

UNDERSTANDING GROWER AND PRODUCER MOTIVATIONS FOR PARTICIPATION
IN FARM TO SCHOOL PROGRAMS

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Understanding Grower and Producer Motivations for Participation in
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ABSTRACT

This thesis examined small-crop producers' motivations for current and future participation in Farm-to-School programs within the region of Becker, Clay, Otter Tail, and Wilkin counties in Western Minnesota and Cass County in North Dakota. A quantitative approach was employed and utilized secondary data from the Growers' Motivation Survey of 2013. The purpose of this study was to identify possible contextual characteristics that influence motivations; determine whether there were significant differences in the motivations of farmers who identified as currently participating; and to investigate significant differences in the motivations of farmers who identified as being at least somewhat likely to participate in Farm-to-School programs within the next five years.

Findings from this research suggested that there is limited support for the theoretical framework of the embeddedness of farmers. However, there is a need for additional studies before the overall concept may be disregarded for all Farm-to-School or direct-to-consumer markets studies.

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LIST OF ABBREVIATIONS

CSA.....	Community Supported Agriculture
CSR.....	Center for Social Research
FTS.....	Farm to School
NSLP.....	Nation School Lunch Program
USDA.....	United States Department of Agriculture
SHIP.....	Statewide Partnership for Health

CHAPTER 1. INTRODUCTION

Farm to School (FTS) organizations are formed with the goals of connecting kindergarten-12 schools with local farms; providing healthy lunches in school cafeterias; improving student nutrition and health; providing agriculture, health, and nutrition education to students; and supporting local or regional farmers (“National farm to school network,” 2013). Each program is distinctively developed, coordinated, and shaped to best fit the needs of the individual school, food service director, and participating growers and producers. Each program must efficiently work alongside and within the longstanding national school meals public entitlement program (Allen and Guthman, 2006). The National Farm to School Program was established as a collaborative project led by the Center for Food & Justice as a four-year project funded by the United States Department of Agriculture’s (USDA) Initiative for Future Agriculture and Food Systems 2000-2004 (“National farm to school network,” 2013).

Farm to School programs are community-oriented with the intent of creating economic development opportunities for farmers by connecting them with school cafeterias, teaching students about agriculture, as well as creating experiential education opportunities through the development of school gardens, also known as Farm *at* School (“National farm to school network,” 2013; Joshi, Azuma, & Feenstra, 2008). Local farmers are able to participate by providing fresh produce, meat, dairy, and other products; by allowing schools to access their farms as a way for students to experience farm life; and by donating their time to help direct or provide advice in the development and cultivation of schools gardens and orchards (“National farm to school network,” 2013). FTS programs are excellent opportunities for farmers and consumers alike given the “intersection with established public welfare programs” already in place (Allen and Guthman, 2006, p. 401).

According to farmtoschool.org, U.S. farmers receive approximately 16 cents on each dollar spent on food (“National farm to school network,” 2013). According to one study conducted using established Farm to School programs, median income from FTS programs represented approximately five percent of participating farmers’ total income (Joshi et al., 2008). While this number may seem small, sales per farmer varied greatly depending upon the number of farmers involved in the program, with average sales per farmer higher in programs with only a few farmers participating (Joshi et al., 2008). Farm to School programs seek to increase the dollar amount that stays within the community.

Farm to School programs also look to reduce the number of U.S. children who are overweight by establishing healthy eating patterns at a young age. Between the 1999-2000 and 2003-2004 school years, the incidence of overweight girls rose from 13.8 percent to 16.0 percent, and from 14.0 percent to 18.2 percent among school-aged boys (Joshi et al., 2008). Because nearly 60 percent of American children age 5-18 participate in the National School Lunch Program at least once per week, school cafeterias are an ideal location to introduce healthy food options to approximately 31 million students (“National farm to school network,” 2013; Sebelius, Donovan, & Solis, 2010).

With the 2009 launch of First Lady Michelle Obama’s *Let’s Move!* campaign, there has been an emphasis on teaching students the connection between where their food comes from and eating healthier, local foods (“National farm to school network,” 2013). The *Let’s Move!* campaign is designed to combat the epidemic of childhood obesity through a comprehensive approach utilizing public and private sectors to educate families and communities to help kids be more active and eat better (“Learn the facts,” n.d.; Sebelius et al., 2010).

FTS programs offer a great opportunity for all involved to give back to the community and create a healthier lifestyle in the process. It is the researcher's intent to better understand what drives a grower or producer to participate in a FTS program. With this insight, food service providers and FTS organizers will be able to address their concerns; build better, long lasting relationships; and meet the needs of local farmers. Additionally, organizations will be better able to understand why a producer may want to participate in a FTS program, as well as what factors help foster relationships that facilitate farmer participation.

The goal of this research is to gain an understanding of what factors initially lead growers to become involved in a Farm to School program. Do growers participate for economic reasons such as an increase in their net profit; do they wish to participate for social benefits such as decreasing the childhood obesity rate in their community; are they motivated by a combination of these factors; or does their motivation stem from elsewhere? More directly, what draws sellers to choose this market, and how are they motivated to stay in the market?

Embeddedness theory will be used to guide the research process. This theoretical framework views relationships in an economy as the force behind what drives and sustains grower participation in this type of program. Quantitative methodology and analysis will be used to address the research questions, in contrast to previous literature. An understanding of why farmers want to participate in a Farm to School program will help policy makers, school officials, and food service providers determine the best ways to initiate and foster relationships with local food growers. This will lead to more productive, longer-lasting Farm to School programs, which in turn may help reduce childhood obesity by establishing improved eating habits, increase the support of the local economy, and more fully engage the community in this process.

CHAPTER 2. LITERATURE REVIEW

Introduction

The original National School Lunch Program was a federally assisted meal program, developed under the National School Lunch Act signed by Harry Truman in 1946. Its goal was to provide meals to public and nonprofit private schools as well as residential child care institutions (“Nutrition standards,” 2012). The school lunch program is similar to the Farm to School program, in that the programs share the goal of providing school children with nutritious food. However, the FTS program is unique in its additional mission to provide growers with a market (Allen & Guthman, 2005).

Unfortunately, the implementation of the existing school lunch program has included meals that, while meeting the national dietary guidelines for vitamins and minerals, typically exceed the fat, saturated fat, and sodium recommendations set by health professionals (Roberts, 2002 as cited in Allen & Guthman, 2005). For example, the current sodium level in the average meal offered to high school students exceeds 1,500 mg. (“Nutrition standards,” 2012). The Institute of Medicine recommends that adults consume no more than 1,500 mg of sodium, and the number is even less for those of certain ages and racial groups (“Americans consume,” 2011).

The United States has taken steps in recent years to increase the nutritional level of meals provided by public or nonprofit schools, including “reducing the sodium content of meals over a 10-year period, preparing meals using food products or ingredients that contain zero grams of trans fat per serving, and requiring students to select a fruit or a vegetable as part of the reimbursable meal” (“Nutrition standards,” 2012, p. 4088). The Healthy, Hunger-Free Kids Act of 2010 updated the National School Lunch Program’s (NSLP) nutritional standards based on the

Dietary Guidelines for Americans, a product of the Department of Health and Human Services and Agriculture (“Nutrition standards,” 2012). These new meal standards went into effect at the beginning of the 2012-2013 school year (“Nutrition standards,” 2012). The goal of the new standards is to decrease the amount of sodium in the average NSLP meal for a kindergartener through fifth grader from 1,230 mg to 640 mg by the school year 2022-2023. This would represent a 54 percent decrease in sodium (“Nutrition standards,” 2012).

