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Farm Income and Food Hub Participation: Farmer Attributes, Attitudes and Perceptions

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Abstract

This study evaluated the relationship between gross farm income and producers' willingness to participate in a food hub. The preliminary findings of the study suggested that farm size based on gross farm income did not significantly affect farmers' willingness and ability to be part of a local food hub. Irrespective of the farm income, connecting to local buyers was the main function of the hub desired by the producers. More than 60% of the producers expected to achieve broader market reach through the food hub.

Keywords: food hub, willingness to participate, farmers' attitude

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Introduction

A strong community-based food system combines local production, processing, distribution and consumption to improve environmental, economic, social and nutritional conditions within a region(Garrett and Feenstra 1999). In recent years, there have been many public and private efforts in supporting such food systems. Food hubs are important part of those systems benefitting large and small producers, buyers, consumers, and food system initiatives including farm to school programs.

Food hubs provide opportunities for increased income to small farmers and ranchers through wider access to retail, food service and institutional markets. Many small farms rely on direct marketing channels, and are too small to compete effectively on the wholesale market. Farmers have been turning to food hubs in recent years in part to meet consumer demand for local food while saving on transportation and marketing costs (Low et al. 2015). United States Department of Agriculture (USDA) supports the development of food hubs as a critical strategy to encourage smaller farmers to scale up their operations; to develop local and regional food systems as a means of enhancing local economic development, and to improve access to fresh food in local communities. The earnings of local farmers, ranchers and other participants in the hub are more likely to be spent within their own communities, which has the potential of improving the overall economy of a region.

Objectives of the Study

This study evaluated the relationship between gross farm income and producers' willingness to participate in a food hub. It is believed that willingness is comprised of a mix of both farm/farmer attributes and the farmer's perception of the benefits of a food hub. Among the other variables that were expected to play a role in food hub participation were previous adaptation of new technology including marketing programs, level of risk acceptance, use of extension services, adoption of sustainable practices, farmer age, farm income, number of years farming, and whether a farmer believed that by participating in a food hub, he or she would reach new customers, increase business income or create more opportunity to focus on farming.

Data and Method

The study surveyed farmers from a nine county region in south central Missouri. The surveys were distributed as part of a feasibility study, supported by a research grant from the USDA Rural Development office in Missouri, meant to gauge capacity and interest in a food hub drawing from farms in the area. The questionnaires included sections intended to generate information about both farm/farmer attributes, such as number of acres farmed and years of farming experience, and farmer attitudes towards potential benefits of food hub participation. Those benefits included increased access to new customers and the ability to spend more time on the farm and less time marketing.

A total of eleven variables representing farm attributes and socio-demographics of farmers were determined to impact producers' decision to sell to a food hub and/or adjust supply to accommodate the hub's needs. (Table 1).

Table 1. Descriptive Statistics of variables included in the regression models.

Variable	Description of Variable	Mean	Std. Dev.
Dependent			
WTP_HUB	1="Likely" or "Very Likely" to Participate; 0=Not willing	0.62	0.49
WTA_Supply	1=Willing to add products, grow specific products, or expand production; 0=Not willing	0.76	0.43
Explanatory Farm Attributes			
PH_ONSITE	Composite variable summing six postharvest activities: sorting, cooling, packing, washing, grading and labeling	1.89	2.15
CERTIFICATIONS	Composite variable comprised of five certifications: GHP, GAP, Certified Humane, Animal Welfare Approved, USDA Certified Organic	4.55	3.81
CROPS_SU	Composite variable comprised of five activities related to crop production: cover crops, IPM, extended growing season, diversified crops, no till	7.59	4.53
NC_ORG	Composite variable comprised of avoidance of synthetic fertilizers and non-certified, but practicing organic	3.50	2.23
EXTENSION	Scored frequency of extension services use	2.24	1.84
TRADITIONAL	Composite variable comprised of five marketing practices: direct to consumer (u-pick, roadside shops, etc.), farmers market, restaurant, grocery, institutions	1.38	1.38
WHOLESALE	Composite variable comprised of three marketing venues: contract marketing, distributors/wholesales, cooperatives	0.29	0.59
NEW_MARKETING	Composite variable comprised of two marketing venues: CSA and internet sales	0.44	0.68
Attitude Toward Food Hub			
HUB_ATT	Composite variable comprised of three attitudes towards a food hub: finding new customers, increased business income and more time farming	10.05	3.11
Socio-Demographics			
EDUCATION	1=More than high school education; 0=high school or less	0.81	0.40
AGE	1=50 or older; 0=younger than 50	0.67	0.47

Farm Income and Farm Characteristics and Attitude

To analyze the relationship of farm income with other variables, a binary variable was created. Farms with incomes of less than $20,000 per year were given a 0 value and farm incomes of $20,000 or more were given a 1 value. A mean value of 0.32 indicated that most of the farms represented through the survey (n=211) were generating less than $20,000 per year. This variable was compared with other variables using ANOVA. (Table 2) Eight variables were found to be significant at a level of at least 10 percent.

