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Purchasing Locally Produced Fresh Vegetables: National Franchise vs. Locally Owned and Operated Restaurants

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Abstract

The objective of this study is to examine purchasing practices of restaurants and food service institutions in relation to locally produced fresh vegetables. The sample for the study included managers of seventy-five restaurants and dining centers out of a total of nearly 600 food service outlets in a mid-size metropolitan city in Midwest region of the United States with a population of about 400,000. The study findings showed differences between national/regional chains and the local independently owned restaurants. Although managers across the board expressed willingness to buy local, actual purchasing decisions were largely driven by freshness, quality and availability. Price was not as critical a factor as others including variety and selection. The results suggested that local vegetable producers should use regularity, quality, and freshness to differentiate themselves. As a producer of small volume of fresh vegetables, local farmers have much higher probability of success if they supply to locally and independently owned restaurants. These restaurants use small volume of vegetables in broader variety.

Keywords: locally produced, chain restaurants, locally owned restaurants

Introduction

The fresh produce market in the United States, particularly fresh vegetables, has been experiencing significant changes, driven primarily by consumer demand and the availability of the products. Consumption of fresh fruits and vegetables (F&V) grew by 26.4% from 1970 to 2012. More importantly, the share of fresh F&V was 50% of total fruits and vegetable consumption in 2012, up from 45% in 1970. The national per capita disappearance/consumption of fresh vegetables, excluding potatoes, grew by 69% from 1970 to 2012, reaching 156 lbs. in 2012. According to Cook (2011), fresh produce consumption was positively correlated with income and education levels of the households. More variety of fresh vegetable items and increased share of branded items are some of other factors behind the increasing trend in the fresh vegetable consumption (Govindasamy and Thornbury 2006.) Per household expenditures on fresh vegetables in 2014 were more than 24% higher than that in 2005. The estimated per household expenditure on fresh vegetables bought at grocery stores in 2014 was $240 (Bureau of Labor 2015).

The retail side of fresh produce market including fresh vegetables is dominated by general line grocery stores including supermarkets such as Wal-Mart, Price Cutter, and Dillon's, and other independently owned stores. According to Cook (2012), the supermarkets and other retailers sold fresh fruits and vegetables worth $69.2 billion dollars in 2010. The other significant retail sector includes food service sector comprising local and national chain restaurants, independent restaurants, dining halls at educational institutions and hospitals contributing more than $50 billion in produce sale in 2010 (Cook 2012). Farmers' markets and other direct sales accounted for a very small portion of the total fresh vegetables sold estimated at less than $2 billion in 2010. Local production of fresh fruits and vegetables marketed directly to the grocery stores and food service sector is a recently emerging phenomenon.

By eliminating the middleman, the goal of the direct marketing is to increase farmers' share in consumers' dollar. Value of locally produced food sold through both direct-to-consumers (DTC) including farmers market and intermediated channels has been growing in recent years. In 2012, local food sales totaled more than $6 billion (Low et al. 2015). Nationwide nearly 8% of the farms marketed foods locally with 70% of them used only DTC including farmers markets and community supported agriculture (CSA). More than 80% of farms marketing locally had gross cash income of less than $75,000 annually. Smaller farms are more likely to target local buyers including independent restaurants compared to large commercial farms. According to the USDA 2007 Census of Agriculture, farms using direct marketing increased by 17% compared to 2002 census (over 136,000 farms utilized the marketing strategy), and direct marketing sales value increased by almost 32%. Although the change between 2007 and 2012 census was not as robust, the number of farms using direct marketing still grew by 5.5%. A number of factors on the demand side have caused the buyers to source locally produced food either directly from farmers or through intermediaries.