These and other changes made to the NSLP nutritional standards will result in an increased availability of fruits, vegetables, and whole grains in students’ breakfast, lunches, and snacks provided by a school district (“Nutrition standards,” 2012). In addition to the new nutritional standards within the NSLP, the *Let’s Move!* campaign initiated by the Obama White House hopes to reverse the increasing childhood obesity rates that have tripled over the last three decades (“Learn the facts,” n.d.; Sebelius et al., 2010). By increasing physical activity and access to healthy foods in combination with simple learning tools for teachers, parents, and children, the campaign seeks to decrease the obesity rates among children in the United States, currently as high as 40 percent among African American and Hispanic communities (“Learn the facts,” n.d.).

Research has shown that increasing the number of available fruit and vegetable offerings increases the number of these healthy options consumed (Joshi et al., 2008). Additionally, an increase in healthy options has led to an increase in positive dietary behaviors in children, both at school and at home (Joshi et al., 2008). While nutritional education and improvements made to school lunch programs have made small impacts throughout the country, the integration of local involvement, a critical element, is missing, especially integration of the farming community. By working together with community food suppliers, the school lunch program has the potential to engage farmers and increase local involvement. This affords local farmers and producers the

opportunity to become highly influential to the growth and development of children in their community, and to improve the local economy.

Traditional School Lunch

FTS attempts to advance the goals of the school meal program by emphasizing fresh produce versus processed food, and local rather than national chains and suppliers (Allen & Guthman, 2005). Oftentimes, established school food programs are looking for a market for farmers' surplus commodities, and may result in the provision of cheap, easily available products such as processed fruits and vegetables and surplus meats (Allen & Guthman, 2005). Schools are in an influential position to influence child health and nutrition because school food programs are already in place (Colasanti, Matts, & Hamm, 2012). Unlike other popular agricultural trends such as farmer's markets and community supported agriculture (CSA), the school food program "engage[s] children five days a week rather than once a week, so exposure to alternative agrifood products and processes is continuous rather than intermittent" (Allen & Guthman, 2005, p 403). Not only can students be reached through the lunch program, but many schools offer breakfast and after school snack programs, which are also funded through the USDA. This affords growers the unique opportunity to participate in a long established, stable market (Allen & Guthman, 2005). In 2011, the cost of the NSLP was more than 11 billion dollars. This is a relatively untapped market for local growers, who currently face tremendous global competition (Izumi, Wright, & Hamm, 2010a). There is a paucity of research that explores the reasons why farmers might engage in FTS programs. However, two overarching themes seem to dominate the existing literature: contextual characteristics of the farmer, and the underlying motivation that drive the farmers' mode of production (i.e., social versus market motivations).

Individual Characteristics

The farmer and farm life have long been a symbol of American culture (“Agriculture fact book,” 2003). The United States Department of Agriculture reports that agricultural production in the United States is shifting to larger farms and generally relies more on contracts and less on “spot markets” (“Agriculture fact book,” 2003). In 1935 there were nearly 7 million farmers in the United States. In 1997, about 1.9 million farmers remained (“Agriculture fact book,” 2003). The USDA estimates that 92 percent of U.S. farms are small farms (e.g., sales less than \$250,000). Additionally, the 2007 U.S. Census of Agriculture indicated that farms with sales under \$2,500 and those with sales over \$500,000 have increased in number. That is, midsized farms have become less prevalent, a phenomenon known as “the disappearing middle” (“2007 census of agriculture,” 2009; Joshi et al., 2008). As for Minnesota, the site of this research, the number of small farms has nearly tripled since 1978, from fewer than 12,000 farms to approximately 31,000 small farms, with gross revenues of \$2,500 or less in 2007 (“Historical highlights,” 2009).

Despite the decreasing proportion of farmers over the last 50 years, sales continue to increase thanks to the advances in technology. Farm acreage today produces much more than it did when farm ownership was at its peak. For example, from 1954 to 2009, the average yield per acre of Durum wheat increased from 3.8 bushels to 44.9 bushels per acre, respectively (“Crop production,” 2013).

Within the sector of small family farms, there are four categories that are based upon the level of sales and the occupation of the farm operators (see Table 1). Limited resource farms have sales of less than \$100,000, farm assets less than \$150,000, and total operator household

income less than \$20,000. The operator(s) of a limited-resource farm may list any major occupation, except hired manager.

Table 1

American Farm Typology

Name	Type	Sales	Characteristics
Limited-resource farm	Small family farm	Less than \$250,000	Sales less than \$100,000, farm assets less than \$150,000, and total operator household income less than \$20,000. Operators may report any major occupation, except hired manager.
Retirement farm	Small family farm	Less than \$250,000	Operators report they are retired. ^a
Residential/lifestyle farm	Small family farm	Less than \$250,000	Operators report a major occupation other than farming. ^a
Farming-occupation Farms	Small family farm	Less than \$250,000	Small farms whose operators report farming as their major occupation. ^a
Large family farms	Other family farms	Between \$250,000 and \$499,999	
Very large family farms	Other family farms	More than \$500,000	
Nonfamily farms	Nonfamily farms	Any	Farms organized as nonfamily corporations or cooperatives, as well as farms operated by hired managers.

Note. Adapted from “Crop production historical track records,” by The United States Department of Agriculture, USDA Publication No. 2157-8990, 2013. Copyright 2013 by the Nation Agricultural Statistics Service.

^a Excludes limited-resource farms whose operators report this occupation.

Retirement farms are classified as those whose operator(s) report they are retired. Residential or lifestyle farms are those whose operator(s) report any other occupation other than farming. Beef cattle operations make up about two-fifths of the limited-resource, residential/lifestyle, and low-sales small farms because they “often have low and flexible labor requirements compatible with off-farm work and retirement” (“Agriculture fact book,” 2003, p. 31).

Lastly, farming-occupation farms are those whose operator(s) report farming as their major occupation. That is, the majority of income is from the farm. All four types of small family farms must have sales not exceeding \$250,000 (“Agriculture fact book,” 2003). Small family farms are classified as either low-sales, with sales less than \$100,000; or high-sales, with sales between \$100,000 and \$249,999.

Three other types of farms exist in the United States, although they are often large, single-commodity farms (i.e., farms that produce one crop per season such as wheat). These are typically not farms that will be participating in direct-to-customer sales. However, they may have additional sales beside their specialty crops. These three types of farms are broken into two categories: family farms and nonfamily farms.

Large family farms are those that have revenues of between \$250,000 and \$499,999 annually. Very large family farms are those with sales topping \$500,000. A nonfamily farm is classified as a farm with any level of sales that is operated as nonfamily corporation or cooperatives and are also operated by hired managers. Cash grains (e.g., soybeans, wheat, corn) and dairy make up the largest proportion of high-sales small farms and large family farms (“Agriculture fact book,” 2003). The contextual characteristics (i.e., age, major occupation, size of farm) of these farmers will range drastically across the country and it is unlikely that one

policy, program, or plan is suitable for each of their individual situations (“Agriculture fact book,” 2003) Understanding who is most likely to participate and why, will allow one to explore how different markets (i.e., direct to customer venues) may be better suited for a particular type of farmer.

While there have been numerous evaluations of consumer patterns and characteristics, very few have attempted to understand the farmer behind the food, and even fewer have considered farmers who are participating or would like to participate in FTS. Devitt (2006) examined the motivations of farmers switching to organic farming practices and Schnell (2007) observed CSA practices. The discussion of FTS programs and the motivations and perspectives of multiple parties, including school food service providers, has been explored by a number of authors. There has been some exploration of the type of people who may be engage in alternative agricultural practices.

Schnell (2007) identified CSA farmers in Maryland and found that all but one of the farmers in his study were not farmers prior to forming their CSA. That is, they had entered the agricultural sector without much knowledge of farming practices, but encouraged by what CSAs could offer them, their customers, and their land. In addition to being relatively new to farming, Schnell (2007) found that CSA farmers are more likely to have much smaller plots of land than the average U.S. farmer, are more likely to rent their land, have a higher level of education than average, and have an urban background.

