scores increased relative to actual scores. The occurrence of Age 2 and Store 6 increased ideal scores relative to actual scores. Three variables had significant positive effects on the difference between actual and ideal ratings. They are Gender, Store 2, and Store 5. The presence of these variables in the quality equation decreased ideal scores relative to actual scores.

Accurate Pricing

Four variables had significant positive effects on the difference between actual and ideal ratings. They were: Income 5, Store 2, Store 3, and Store 4. The presence of these variables in the equation decreased ideal scores relative to actual scores.

Employees

Two variables had significant negative effects on the difference between actual and ideal ratings. They were Store 4 and Store 6. There were no significant demographic variables in predicting customer satisfaction of employees.

Hours

Store 6 had a significant negative effect on the difference between actual and ideal ratings. Age had a significant positive effect on the difference.

Information

Status 4, married and no dependants, had a significant negative effect on the difference between actual and ideal ratings. Stores two through five all had significant positive effects on the difference.

Signs

Two variables had significant negative effects on the difference between actual and ideal ratings, Income and Store 6. Five variables had significant positive effects on the difference between actual and ideal ratings. Increases in educational attainment, Age 3, Store 2, Store 3, and Store 4 decrease ideal scores in relation to actual scores.

Physical Features

Age and Store 6 had significant negative effects on the difference between actual and ideal scores. Education and size had significant positive effects on the difference between actual and ideal ratings.

Other Products

Age and Store 6 had negative effects on the difference between actual and ideal scores. There were four variables that had a significant positive effect on the difference between actual and ideal ratings. They were Education 4, Store 2, Store 4, and Store 5.

6. Marketing Implications

There are marketing implications that follow directly from the analysis of the survey. These are organized in terms of socioeconomic characteristics, ideal and actual rankings for the feature statements, and estimates of the eight feature statement group equations.

Socioeconomic Characteristics

The typical respondent was similar to the typical fresh produce shopper who is a female over 45 years old, has at least some college experience, and is in an above average income group. Most of these women are married with 2 or less people in the household (American Institute of Food Distribution, Inc). Advertising dollars should be allocated to media that best meets this customer profile, such as local newspapers with circulation in neighborhoods that have such households, and radio and television programming that caters to this type of person

Feature Ratings

Ideal, actual, and difference scores and orderings of the scores provide insight about green grocer store features. Quality, Employees, Accurate Pricing, and Hours have "very important" ideal ratings. Information, Signs, and Physical Features average ideal scores were somewhat less than the first four. An implication of this is that outlets should stay focused on selling produce. A high ideal score for Hours indicates this feature is also very important. Other Products had the lowest ideal average score suggesting that they are shopping green grocers for the produce.

Actual scores suggest that outlets are doing a good job of meeting customer expectations. However, in evaluating difference scores with ideal ratings, there is evidence of opportunities to better meet customer needs. Overall, the six stores came the closest to meeting shopper expectations for Employees, followed closely by Information and Hours. Implications are the outlets are doing well overall in terms of employee interactions with customers, the pricing of products, and hours of operation. Physical Features and the emphasis on produce (as opposed to Other Products) more than met ideal valuations.

The differences are indications of the extent of agreement between ideal and actual average scores. When considered in relation to the ideal average scores, opportunities for enhancing customers' satisfaction are identified. Using this criterion Employees, Hours, and Information have very small average differences, suggesting the outlets are meeting customer expectations. The positive differences for Physical Features and Other Products are indications that the outlets are more than reaching the expectations of the typical patron. The largest gap is with Quality, it has the highest ideal average and the greatest difference. This implies that green grocers need to always be working with their supplies to try to ensure that only the best quality produce is sold. In addition, controls should be in place to monitor displays and remove damaged items. Finally, information should be made available to customers about good ways to get the produce home (especially in hot cars) and how to store the commodities, once they get home.

Regression Analysis

The regression results also generated marketing implications. Relatively few of the socioeconomic variables had significant coefficients in the feature group equations. This is consistent with the sample being fairly homogeneous across stores and with respondents having similar valuations of features. In addition, in those instances where a socioeconomic variable was significant in more than one group, the sign of the coefficient was not consistent; suggesting the respective measure sometimes increased the difference rating and sometimes decreased it.

Stores, on the other hand, did have relatively more significant coefficients. Store 6 had negative coefficients in six instances, suggesting this outlet was not doing as well on the features. The outlet may want to improve quality, work on employee interactions with customers, possibly altering hours somewhat, improving signs and physical features, and perhaps make some improvements to the facility. In all other instances but one (Store 4 Hours is the exception), the stores had positive coefficients, suggesting they were doing better in meeting customers' ideal valuations of features.