The influence of current food shopping trends—local food, support for local farmers and agribusinesses, and fresh quality produce and meat—are considered to be behind the strong surge of farmers who utilize direct marketing. (LeRoux et al. 2009; Mark et al. 2009) In addition to farmers markets, road-side markets and u-pick markets, producers have found direct sales to the local restaurants, food service institutions, and schools profitable marketing strategies (USDA

2001). In various studies, buyers of fresh fruits and vegetables at restaurants and food service institutions have reported a favorable attitude toward local production (Strohbehn and Gregoire 2003; Cottingham et al. 2000). However, quality, price, and services are primary consideration in seeking local food suppliers (Bergstrom et al. 2005).

While examining the perceived attitude of food service directors in Midwest schools, Strohbehn and Gregoire (2003) have reported several perceived benefits to purchasing locally including ability to purchase smaller quantities and fresher food, support to local economy, and good public relation. Similarly, the reported barriers to local purchases were lack of year round supply, inadequate quantity, and inconsistent quality (Strohbehn and Gregoire 2003; Cottingham et al. 2000). Perceived benefits and obstacles to buying locally produced food, however, are likely to vary across types of food service institutions. There are many sub-sectors within the broad sector of hotel, restaurant and institutional (HRI) market, including fast food to fine dining restaurants, health care, schools, and business. Vendor selection decisions vary across these sub-sectors depending on ownership type, menu, capacity of the restaurant, and compliance with Federal and State agencies. For example, locally owned and operated restaurants may have a different set of purchase practices and programs regarding locally produced food compared to a restaurant owned and operated under national franchise.

Objectives

The objective of this study was to examine purchasing practices of restaurants and food service institutions in relation to locally produced fresh vegetables. A comparative analysis was conducted to highlight key differences between these two types of restaurants. The study examined 1) factors affecting the purchase decisions of locally grown fresh vegetables; 2) willingness to buy locally grown produce; 3) key attributes desired while supplying locally grown produce to these restaurants; and 4) perceived attitude of buyers toward locally produced food. The study was sponsored by Missouri Department of Natural Resources (MDNR) to support Renewable Energy-Sustainable Food Feasibility Project.

Method

A survey was conducted among the managers of restaurants and dining centers. Samples were drawn from restaurants and dining centers belonging to national or regional chains, and the locally and independent owned. The sample for the study included managers of seventy-five restaurants and dining centers out of a total of nearly 600 food service outlets in a mid-size metropolitan city in Midwest with a population of about 400,000. The questionnaire consisted of five sections: 1) Characteristics of food service facilities including ownership (independent locally owned and operated vs. national franchise); capacity in terms of seats and customer served, 2) usage of fresh vegetables, sources of supply and prices paid, 3) existing practices of purchasing locally produced fresh vegetables, 4) attributes desired while selecting vendors to supply locally produced food, and 5) perception and attitude of restaurant managers toward locally produced food. Samples were drawn from a large metro area in Midwest with a population of more than 400,000 covering five counties. Restaurants and dining centers within the metropolitan were divided into chain and independent restaurants. Initial list of the restaurants were obtained from the Missouri Restaurant Association. The list was augmented

with the information from listings in local yellow pages. A random sample of 100 independent restaurants and 100 chain restaurants were contacted by telephone and requested for a personal interview.

Results

Out of the 200 initial restaurants contacted, we obtained a total of seventy-five completed surveys by managers at restaurants and dining facilities. Completed surveys included forty-seven from independent and locally owned restaurants, and twenty-eight from national franchises or chain restaurants. The self reported categories of the surveyed restaurants included fast food and carryout (21); casual dining (43); fine dining (10) and ethnic restaurants (10). Other self reported categories were Italian, bar and grill, pizza, etc.

The capacity of the surveyed restaurants in terms of number of seats and customers served per week varied across two types of restaurants. Fifty two percent of the chain restaurants had more than 200 seats while only 22% of the independently owned restaurants had more than 200 seats. The average overall capacity was 100 to 150 seats (Table 1). Similarly, 69% of the chain restaurants served more than 2000 customers per week compared to only 31% for independent locally owned restaurants. Overall, only 37% of the restaurants served more than 2000 customers per week. The average meal served per week was 2792 (Table 1).