Conversely, in a study conducted by Devitt (2006) in Ireland, it was found that of the farmers interviewed, only one had attained a degree from a university and all had some type of agricultural background, either having grown up on a family farm or studied agricultural science in school. It is important to note that while both studies discuss alternative agricultural methods

and markets, they were conducted in two different countries (the United States and Ireland), with a small number of participants, identifying two practices that, while often employed together, are not synonymous.

The popularity of alternative agricultural movements within the last 10 to 15 years has led to the exploration of these markets. Schnell (2007) describes how direct-to-customer venues have changed the way producers and consumers think of the market. The focus now is on both agriculture and the “context in which agriculture takes place, one that encompasses local economies, working conditions, and the personal connections within the food system” (Schnell, 2007, p. 551).

Entrepreneurial Orientation

The past few decades have shown an increase in entrepreneurial activities among farmers (Alsos, Ljunggren, & Pettersen, 2003). The potential for economic development within rural agricultural communities through activities such as tourism, food processing, and accessing nontraditional food markets, make farm productions an ideal “innovative reservoir,” a place in which new ideas develop and can be readily tested (Alsos et al., 2003, p. 435). Though the family or micro-level farm has been present for hundreds of years, “their survival and future existence . . . depends on their ability to adapt . . . Small firms are especially vulnerable in periods of turbulence, since they often have few resources devoted to strategic processes as well as being financially less robust” (Grande, Madsen, & Borch, 2011, p. 89).

Entrepreneurial activities are key to sustaining not only the farm, but also the economic development in the rural communities surrounding those farms (Alsos et al., 2003; Grande et al., 2011). According to McElwee (2006) farmers are becoming more entrepreneurial through the progressive modernization of agriculture, and these activities are connected with rural

development. In the case of entering a market such as a Farm to School program, McElwee (2006) describes these types of entrepreneurs as having “opportunity competencies” (p. 194). Opportunity competency allows one to recognize when a market opportunity is available and developing that opportunity into a successful economic venture.

Entrepreneurial orientation is a theoretical perspective that stresses innovation and preparedness as the platform for business strategies (Grande et al., 2011). Entrepreneurial orientation is not a business plan per se, but instead is often described as a mindset that business owners must have while pursuing new ventures and outlets. Understanding this mindset and the motivations behind the entrepreneurial activity of diverse markets to which a farmer is selling is again key to this research.

Social and Market Motivations

Previous literature has identified two major motivational factors for participation in FTS programs: social benefits and market diversification (Izumi, Rostant, Moss, & Hamm, 2006). When market motivations are isolated, the FTS system itself does not significantly contribute to the overall market that is needed to sufficiently support a farmer in the continual operation of their farm or their personal dependents (Izumi et al., 2010b). For this reason, it is necessary for participants in FTS programs to gain more than economic value from their participation (Izumi et al., 2010b). This value comes in the form of social motivations. Social motivations may lead the participant to continue with FTS sales despite factors that may make doing so economically unappealing (Connor et al., 2012).

Social motivations can make up for a lack of positive market motivations such as monetary or financial gains. According to Christens (2012), supporting ones’ business model through relying on social motivations can be proof of “psychological empowerment.” That is, by

providing what is often viewed as a positive alternative to traditional food systems, the producer gains not only financial support but also gains a feeling of providing for the community or their customers. They have the *power*. By connecting oneself to the community through social interactions, a producer has a higher level of commitment, making certain continual contributions, and “Ensuring that participants are becoming psychologically empowered through their involvement contributes to sustainability . . .” (Christens, 2012, p. 549).

Direct marketing initiatives such as farmer’s markets, CSAs, and FTS programs are often linked to creating a face-to-face connection between the buyer and the seller (Kirwan, 2005). Often consumers are used to “uniform standards” when it comes to their food. Mass production of goods has led the consumer to expect certainty; this is where social relationships can pick up the slack. Knowing where, how, and by whom the food is produced, consumers can replace “‘uniform standards’ with individualized [sic] judgment, thereby helping to overcome uncertainty” (Kirwan, 2005, p. 303). An important segment of the previous literature focuses on the social motivations of the consumer. That is, consumption behaviors are often based upon a connection with the satisfaction of relationships with the seller. The benefits of the relationships formed by this type of transaction outweigh any risks the consumer may encounter “when good[s] and services are unique, expensive, or have many dimensions of quality” (Devitt, 2006, p. 102).

In a case study of regionally based food distributors, Izumi, Wright, and Hamm (2010a) identified that economic arrangements with farmers were produced by what was typically informal and often verbally-based agreements which resulted in a relationship which gave those distributors economic advantage over their competitors. In relation to FTS programs, much of the existing literature focuses on the advocacy role of many programs. Understanding how

farmers can not only hold advocate positions in the local food movement, but also gain economic advantage by addressing their marketing needs and motivations is key to the understanding of mediating factors influencing initial and continual participation in FTS. Izumi et al., (2010a) found that when a clear social connection is combined with what is often perceived as strong advocacy-based reasons for participation, economic advantages typically follow.

Theoretical Models

Several alternative agricultural movements, including farmer's markets, CSAs, as well as the Farm to School program, have attempted to remake our food system with locally grown, often environmentally sustainable based produce (Schnell, 2007). Many proponents of such agriculture trends support the notion of going beyond the need for economic exchange by promoting local social relationships between farmers and consumers (Schnell, 2007). Many alternative agricultural methods and direct marketing techniques promise the "human connection at the place where production and consumption of food converge" (Hinrichs, 2000, p. 295). This dual interchange of market profits and social benefits can be demonstrated through embeddedness theory. Mark Granovetter (1992) explains that, like all action, economic action is social and "cannot be explained by individual motives alone; it is embedded in ongoing networks of personal relations rather than carried out by atomized actors" (p. 4).

Granovetter (1992) contends that economic action is second to social action; that economics is a special, individual part of social action and should be treated as such. As researchers, we must not rely too strongly on the assumption that individuals will always make their decisions independent of social thought. At the same time, there can be an overreliance on the socialization of human action. That is, it cannot be assumed that an individual will make decisions *only* based on social thought. This view allows for individual behavior to be "so

sensitive to the opinions of others that they are automatically obeyed commonly held norms” (Granovetter, 1994, p. 5). This is to say that non-price considerations take a considerable, if not entire, relevancy (Hinrichs, 2000). Granovetter (1994) maintains, instead, that social influences cannot be fully relied upon because the influence assumes actors will follow any custom, habit, or norm unconditionally and automatically. For example, farmers will not sell to schools simply because they think it is the moral, or the right thing to do.

At the same time, one cannot discount social connections entirely. Price considerations or “high marketness” suggests that there is nothing that will interfere with the bottom line or price domination (Block, 1990, as cited in Hinrich, 2000). For example, farmers will not choose to sell to a certain market *just* to obtain the highest profit. There must be other motivations such as profiting *and* contributing to the creating of healthy habits in school children.

Granovetter’s suggestion is that social researchers take a middle ground between relying too much upon and avoiding the concept completely, and analyze how behavior utilizes both market and social motivation concepts to discover the level of embeddedness.

This “embeddedness” can be explained by the how social institutions are formed, specifically economic institutions. That is, the ways in which people (actors) interact with one another, go about their lives, and conduct business. Embeddedness aims to answer the question of how groups, not individuals, cooperate to carry out a common goal. According to Bandelj (2012), “embeddedness refers to the importance of social relations for structuring economic action” (p. 177). That is to say that all economic actors are influenced by their relationships with other actors and these relations have the largest impact on behavior. That would suggest that a farmer would choose to sell to a market that allows them not only to receive profit but also

benefit the customer in some way, instead of selling to a market that would only benefit themselves.