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Appendices

Appendix A: Questionnaire

The same survey instrument was distributed to shoppers in each of the six Green Grocer outlets.

Customer Survey

We are conducting a study to identify ways to help green grocers improve their marketing of produce to customers. Please take a few minutes to answer some questions about green grocers in general and your opinion about the **green grocer name**. In answering the questions, there are no right or wrong answers. You do not have to answer every question, but we would like you to answer as many as you can. Your answers will be combined with those of other shoppers, so your responses will be anonymous. When completed, please put it in the postage paid envelope and mail it back to us.

Please show the extent to which you think green grocers should possess the features described below. Responses on the left are for your expectations about your ideal green grocer, and responses on the right are for your experience at the **green grocer name** where you received this survey.

My IDEAL green grocer					Feature Statements	Green Grocer Meets MyIdeal				
Not important to me		Very important to me				Not very well		Very well		
1	2	3	4	5	1. has modern-looking facilities (buildings, displays, etc.)	1	2	3	4	5
1	2	3	4	5	2. is visually appealing	1	2	3	4	5
1	2	3	4	5	3. has employees who are courteous	1	2	3	4	5
1	2	3	4	5	4. has visually appealing signs and posters	1	2	3	4	5
1	2	3	4	5	5. also stocks milk and eggs	1	2	3	4	5
1	2	3	4	5	6. shows sincere interest in answering customer questions	1	2	3	4	5
1	2	3	4	5	7. insists on error-free pricing, customer bills, and orders	1	2	3	4	5
1	2	3	4	5	8. has aisles that are easy to walk through	1	2	3	4	5
1	2	3	4	5	9. has employees who are willing to help customers	1	2	3	4	5
1	2	3	4	5	10. has employees who have the knowledge to answer customer questions	1	2	3	4	5
1	2	3	4	5	11. gives customers individual attention	1	2	3	4	5
1	2	3	4	5	12. has convenient operating hours	1	2	3	4	5
1	2	3	4	5	13. also stocks homemade bakery products	1	2	3	4	5

1	2	3	4	5	14. clearly labels the names of all the items for sale	1	2	3	4	5
1	2	3	4	5	15. clearly marks the prices of items	1	2	3	4	5
1	2	3	4	5	16. employees give prompt service to customers	1	2	3	4	5
1	2	3	4	5	17. employees are able to handle customers complaints directly and quickly	1	2	3	4	5
1	2	3	4	5	18. sells only the best available fresh produce	1	2	3	4	5
1	2	3	4	5	19. clearly labels locally grown produce	1	2	3	4	5
1	2	3	4	5	20. provides expected dates for availability of locally grown produce	1	2	3	4	5
1	2	3	4	5	21. has advertisements, signs, and posters that provide useful information about produce	1	2	3	4	5
1	2	3	4	5	22. has roadside sign that tells what locally produced foods are currently available	1	2	3	4	5
1	2	3	4	5	23. also stocks specialty coffees	1	2	3	4	5
1	2	3	4	5	24. when a customer has a problem, the store shows a sincere interest in solving it	1	2	3	4	5

Listed below are six features of green grocers. We would like to know how important each is to you when you evaluate a green grocer. Please allocate a total of 100 points among the features according to how important each is to you – the more important, the more points given. Please be sure your points add up to 100.

1. Appearance of buildings, parking lot, displays. _____ Points
2. Appearance of signs and printed materials. _____ Points
3. Willingness to help customers & provide prompt service. _____ Points
4. Knowledge and courtesy of personnel. _____ Points
5. Quick, accurate checkout _____ Points
6. Store is easy to walk through _____ Points

Total = 100

Listed below are five features of fresh produce. We would like to know how important each is to you when you evaluate a green grocer. Please allocate a total of 100 points among the features according to how important each is to you – the more important, the more points given. Please be sure your points add up to 100.

1. Availability of locally grown produce. _____ Points
2. Quality of produce. _____ Points
3. Price of produce. _____ Points
4. Labeling of locally grown produce. _____ Points
5. Assortment of produce. _____ Points

Total = 100

Listed below are six other product categories often found at green grocers. We would like to know how important each is to you when you consider shopping at a green grocer. Please allocate a total of 100 points among the features according to how important each is to you – the more important, the more points given. Please be sure your points add up to 100.

- | | |
|---------------------------------|--------------|
| 1. Plants and nursery products. | _____ Points |
| 2. Homemade bakery products. | _____ Points |
| 3. Milk and eggs. | _____ Points |
| 4. Locally produced foods. | _____ Points |
| 5. Snack foods. | _____ Points |
| 6. Specialty coffees. | _____ Points |
| Total = 100 | |

Please answer the following questions about yourself/household.