Table 1. Descriptive statistics of variables used in the logit model

Variable	Description of Variable	Mean	Std. Dev
BUY_LOCAL	1= buys fresh vegetables produced locally; 0 = otherwise	0.243	0.432
Explanatory Variables:			
RES_TYPE	1= Chain Restaurants (part of the national or regional chain); 0 = otherwise (independently and locally owned)	0.637	0.487
RES_LOC*	1 = located downtown ; 0 = otherwise	0.284	0.454
SEATS*	Number of seats(capacity measure)	183	259
MEALS	Number of meals served per week (capacity measure)	2892	5646
FRES_VEG	Fresh vegetables as percent of total vegetables	74.479	30.756
FREQ_VEG	Varieties of vegetables used	6.466	2.506

Note. Asterisk implies that the variable was dropped during estimation to avoid multicollinearity

Fresh vegetables accounted for more than 80% of the total vegetable usage for about 60% of the restaurants. This percentage was higher for independent locally owned restaurants (54%) than that for chain restaurants (46%). While the basic salad mix with iceberg lettuce, tomatoes, onion, romaine lettuce and cabbage were leading fresh vegetables in terms of the average use per week, tomatoes, bell peppers, romaine lettuce, and cucumbers were leaders in terms of number of restaurants using them at least once a week. There was a significant difference between chain and independent restaurants in terms of variety of vegetables used. The chain restaurants were more likely to use few vegetables in larger quantity such as lettuce, tomatoes, and basic salad mix. The independent and locally owned restaurants used a wider variety of vegetables. Nearly

65% of the restaurants did not use any organic fresh vegetable and only 7% used organic vegetables to meet more than 75% of their fresh vegetables requirements.

None of the chain restaurants used farmers markets and local grocery stores as suppliers of their fresh vegetables compared to independent and locally owned restaurants who reported to have used farmers markets and local grocery stores for twenty-eight and twenty-six different items of fresh vegetables, respectively. Nearly 100% of the chain restaurants were supplied fresh vegetables by distributors such as Sysco compared to 75% of independent restaurants. Further, only a quarter of the restaurants reported to have bought fresh vegetables locally. Only 4% of the chain restaurants bought fresh vegetables locally that did not include farmers market and local grocery stores while 37% of independent restaurants bought locally.

Predicted probability of purchasing locally produced fresh vegetables: A logit model (Long 1997; Green 1995) was used to estimate the probability of restaurants purchasing locally produced fresh vegetables. The model is defined as

$$(1)\quad \mathbf{Y}^*_i = \boldsymbol{\beta}'\mathbf{X}_i + \boldsymbol{\alpha}_i$$

Values for $\mathbf{Y}^*$ are 0 and 1. Value of 0 indicates that the surveyed restaurants do not purchase locally produced fresh vegetables and 1 indicates otherwise. The parameters for the model were estimated using maximum likelihood estimation via LIMDEP 8.0 (Greene 2002). The descriptive statistics of variables used in the models including the mean and standard deviation are shown in Table 1.

The explanatory variables included type of the restaurants surveyed (*RES_TYPE*), location of the restaurants (*RES_LOC*), capacity of restaurants in terms of seats (*SEATS*), and meals served per week (*MEALS*), fresh vegetables as a percentage of total vegetables used in the restaurants (*FRESH_VEG*), and variety of fresh vegetables used (*FREQ_VEG*).

Estimated coefficients are reported in Table 2. The overall significance level of the model was 99% with a chi-square value of 23.36. The predictability of the model was at approximately 80% and with McFadden R squared value of 27%. Also, two independent variables were individually significant at 95% or more. National or regional chain restaurants were less likely to buy locally produced fresh vegetables compared to independently and locally owned restaurants (β=-3.009; p-value = 0.0065). The higher the proportion of the fresh vegetables in the total vegetable usage in a restaurant higher was the probably of buying locally (β=0.0271; p-value=0.0461). Number of meals did not show any statistically significant effect on the decision to buy local. The likely effect may already have been absorbed by the variable representing restaurant type. Type of restaurants and number of meals per week are likely to be correlated. Often national and regional chains serve larger number of meals per week compared to local and independently owned restaurants.