Both market (individual) and social concepts are taken into consideration and there is an understanding that both the individual and social influence is necessary for economic development. Embeddedness recognizes the apparent contrast between market and social motivations but accepts that the pursuit of self-interest and the over-acceptance of social norms and patterns are able to work in harmony. One must internalize the social influences and in doing so, make their own judgments on how to proceed (Granovetter, 1985). For example, farmers should recognize the effect (or lack thereof) their marketing techniques have on others, and decide also if it is economically sound for them to proceed. Granovetter (1985) states: “Actors do not behave or decide as atoms outside a social context, nor do they adhere slavishly to a script written for them by the particular intersection of social categories that they happen to occupy. Their attempts at purposive action are instead embedded in concrete, ongoing systems of social relations” (p. 487).

It should be noted that one cannot and should not confuse economic embeddedness with safe practices, better health, or having a low (or small) environmental impact. This also does not account for farmers continuing to sell through direct markets despite little economic gain. According to Hinrichs (2000) “a more critical view of embeddedness recognizes that price may still matter and that self-interest may be at work, sometimes even in the midst of vigorous, meaningful social ties” (p. 297). Therefore, it is not a question of whether one has social motivated *or* market motivations, but to what extent they are motivated by both. It is the intent of this research to discover the degree to which farmers are social and economically motivated.

By exploring the degree of influence both social and market motivations have on the farmer, one can gain a better understanding of this type of market: what draws sellers to choose this market and how they are motivated to stay in the market? This will be accomplished by exploring the relationship between embeddedness variables and level of interest. Contextual variables will then be used to describe *who* these farmers are and to what extent, if any, there are patterns that describe the “FTS producer.” Therefore, the relationship between contextual variables and embeddedness variables will be explored. Using a quantitative measure of embeddedness, it is predicted that farmers will report social motivations as being most important to their level of interest, both currently and in the future, in participation in FTS program. Specifically, the following six hypotheses will be tested:

1. There is an unknown relationship between context variables (farm type, finances, and age) and the level of market embeddedness.
2. There is an unknown relationship between context variables (farm type, finances, and age) and the level of social embeddedness
3. There is an inverse relationship between the level of market embeddedness and the level of interest in current participation.
4. There is a direct relationship between the level of social embeddedness and the level of interest in current participation.
5. There is an inverse relationship between the level of market embeddedness and the level of interest in future participation.
6. There is a direct relationship between the level of social embeddedness and the level of interest in future participation.

The model used in the study was developed to observe the factors contributing to the level of interest in FTS programs (Figure 1). The embeddedness variable is measured by examining data from the survey about market and social motivations of the farmer. Likewise, the context variables will be measured by examining data from the survey in regards to questions asked concerning the participants' characteristics. These variables will be discussed in greater detail in the following chapter on Methodology.

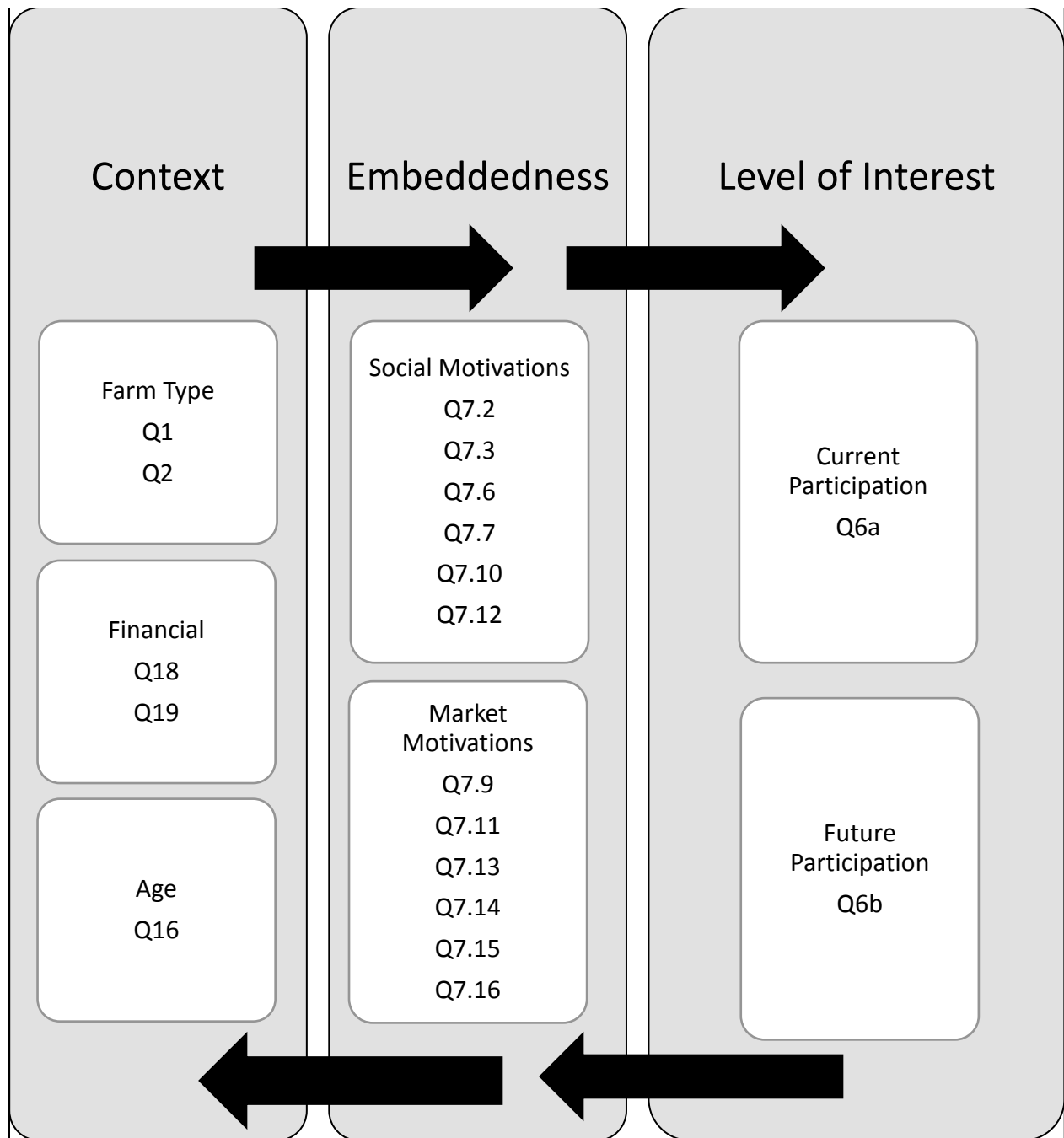


Figure 1. Model of the relationship between context, embeddedness, and level of interest.

CHAPTER 3. METHODOLOGY

Origins of the Project

The data for this research comes from a 2013 Grower Motivations Survey that was developed and conducted by the Center for Social Research (CSR) located on the campus of North Dakota State University in partnership with the University of Minnesota Extension on behalf of the PartnerSHIP 4 Health program of Becker, Clay, Otter Tail, and Wilkin counties in Minnesota. PartnerSHIP 4 Health is the four-county initiative of the Minnesota Statewide Health Improvement Program (SHIP) program, which was created in 2008 by the Minnesota Department of Health with the passing of a health reform law in Minnesota and is tasked with “creating good health for parents, kids, and the whole community, by decreasing obesity” in Minnesota (“Statewide health,” 2013a). A component of the healthcare reform law is to invest in prevention activities that are designed to improve the overall health of the citizens of Minnesota.

The 2012-2013 SHIP program includes 18 community grants that cover about half the state and are community-based, community-lead programs that can be tailored to fit the needs of the citizens in the area (“Progress brief,” 2013b). The community leadership team of the four county region of Becker, Clay, Otter Tail, and Wilkin approached the Center for Social Research at North Dakota State University in the fall of 2012 and asked the staff to complete an assessment of regional growers and producers, their marketing, growing, and selling habits, to gain a better understanding of how to improve community access to locally grown foods.