Table 2. Farm Income and Farm Attributes and Attitude: A Mean Comparison.

Variables	Income < $20,000	Income > $20,000	F-Statistic
NC_ORG[1]	3.86	2.79	11.08**
NON-CERTIFIED, PRACTICING ORGANIC	1.99	1.36	11.03**
AVOID SYNTHETIC FERTILIZERS	2.16	1.58	11.98**
PERCENTAGE OF FARM INCOME FROM LIVESTOCK	35.45	66.39	24.73**
EXTENSION	1.99	2.74	7.75**
TRADITION	1.27	1.60	2.68*
WHOLESALE	0.23	0.44	5.91**
NEW_MARKETING	0.39	0.54	2.36
INCREASED INCOME[2]	3.37	3.63	2.67*

Note. [1]NC_ORG is made up of Non-Certified, Practicing Organic and Avoid Synthetic Fertilizers. [2] Q36_ATT is comprised of New Customers, Increased Income and Time Farming. ** Less than 5 percent significance; * Less than 10 percent sig.

The NC_ORG score (F-Statistic = 11.08) suggests that farms with annual incomes lower than $20,000 tend to adopt more organic practices. The score variable NC_ORG was formed using two separate variables namely, non-certified but practicing organic and avoidance of synthetic fertilizers. Both were independently significant when mean comparison tests were run against farm income. One reason for this may be because the farms that generate less income are likely to be smaller in terms of acreage and production as well, making organic practices more manageable. Additionally, smaller producers may also be marketing through direct to consumer venues, such as farmers markets, where they can communicate their practices directly to customers who likely value such methods.

Producers with farms generating $20,000 or more in annual income tended to use extension services more frequently (F-value = 7.75). This may be because smaller producers are less likely to seek out help from extension. It's also possible that extension services are geared towards larger scale production and production methods, although further research would be needed to determine the validity of such a statement. It does appear to be true that smaller producers perceive themselves to be in need of the educational resources needed to increase the scale of their businesses. Throughout the study, a number of small producers stressed that extension staff and offices were over-worked and did not have enough time or resources to do an adequate job of assisting specialty crop producers.

Producers with farms generating $20,000 or more per year appeared to utilize more than one type of distribution channel within various groups compared to those earning less than $20,000: the higher earners held higher scores when analyzing TRADITIONAL (mean score of 1.60 compared to 1.27), WHOLESALE (mean score .44 compared to .23) and NEW_MARKETING (mean score .54 compared to .39) variables. Few producers of any income level were using the CSA and internet sales measured in the group called NEW_MARKETING. Sixty-six percent of

respondents were using neither of the two new marketing channels. Twenty-three percent of producers were engaged in one of the two practices and 10.6 percent were doing both.

While HUB_ATT scores were not statistically significant when compared to farm incomes, one of the variables making up the score was: the belief that a food hub can help farms increase their incomes. Again, producers with larger farm incomes were more likely to believe that the hub could help increase their incomes. (Mean score of 3.63 compared to 3.37.) This may be because larger farmers have some experience selling at wholesale prices, and while smaller farmers focus on earning retail and farmers-market level prices by selling direct to consumers. Existing studies show that receiving less than retail price is typically a concern for small farmers who sell primarily at farmers markets (Gale 1997).

Significance of the Study to the Food Industry

The preliminary findings of the study suggest that farm size based on gross farm income was not significantly affecting farmers' willingness and ability to be part of a local food hub. Connecting to local buyers was the main function of the hub desired by the producers. More than 60 percent of the producers expected to achieve broader market reach through the food hub. Nearly two third of the producers surveyed were willing to obtain certificates including (Good Agricultural Practices) GAP and (Good Handling Practices) GHP if provided free of cost or for less than $500 per year. Study provides other important findings that can help the local buyers in implementing purchase strategies to enhance purchase of locally produced products.

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