Table 2. Logit Model Estimation: probability of buying locally produced fresh vegetables

Variables	Coefficient	t-ratio
Constant	-5.6465	-3.511
RES_TYPE*	-3.0087	-2.723
RES_LOC	0.9342	1.306
MEALS	0.0011	0.792
FRES_VEG*	0.0271	1.994
FREQ_VEG	-0.0373	-1.259
Log Likelihood Function	-30.763	
Restricted Log Likelihood	-42.448	
Chi Squared*	23.36	
McFadden's R^2	0.27	
Percent of correct Prediction	78.667%	

Note. *Indicates significant at less than 5%

Important attributes desired while purchasing fresh vegetables: Restaurant managers were asked to evaluate five important attributes in making fresh vegetable purchase decisions including availability in season; selection and variety; freshness; quality; and price. They responded by selecting one of the three different levels of importance: very, somewhat, and not important (Table 3). Freshness and quality were more important attributes for both chain and independent restaurants compared to variety and price. While nearly 70% of chain restaurant managers reported price to be "very important", only 56% of the independent and local restaurants reported so. No statistically significant differences were observed between chain and local restaurants, except for selection of menu items and variety of fresh vegetables used in making dishes. This may be related to menu diversity, as local restaurants have more menu variety whereas national chains have more fixed menus. Although the study did not examine menu variety specifically, number of meals served can be used as a proxy to address this aspect. The average chain restaurant in the study served more meals per day than an independent restaurant, hence less variety to achieve cost efficiency through economy of scale.

Willing to buy fresh vegetables produced locally: Managers of the sample restaurants were asked whether they were "more willing," "indifferent," "less willing," or "unsure" about buying locally produced fresh vegetables. Although no statistically significant differences are observed between chain and local restaurants, a little more than half of the restaurants were "more willing" to buy fresh vegetables sold in local farmers markets or grown in local farms or greenhouse (Table 4). This percentage was higher for independent restaurants than for chain restaurants. More than half of the independent restaurants were "more willing" to buy organically grown fresh vegetables, while more than half of the chain restaurants were either indifferent or less willing. The difference between chain and independent restaurants was even more apparent when the respondents were asked about buying fresh vegetables grown using sustainable practices.

Centralized buying practices at chain restaurants where managers at the individual restaurant level have very limited say in purchase decisions may explain such disparity.

Table 3. Important consideration while making fresh vegetable purchase decisions as reported by restaurant managers

	Not Important	Somewhat Important	Very Important	Total
1) Availability in the season (chi-square: 1.84)				
Chain restaurant	6 (23.10%)	7 (26.90%)	13 (50.00%)	26 (100%)
Independent locally owned restaurant	5 (11.10%)	13 (28.90%)	27 (60.00%)	45 (100%)
2) Selection or variety (chi-square: 7.41)**				
Chain restaurant	5 (19.20%)	12 (46.20%)	9 (34.60%)	26 (100%)
Independent locally owned restaurant	2 (4.40%)	14 (31.10%)	29 (64.40%)	45 (100%)
3) Freshness (ripeness/maturity) (chisquare:0.24)				
Chain restaurant	0.00 (0.00%)	1 (3.80%)	25 (96.20%)	26 (100%)
Independent locally owned restaurant	0 (0.00%)	3 (6.70%)	42 (93.30%)	45 (100%)
4) Quality (Chi-square:2.31)				
Chain restaurant	0 (0.00%)	1 (3.80%)	25 (96.20%)	26 (100%)
Independent locally owned restaurant	1 (2.20%)	0 (0.00%)	44 (97.80%)	45 (100%)
5) Price per relative unit (Chi-square:1.65)				
Chain restaurant	0 (0.00%)	8 (30.80%)	18 (69.20%)	26 (100%)
Independent locally owned restaurant	1 (2.20%)	19 (42.20%)	25 (55.60%)	45 (100%)