Survey Design

The instrument was four pages in length with 20 individual questions. The instrument was divided into three sections: production and distribution, future plans, and personal characteristics. The survey consisted of open- and closed-ended responses and many of the

questions were adapted from instruments used in two previous studies. The first was conducted by the Institute for Agriculture and Trade Policy entitled, “Grower Perspectives on Farm to School: A Survey of Interested Farmers, Ranchers, and Other Producers” (Berkenkamp, 2012). The second was a farmers marketing questionnaire designed by the University of Minnesota Extension. Both North Dakota State University and University of Minnesota Institutional Review Boards granted approval for the mail-based survey. Cover letters indicating the purpose of the study accompanied the survey as they were mailed out in February 2013.

Sampling Design

The sampling frame for the survey was derived from lists of area producers compiled by the University of Minnesota Extension office and the Cass-Clay Food System Initiative, a community organization whose goal is to increase access to healthy, affordable food. The participant list was expanded by SHIP community leaders and the CSR staff based on feedback from community members who knew of growers in the region who indicated an interest in FTS activities. The expanded list was developed through a snowballing technique, whereby farmers on the list were asked to provide information regarding other growers and producers in the area. The combined list represented 84 participants. Although this number represents a relatively small fraction of those farmers in the region, it accounts for the vast majority of producers either currently participating in FTS activities or known to be potential FTS producers. Moreover, despite the fact that the approach to the sampling was not random, and although the sample is small, the initial population is relatively small as well. Central limit theory suggests “there are a variety of situations in which we can assume normality regardless of the shape of our sample data” (Lumley, Diehr, Emerson, & Chen, 2002 as cited in Field, 2013). Therefore, by obtaining a large proportion of the sample ($n > 30$), central limit theory suggests that this sample complies

with the intent of randomness. The sources from which the sample list was obtained were deemed knowledgeable and well qualified to identify the number of possible Farm to School producers in the region.

Anonymity of respondents was maintained by not gathering names, addresses, or other identifying information on the survey. A total of 36 completed surveys were returned by mail to the CSR for data entry, analysis, and report writing and represents the data set to be used for this analysis.

Independent Variable

The model that was used in the analysis (see Figure 1) indicates that a producer's level of interest in participation in FTS activities is directly related to the characteristics of the producer and their perceptions of the level of embeddedness. Therefore, the independent variables were divided into two categories. First, contextual indicators were used to explain the characteristics of the producers (See Figure 1). Three main themes served to identify the characteristics of the farmer and their farm. The first, Farm Type, was analyzed using two indicators: farm size and diversity of products produced. The size of the operation was measured by a question on the survey (Q1), which asked respondents the number of acres they owned, leased, or used free of charge in 2012. This helped answer the hypothesis of which size of farm will have a higher level of interest in participation in FTS activities.

Diversity of products produced was measured by using a question on the survey that asks respondents to identify which products they currently produce from a 15-item list (Q3). This measure was operationalized as a composite index by summing the responses to the 15 items (see Table 2). Respondents were asked to mark any of the products they currently sell. It was assumed that an unmarked response indicates a negative response. Thus, this variable ranged

from one to 15: the larger the value, the greater the diversity of products sold. It was hypothesized that those with a larger diversity of products will have a higher interest in participating in FTS activities.

Table 2

Products Currently Being Grown and Sold

Question: In the following list of products, please tell us which ones you currently grow and sell.

- Perishable vegetables
 - Storage vegetables
 - Fruit other than apples
 - Apples
 - Chicken or turkey
 - Eggs
 - Beef or pork
 - Honey
 - Grains
 - Dried beans
 - Maple syrup
 - Dairy Products
 - Wild rice
 - Bison
 - Other (specify)
-

Note. Operationalized as No=0, Yes=1. In the original data set, “products currently being grown and sold” was operationalized as Yes=1, No=2. For purpose of analysis, it will be recoded as No=0, Yes=1.

The second theme concerned the financial characteristics of the farm. This was analyzed using two dichotomous variables. The first variable, net farm profit (Q18), was used to identify whether or not the respondent’s farm had a positive farm profit in 2012. The second variable, off-farm income (Q19), was used to determine whether or not any adult in the respondent’s household earned off-farm income. For both questions, the response category was a simple “yes/no.”

The third theme was a demographic variable and was comprised of one indicator: Age. Respondents were asked to report their age in years (Q16).

The second category of variables represents the concept of embeddedness. Embeddedness reflects the degree to which agriculture practices are integrated into the social and cultural fabric of the community. The two key components of concern in this study with regard to embeddedness are the degree to which producers are motivated by market versus social factors, as identified by the literature. Therefore, the two embeddedness indicators were social and market motivations. They were based on a composite index constructed from a list of reasons for growing and selling products. The components of each index are found in Tables 3-4. The dimensionality of the 16 items from the motivations measure (Q7) was analyzed using maximum likelihood factor analysis. Two criteria were used to determine the number of factors to rotate: the scree test and the interpretability of the factor solution. Based on the plot, two factors were rotated using the Varimax rotation procedure. The rotated solution yielded two interpretable factors, market and social motivations. Both of these scores had high reliabilities; the market score had a Cronbach's $\alpha = .85$. The social motivations score had a Cronbach's $\alpha = .80$. The market motivations factor accounted for 19.63 percent of the item variance, and the social motivations factor accounted for 17.79 percent of the item variance. No items loaded on both factors.

The social motivations index was calculated by summing respondents' scores on the 6 five-point Likert scale items noted in Table 3. The range for this variable was 6-30. The market motivations scale was calculated by summing the 6-item scale noted in Table 4. The range for this variable was 6-30. Both scales were based on the assumption that those respondents who left the item blank find the particular indicator "not at all important."

Table 3

Social Motivations Index Components

Question: Please tell us the importance of each of the following items when deciding why you grow and sell the products you produce

- The ability to produce at the level of my choosing (Q7-2)
 - The ability to raise the products of my choosing (Q7-3)
 - Building relationships within the community (Q7-6)
 - Reliable customers (Q7-7)
 - Increasing access to healthy, locally grown food (Q7-10)
 - Educating customers/students about the food system and where their food comes from (Q7-12)
-

Note. Operationalized as a one to five scale, with one being “not at all important” and five being “very important.”

Table 4

Market Motivations Index Components

Question: Please tell us the importance of each of the following items when deciding why you grow and sell the products you produce

- New revenue for my farm (Q7-9)
 - Reducing my farm’s ecological footprint by selling to customers close by (Q7-11)
 - Market for surplus product (Q7-13)
 - Market for seconds (Q7-14)
 - Diversifying my market (Q7-15)
 - It is the only option I have to sell (Q7-16)
-

Note. Operationalized as a one to five scale, with one being “not at all important” and five being “very important.”

Dependent Variable

The dependent variable that was explored in this study was the level of interest among producers with regard to participation in FTS activities. This was measured in two ways and reflects current and future interest.

Current participation in Farm to School programs indicated active interest among area growers and producers in FTS programs based on actual participation. Survey respondents were asked to indicate the percent of total sales that currently comes from direct to school (Farm to

School) venues (Q6A). This was operationalized as a dichotomous response category; either the producer participates in the FTS program or s/he does not. Respondents who left the question blank were viewed as currently not using this type of venue. The dichotomous approach to measuring participation avoids the complexity of determining what proportion of crops from a specific producer should be included in FTS activities.

The second indicator of interest represented self-reported likelihood of future participation. Survey respondents were asked to indicate the likelihood of selling or continuing to sell through a direct to school venue over the next five years using a five-point Likert scale (Q6B). This was operationalized as a one to five scale, with one being “not at all likely” and five being “very likely.” The assumption was that those respondents who left the question blank are “not at all likely” to sell through this type of venue over the next five years.