1. What is your age category? (Please check one)
 _____ 15-24 _____ 25-34 _____ 35-44 _____ 45-54 _____ 55-64 _____ 65+
2. Are you _____ Female or _____ Male?
3. What is the highest level of education completed? (Please check one)
 _____ Some high school _____ High school grad
 _____ Some college/technical school _____ College/technical school grad
4. What is your household status? (Please check one)
 _____ Single adult & dependents _____ Married & dependents
 _____ Single & no dependents _____ Married & no dependents
5. How many people live in your household? _____ people
6. Which category best represents your 1999 household before tax income? (Please check one)
 _____ less than \$25,000 _____ \$25,000 - \$49,999 _____ \$50,000 - \$74,999
 _____ \$75,000 - \$99,999 _____ \$100,000 - \$124,999 _____ \$125,000+
7. What is your home ZIP code? _____

Appendix B:

Demographic Summaries of Green Grocer Shoppers.

Appendix Table 1

Respondent Characteristics by Green Grocer Outlet

Characteristic	1	2	3	Stores* 4	5	6	All Stores
Age							
15 to 24	2.04%	1.23%	0.61%	0.69%	2.15%	1.85%	1.21%
25 to 34	3.06%	3.68%	7.98%	4.86%	8.60%	5.56%	5.20%
35 to 44	15.31%	8.90%	14.11%	14.58%	20.43%	20.37%	13.94%
45 to 54	21.43%	21.17%	20.25%	24.31%	36.56%	24.07%	23.51%
55 to 64	28.57%	29.75%	19.02%	21.18%	16.13%	19.44%	23.51%
65 & up	29.59%	35.28%	38.04%	34.38%	16.13%	28.70%	32.62%
Gender							
Female	81.44%	70.55%	78.05%	82.87%	77.17%	85.85%	78.06%
Male	18.56%	29.45%	21.95%	17.13%	22.83%	14.15%	21.94%
Education							
Some H.S.	4.17%	6.33%	1.23%	7.04%	5.38%	3.85%	5.21%
H.S. Grad	33.33%	30.06%	9.82%	18.66%	25.81%	29.81%	23.77%
Some College	18.75%	22.15%	18.40%	24.65%	19.35%	25.00%	21.97%
College Grad	43.75%	41.46%	70.55%	49.65%	49.46%	41.35%	49.05%
Household Status							
Single & Dependents	0.00%	3.40%	5.52%	5.99%	4.35%	15.83%	5.37%
Married & Dependents	33.33%	28.40%	23.93%	31.34%	47.83%	31.07%	30.89%
Single No Dependents	12.50%	15.74%	26.99%	14.79%	6.52%	17.48%	16.29%
Married No Dependents	54.17%	52.47%	43.56%	47.89%	41.30%	35.92%	47.46%
Household Size							
1 Person	9.38%	16.77%	23.93%	13.31%	5.49%	22.33%	15.86%
2 People	55.21%	58.07%	49.69%	57.19%	42.86%	45.63%	53.75%
3 People	27.08%	12.11%	12.88%	14.39%	19.78%	15.53%	15.19%
4 People	4.17%	9.32%	9.82%	11.87%	19.78%	9.71%	10.54%
5 People	3.13%	2.48%	3.07%	2.88%	10.99%	5.83%	3.80%
6 People	1.04%	0.62%	0.00%	0.36%	1.10%	0.97%	0.57%
7 or more	0.00%	0.62%	0.61%	0.00%	0.00%	0.00%	0.28%
Household Income							
<\$25,000	20.00%	12.50%	14.08%	13.47%	12.82%	22.22%	14.66%
\$25,000 to \$49,999	32.50%	38.97%	31.69%	35.92%	28.21%	34.44%	35.06%
\$50,000 to \$74,999	20.00%	24.26%	24.65%	28.16%	30.77%	25.56%	25.69%
\$75,000 to \$99,999	12.50%	10.29%	11.97%	9.80%	17.95%	8.89%	11.14%
\$100,000 to \$124,999	7.50%	4.78%	6.34%	6.53%	3.85%	3.33%	5.51%
\$125,000 +	7.50%	9.19%	1.13%	6.12%	6.41%	5.56%	7.94%

Based on data collected from survey

* Highlighted percentages represent significant differences (.05 level) from all store averages

Vita

James Douglas Smith was born in Knoxville, Tennessee. He attended Bearden High School, graduating in 1993 with honors. He received his B.S. in Animal Science from the University of Tennessee Knoxville in 1998. He will receive his M.S. in August of 2001. After finishing his M.S. in Agricultural Economics he plans to work in the private agribusiness sector.

He was married to the former Ellen Joy Winter in June of 1997, and was blessed with a daughter, Meghan Elizabeth Smith, in October of 2000.

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