Note. **Significant at less than 5%

Table 4. Restaurant managers' willingness to buy locally produced fresh vegetables and those produced using organic and sustainable practices

	Unsure	Less willing	Indifferent	More willing	Total
1) Sold in local farmers market (Chi-square: 5.12)					
Chain restaurant	4	1	11	10	26
	15.40%	3.80%	42.30%	38.50%	100%
Independent locally owned restaurant	6	3	8	28	45
	13.30%	6.70%	17.80%	62.20%	100%
2) Grown on local farms or greenhouse (Chi-square: 5.81)					
Chain restaurant	4	2	10	10	26
	15.40%	7.70%	38.50%	38.50%	100%
Independent locally owned restaurant	2	5	10	28	45
	4.40%	11.10%	22.20%	62.20%	100%
3) Organically grown (Chi-square: 3.01)					
Chain restaurant	4	2	11	9	26
	15.40%	7.70%	42.30%	34.60%	100%
Independent locally owned restaurant	3	2	17	23	45
	6.70%	4.40%	37.80%	51.10%	100%
4) Grown using sustainable practices (Chi-square: 1.99)					
Chain restaurant	5	2	9	10	26
	19.20%	7.70%	34.60%	38.50%	100%
Independent locally owned restaurant	4	3	15	23	45
	8.90%	6.70%	33.30%	51.10%	100%

Attitude toward locally produced fresh vegetables: Restaurant managers' attitude toward local purchase is likely to be influenced by their perception of locally grown fresh vegetables such as taste, safety, environmental impact, and promotion of local economy and local farmers (Table 5). Managers were asked as to how they perceived various aspects of locally produced fresh vegetables including taste, impact on the environment and contribution to local economy using a five-scale measurement of attitude. Independent and locally owned restaurants were more likely to "agree" or "strongly agree" than the managers of chain restaurants that locally grown fresh vegetables were generally taste better and safe to eat. The differences were statistically different at 10%. Additionally, managers of independent restaurants tended to "agree" or "strongly agree" that locally produced fresh vegetables were favorable to environment and local economy.

Table 5. Restaurant managers' attitude toward locally produced fresh vegetables

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
1) Locally grown fresh vegetables taste better (Chi-square:7.69*)						
Chain restaurant	3 11.50%	2 7.70%	11 42.30%	9 34.60%	1 3.80%	26 100%
Independent locally owned restaurant	7 15.90%	5 11.40%	8 18.20%	14 31.80%	10 22.70%	44 100%
2) They are safe to eat (Chi-square:7.26)						
Chain restaurant	4 15.40%	2 7.70%	10 38.50%	10 38.50%	0 0.00%	26 100%
Independent locally owned restaurant	6 13.60%	7 15.90%	12 27.30%	11 25.00%	8 18.20%	44 100%
3) They reduce carbon foot print (Chi-square:2.80)						
Chain restaurant	4 15.40%	3 11.50%	9 34.60%	9 34.60%	1 3.80%	26 100%
Independent locally owned restaurant	5 11.40%	8 18.20%	14 31.80%	11 25.00%	6 13.60%	44 100%
4) They help sustain the environment (Chi-square:2.05)						
Chain restaurant	5 19.20%	3 11.50%	6 23.10%	9 34.60%	3 11.50%	26 100%
Independent locally owned restaurant	4 9.10%	8 18.20%	11 25.00%	14 31.80%	7 15.90%	44 100%
5) They promote local farmers (Chi-square:5.09)						
Chain restaurant	9 34.60%	2 7.70%	1 3.80%	5 19.20%	9 34.60%	26 100%
Independent locally owned restaurant	14 31.80%	4 9.10%	0 0.00%	3 6.80%	23 52.30%	44 100%
6) They promote local economy (Chi-square: 2.99)						
Chain restaurants	9 34.60%	2 7.70%	1 3.80%	6 23.10%	8 30.80%	26 100%
Independent locally owned restaurants	15 34.10%	2 4.50%	1 2.30%	5 11.40%	21 47.70%	44 100%