Analytical Design

The analysis was conducted in two stages (see Figure 1). The first stage was a series of hypothesis tests that explore the relationship between the individual contextual variables and the degree of embeddedness. First, a correlation was run on each of the indicators that comprise the individual context variables against the social motivation index. Spearman’s Correlation Coefficient was used for both farm type indicators since social motivation was a Likert-based score and both farm type indicators are interval measures. Spearman’s Correlation Coefficient is well suited for Likert-based indicators because it adjusts for the assumption that Likert scales are interval measures, and thus are considered continuous. In addition, a nonparametric statistical test, such as Spearman’s Correlation Coefficient, is ideal for small sample sizes given that “the accuracy of the probability statement does not depend of the shape of the population” (Siegel, 1956, p. 32).

Secondly, a correlation was run on each of the indicators that comprise the individual context variables against the market motivation index. Once again, Spearman's Correlation Coefficient was used considering market motivation is a Likert-based measure and was used to test hypotheses one and two.

The second stage was a series of hypothesis test that examined the relationship between embeddedness and level of interest. First, a correlation was run on each of the indicators that comprise the embeddedness variable against the dependent variable of current participation. Since current participation is a dichotomous indicator, a t-test was used to test hypotheses three and four.

Finally, a correlation was run on each of the indicators that comprise the embeddedness variable against the dependent variable of self-reported likelihood of future participation. Since future participation was based on a Likert scale, Spearman's Correlation Coefficient was used to test hypotheses five and six. All four steps were taken in order to assess the strength of the relationship among the separate components of the model and to test the six main hypotheses.

CHAPTER 4. RESULTS

The following chapter uses descriptive statistics, hypothesis testing, and correlation testing to test the six main hypotheses of the study. The six main hypotheses of the study are as follows:

1. There is an unknown relationship between context variables (farm type, finances, and age) and the level of market embeddedness.
2. There is an unknown relationship between context variables (farm type, finances, and age) and the level of social embeddedness
3. There is an inverse relationship between the level of market embeddedness and the level of interest in current participation.
4. There is a direct relationship between the level of social embeddedness and the level of interest in current participation.
5. There is an inverse relationship between the level of market embeddedness and the level of interest in future participation.
6. There is a direct relationship between the level of social embeddedness and the level of interest in future participation.

Descriptive Statistics: Independent Variable

Table 5 displays the demographic distribution of the independent variable within the sample.

Contextual Indicators

Acreage. Of the 36 respondents, 63.7 percent owned, leased, or used free of charge 25 acres of land or less in 2012 (n=21). Four of the 36 respondents farmed 26 to 100 acres in 2012

(12.2 percent). Nearly one-quarter of the respondents farmed more than 100 acres in 2012 (24.2 percent, n=8).

Product variation. The majority of respondents, 62.9 percent, produced two or three product varieties (n=22). One in five respondents produced just one product (20.0 percent, n=7), and one-sixth of respondents produced four or more products in 2012 (17.6 percent, n=6)

Financial Characteristics

Net profit. The majority of the respondents, 82.4 percent, reported that they had a positive net farm profit in 2012 (n=28). 17.6 percent reported that they did not have a positive net farm profit for the year (n=6).

Off-farm income. Nearly three-fourths of respondents had adults in the household earning off-farm income (73.5 percent, n=25). Approximately one in four respondents indicated there were no adults earning off-farm income in 2012 (26.5 percent, n=9).

Age Variable

The mean age of respondents was 56.2 years old (n=34). Responses ranged from 26 to 86 years old.

Descriptive Statistics: Dependent Variables

Table 5 displays the demographic distribution of the dependent variables within the sample.

Current and Future Farm to School Program Participation

Current participation. One in six respondents were currently participating in a Farm to School program at the time of the survey (16.7 percent). The remaining 30 respondents were not currently participating in this type of market.

Table 5

Distribution of Demographics (N=36)

Variable	Mean	Number ^a	Percent
Acreage	152.4		
Less than 1 acre		2	6.1
1-25 acres		19	57.6
26-50 acres		2	6.1
51-100 acres		2	6.1
More than 100 acres		8	24.2
Product variation	2.5		
1 product		7	20.0
2-3 products		22	62.9
4 or more products		6	17.1
Positive net farm profit			
Yes		28	82.4
No		6	17.6
Adults earning off-farm income			
Yes		25	73.5
No		9	26.5
Age	56.2		
Younger than 18		0	0.0
18-29		3	8.8
30-44		3	8.8
44-64		19	55.9
65-74		8	23.5
75 years or older		1	2.9
Currently participating in Farm to School programs			
Yes		6	16.7
No		30	83.3
Reported at least somewhat likely to participate in Farm to School programs in the next five years			
Yes		14	38.9
No		22	61.1

^aNumber may not equal total N due to missing values.

Future participation. When asked the likelihood of participating in a Farm to School program in the next five years, 38.9 percent of respondents said they were at least somewhat likely to participate in the future (n=14) (Table 5).

Embeddedness Scores

During analysis, a third score was interpreted in the factor analysis. Two individual components, Low Production Cost (Q7-4) and Low Marketing Costs (Q7-5), were thereby added as a third score titled “Cost Motivations.” The range for this score was 2-10. This score, following the composition of the initial two composite scores, was based on the assumption that those respondents who left the item blank find the particular indicator “not at all important,” and was thus recoded. The strength of the index was extremely strong with a Cronbach’s $\alpha = .91$. The cost motivations factor accounted for an additional 12.93 percent of the variance explained, bringing the total variance explained by the three score to 50.35 percent. The mean Cost Motivations index score was 6.28. The mean Social Motivation index score was 24.58. The mean Market Motivation index score was 16.42.

Embeddedness Scores by Currently Participation Status

The mean market score for those who were currently participating was 17.2. The mean market score for those who were not currently participating was 16.3. The mean social embeddedness score for those who were currently participating was 25.8. The mean social score for those who were not currently participating was only slightly lower at 24.3. The cost embeddedness scores for the two groups of respondents were nearly identical at 6.2 for those who were currently participating and 6.3 for those who were not currently participating. Figure 2 displays the similarities of the means of all three embeddedness scores when group by respondents’ current participation status.

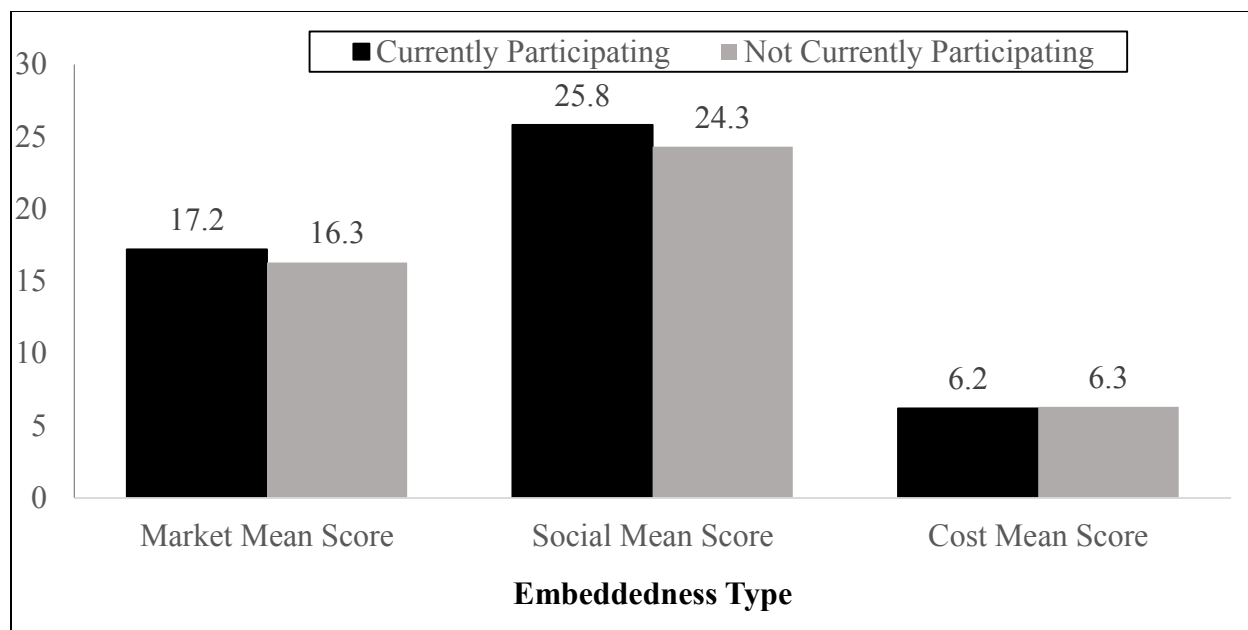


Figure 2. Mean embeddedness scores by currently participation status.

Embeddedness Scores by Likelihood of Future Participation

The mean market scores for those who were not likely to participate in the future was 16.3. The mean score for those who indicated they were at least somewhat likely to participate was 16.7. The mean social embeddedness score for those who were not likely to participate in the future was 24.3. Those who indicated some likelihood of participating in the future had a mean social score of 25.0. And lastly, the mean cost scores for the two groups were nearly identical, with a mean score of 6.3 for those who were not likely to participate in the future, and a mean score of 6.2 for those who were at least somewhat likely to participate in the future. Figure 3 displays the similarities of the means of all three embeddedness scores when grouped by respondents' likelihood to participate in FTS programs within the next five years.

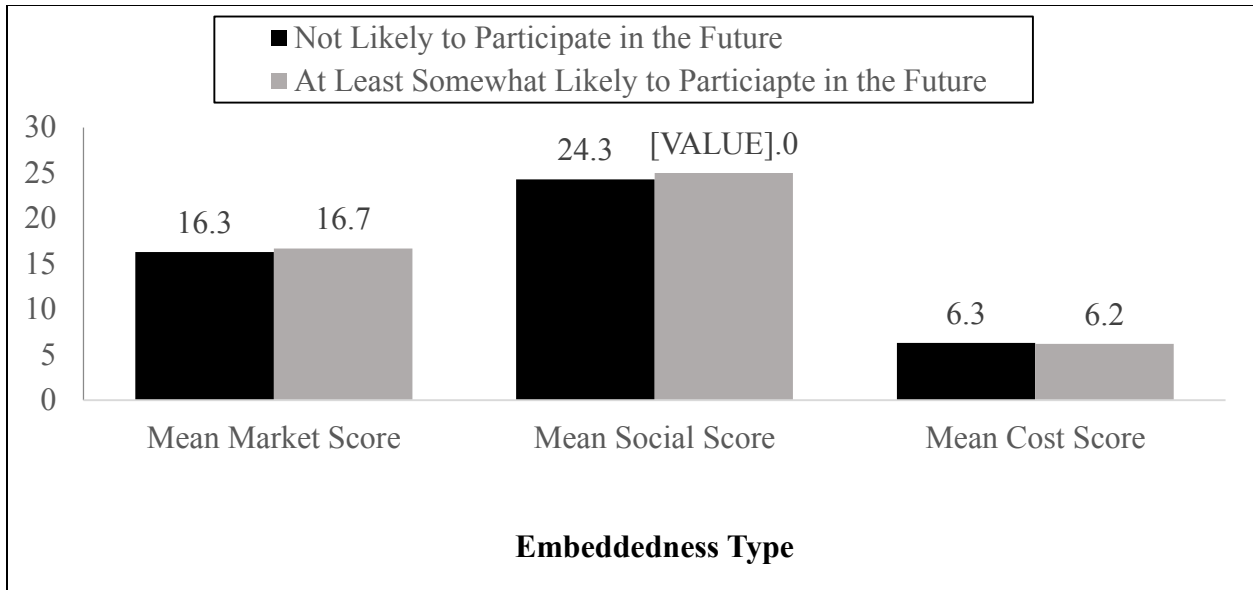


Figure 3. Mean embeddedness scores by future participation likelihood.

Respondents Currently Participating in FTS

Table 6 displays the distribution of demographic variables by the respondents' current participation status in Farm to School programs.

Acreage. Of those who are currently participating in a FTS program, 50 percent indicated they were farming on 25 acres of land or less (n=2). One person (25 percent) indicated they were farming on 51-100 acres, and one respondent (25 percent) indicated they farmed on more than 100 acres. The mean number of acres being farmed by current FTS program participants was 228.9 acres.

Product variation. When respondents were asked to describe their product variation, 83.3 percent of respondents had a product variation greater than two products (n=5). One additional respondent indicated they produced one product type. The mean number of products being produced by current FTS participants was 3.2 products.

Table 6

Distribution of Variables by Current Participation Status

Variable	Farm to School Participation Status of Respondent					
	Currently Participating (n=6)			Not Currently Participating (n=30)		
	Mean	Number ^a	Percent	Mean	Number ^a	Percent
Acreage	228.9			141.8		
Less than 1 acre		0	0.0		2	6.9
1-25 acres		2	50.0		17	58.6
26-50 acres		0	0.0		2	6.9
51-100 acres		1	25.0		1	3.4
More than 100 acres		1	25.0		7	24.1
Product variation	3.2			2.4		
1 product		1	16.7		6	20.7
2-3 products		3	50.0		19	65.5
4 or more products		2	33.3		4	13.8
Positive net farm profit		5	83.3		23	82.1
Yes		1	16.7		5	17.9
No						
Adults earning off- farm income		5	83.3		20	71.4
Yes		1	16.7		8	28.6
No						
Age	52.2			56.9		
Younger than 18		0	0.0		0	0.0
18-29		1	20.0		2	6.9
30-44		0	0.0		3	10.3
44-64		3	60.0		16	55.2
65-74		1	20.0		7	24.1
75 years or older		0	0.0		1	3.4

^aNumber may not equal total N due to missing values.

Net profit. All but one respondent had a positive net farm income in 2012 (n=5).

Off-farm income. The same number of respondents had an adult in the home working outside of the household in 2012 (n=5).

Age. The most common response category for the age of the respondent was ages 44-64. One respondent (20.0 percent) indicated they were between the ages of 18 and 29. One additional respondent indicated they were between the ages of 65 and 74. The mean age for current FTS participants was 52.2 years of age.

Respondents Not Currently Participating in FTS

Table 6 displays the distribution of demographic variables by the respondents' current participation status in Farm to School programs.

Acreage. Of those respondents who indicated they are not currently participating in a FTS program, 65.5 percent were farming on 25 acres or less (n=19). An additional three respondents were farming on 26 to 100 acres (10.3 percent) and seven were producing on more than 100 acres (24.1 percent). The mean acreage being farmed by respondents not currently participating in FTS programs was 141.8 acres.

Product variation. The majority of respondents who were not currently participating in FTS programs produced between two and three products (65.5 percent, n=19). Six respondents produced one product (20.7 percent), and four respondents produced four or more products (13.8 percent). The mean number of products being produced by those who were not currently participating in FTS programs was 2.4 products.

Net profit. Most respondents had a positive net farm profit in 2012 (82.1 percent, n=23). The remaining five respondents did not have a positive net farm profit (17.9 percent).

Off-farm income. Nearly three-fourths of respondents who were not currently participating in FTS programs had adults in the household earning off-farm income (71.4 percent, n=20). Eight respondents indicated that no adult in the household earned off-farm income in 2012 (28.6 percent).

Age. The majority of respondents who indicated they were not currently participating in FTS programs were 44 years or older (82.7 percent). Two respondents indicated they were between the ages of 18 and 29 (6.9 percent), and three respondents indicated they were between the ages of 30 and 44 (10.3 percent). The mean age for respondents who were not currently participating FTS programs was 56.9 percent.

Not Currently Participating, At Least Somewhat Likely to Participate in the Future

Table 7 displays the distribution of variables by the respondents' likelihood to participate in Farm to School programs in the future.