Note. *Significant at 10%

Conclusions and Implications

The study findings show differential preferences between national/regional chains and the local independently owned restaurants for the locally produced fresh vegetables. Although managers across the board expressed willingness to buy local, actual purchasing decisions were largely driven by freshness, quality and availability. Price was not as critical a factor as others including

variety and selection. In addition to factors considered in this study, the lower demand for local fresh vegetables among national and regional chain restaurants compared to local and independent restaurants could also be attributed to more stringent food safety requirements and higher level of perceived barriers including lack of consistent supply and "not knowing" where to source from. Policies and programs addressing perceived barriers should be put in place to enhance participation of chain restaurants in the locally produced market.

The results suggest that local vegetable producers should use regularity, quality, and freshness to differentiate themselves. Regularity of supply would require investment in season extending technology including high tunnel and greenhouse. As a producer of small volume of fresh vegetables local farmers have much higher probability of success if they supply to locally and independently owned restaurants. These restaurants use small volume of vegetables in broader variety. Additionally, small variety growers may need to recast their business models as the industry seem to be moving towards fewer vegetables delivered round the year.

References

Andreatta, S. and W. Wickliffe. 2002. Managing Farmer and Consumer Expectations: Study of North Carolina Farmers Market. *Human Organization* 61(2): 167-176.

Bergstrom, K., C. Soler, and H. Shanahan. 2005. Professional food purchasers' practice in using environmental information. *British Food Journal* 107(5): 306-319.

Brown, A. 2002. Farmers' Market Research 1940-2000: "An Inventory and Review." *American Journal of Alternative Agriculture.* [accessed through interlibrary loan from Truman State University].

Bureau of Labor Statistics. 2015. Consumer Expenditure Survey. http://www.bls.gov/cex/

Cook R. 2011. "Tracking Demographics and U.S. Fruit and Vegetable Consumption Patterns." Department of Agriculture and Resource Economics. University of California, Davis.

Cook, R. 2012. "Trends in the Marketing of Fresh Produce and Fresh-cut Products. Department of Agriculure and Resource Economics." University of California, Davis.

Cottingham, J., J. Hovland, J. Lenon, T. Roper, and C. Techtmann. 2000. "Direct marketing of farm produce and home goods." Madison, WI University of Wisconsin Cooperative Extension Service, A3602.

Greene, W. 2002. "Limdep version 8. Econometric Software, Inc." Plainview, New York.

LeRoux, M., T. Schmit, M. Roth, and D. Streeter. 2009. Evaluating Marketing Channel Options for Small-Scale Fruit and Vegetable Producers. Working Paper, Department of Applied Economics and Management, Cornell University, Ithaca, New York. April.

Low, S., A. Adalja, E. Beaulieu, N. Key, S. Martinez, A. Melton, A. Perez, K. Ralston, H. Stewart, S. Suttles, S. Vogel, and B. B.R. Jablonski. 2015.*Trends in U.S. Local and Regional Food Systems*, U.S. Department of Agriculture, Economic Research Service, Washington, D.C. AP-068. January. http://www.ers.usda.gov/media/1763057/ap068.pdf.

Mark, T., A. Adhikari, J. Detre, and A. Mishra. 2009. Linkage between Direct Marketing and Farm Income: A Double-Hurdle Approach. Presentation at the American Agricultural Economics Association Meeting in Milwaukee, WI. July.

Strohbehn, C. and Gregoire, M. B. 2003. Case Studies of Local Food Purchasing by Central Iowa Restaurants and Institutions. *Journal of Food Science* 14(1): 53–64.