Acreage. The distribution of variables of those respondents who are not currently participating in Farm to School programs but indicated they are at least somewhat likely to participate in the market in the next five years (See Table 7). When compared to those who are currently participating in FTS programs, these respondents are farming on fewer acres; the mean number of acres farmed by those who are not currently participating but are at least somewhat likely to participate in the future was 79.5 acres. 62.5 percent of these respondents indicated they farmed on 25 acres or less (n=5). One respondent farmed on 26 to 50 acres (12.5 percent). Two additional respondents indicated they were farming on more than 100 acres (25.0 percent).

Product variation. The majority of respondents who were not currently participating in FTS programs but indicated they were interested in participating in the future were currently producing two to three product variations. One respondent indicated they produced one product

(12.5 percent), and one additional respondent indicated they produced four or more products (12.5 percent). The mean number of products being produced by these groups of respondents was 3 products.

Net profit. The majority of respondents who were not currently participating in FTS programs but were at least somewhat likely to participate in the future had a positive net farm profit in 2012 (71.4 percent, n=5). Two respondents indicated they did not have a positive net farm profit (28.6 percent).

Off-farm income. All of the respondents in this category had adults in the household earning off-farm income.

Age. The mean age of these respondents was 52.0 years of age. Three-fourths of respondents were between the ages of 45 and 74 years old (75.0 percent, n=6). One respondent was between the ages of 18 and 29 and one additional respondent was between the ages of 30 and 44.

Table 7

Respondents Not Currently Participating but Somewhat Likely to Participate in the Future (n=8)

Variable	Mean	Number ^a	Percent
Acreage	79.5		
Less than 1 acre		1	12.5
1-25 acres		4	50.0
26-50 acres		1	12.5
51-100 acres		0	0
More than 100 acres		2	25.0
Product variation	3.0		
1 product		1	12.5
2-3 products		6	75.0
4 or more products		1	12.5
Positive net farm profit			
Yes		5	71.4
No		2	28.6
Adults earning off-farm income			
Yes		7	100.0
No		0	0.0
Age	52.0		
Younger than 18		0	0.0
18-29		1	12.5
30-44		1	12.5
45-64		5	62.5
65-74		1	12.5
75 years or older		0	0.0

^aNumber may not equal total n due to missing values.

Correlational Analysis: Spearman's Rho

Hypothesis One

A Spearman *rho* correlation coefficient was calculated for the relationship between a respondent's contextual variables and market motivation. The context variables include: Acreage, Product Variation, Net Profit, Off-farm Income, and Age.

Acreage and market motivation. When tested against acreage, the relationship was not found to be significant, $r_s = -.013$ ($p > .05$). Acreage is not related to market motivations.

Product variation and market motivation. The relationship between a subject's product variation and market motivation was found to be positive and strong, $r_s = .486$ ($p > .01$), indicating a moderately significant relationship between the two variables. Those with higher product variation tend to have higher market motivation.

Net profit and market motivation. Positive net farm profit was found not to be related to market motivations. A non-significant relationship was found, $r_s = -.055$ ($p > .05$).

Age and market motivation. Lastly, when calculating the relationship between a subject's age and market motivation, the relationship was not found to be significant, $r_s = -.181$ ($p > .05$). Age is not related to market motivation.

Summary of hypothesis one. The relationship within hypothesis one cannot be determined because of the non-significant correlations between the context variables and the level of market embeddedness. Overall, hypothesis one was not supported. However, one context variable was correlated to market embeddedness; the greater the number of types of product and farmer producers, the more likely they are to have a high market motivation score.

Hypothesis Two

A Spearman *rho* correlation coefficient was calculated for the relationship between a subject's contextual variables and social motivation. The contextual variables include: Acreage, Product Variation, Net Profit, Off-farm Income, and Age.

Acreage and social motivation. When tested against acreage, it was not found to be significant, $r_s = -.246$ ($p > .05$). Acreage is not related to social motivations.

Product variation and social motivation. The relationship between a subject's product variation and social motivation not found to be significant, $r_s = -.005$ ($p > .05$). Product variation is not related to social motivations.

Net profit and social motivation. Positive net farm profit was found not to be related to social motivations. A non-significant relationship was found, $r_s = .222$ ($p > .05$).

Off-farm income and social motivation. When social motivation was tested against adults in the household earning off-farm income, the relationship was found to be not significant, $r_s = -.195$ ($p > .05$). Off-farm income is not related to social motivations.

Age and social motivation. Lastly, when calculating the relationship between a subject's age and social motivation, it was not found to be significant, $r_s = .189$ ($p > .05$). Age is not related to social motivations.

Summary of hypothesis two. The relationship within hypothesis two cannot be determined based on non-significant correlations between the context variables and the level of social embeddedness. Hypothesis two was not supported.

Additional Testing of Cost Motivation

A Spearman *rho* correlation coefficient was calculated for the relationship between a subject's contextual variables and cost motivation. Contextual variables include: Acreage, Product Variation, Net Profit, Off-farm Income, and Age.

Acreage and cost motivation. When tested against acreage, it was not found to be significant $r_s = .000$ ($p > .05$). Acreage is not related to cost motivations.

Product variation and cost motivation. The relationship between a subject's product variation and cost motivation was found to be not significant $r_s = .186$ ($p > .01$). Product variation and cost motivation are not related.

Net profit and cost motivation. Positive net farm profit was found to not be related to cost motivation. A non-significant relationship was found, $r_s = -.055$ ($p > .05$).

Off-farm income and cost motivation. When tested against adults in the household earning off-farm income, the relationship was not found to be significant, $r_s = .114$ ($p > .05$). Off-farm income is not related to cost motivation.

Age and cost motivation. Lastly, when calculating the relationship between a subject's age and cost motivation, the relationship was not found to be significant, $r_s = -.233$ ($p > .05$). Age is not related to cost motivation (see Table 8).

Table 8

Spearman's Rho Correlation Coefficient: Context Variables and Motivation Variables

Variables	1	2	3	4	5	6	7	8
1. Acreage	-	.051	-.320	.195	-.340	-.246	.013	.000
2. Product Variation		-	-.045	-.145	-.020	-.005	.486**	.186
3. Positive net farm profit			-	-.278	.099	.222	-.055	.048
4. Adults earning off-farm income				-	-.361*	-.195	.262	.114
5. Age					-	.189	-.181	-.233
6. Social Motivation						-	.210	.289
7. Market Motivation							-	.582**
8. Cost Motivation								-

* $p < .05$, ** $p < .01$

Hypotheses Three and Four

During the analysis of the data, it was determined that an n of six was not sufficient to support the hypothesis testing that explored relationship between embeddedness and current level of participation. When t-tests were run, an n of six proved to be too small and Q-Q plots and histograms suggested non-normal data or unusual cases. Hypotheses three and four could not be tested.

Hypothesis Five

For the relationship between market motivation and future participation, a correlation that was not significant was found, $r_s = .152$ ($p > .05$). Market motivation is not related to future participation. For the relationship between cost motivation and future participation, a correlation that was not significant was found, $r_s = -.128$ ($p > .05$). Cost motivation is not related to future

participation (See Table 9). The relationship within hypothesis five cannot be determined based on non-significant correlations. Hypothesis five was not supported.

Hypothesis Six

A Spearman *rho* correlation coefficient was calculated for the relationship between a subject’s motivations index scores and self-reported likelihood of future participation. For the relationship between social motivation and future participation, the relationship was not found to be significant, $r_s = -.089$ ($p > .05$). Social motivation is not related to future participation. The relationship within hypothesis six cannot be determined based on non-significant correlations. Hypothesis six was not supported.

Additional Testing of Cost Motivations

For the relationship between cost motivation and future participation, a correlation that was not significant was found, $r_s = -.128$ ($p > .05$). Cost motivation is not related to future participation (See Table 9).

Table 9

Spearman’s Rho Correlation Coefficient: Motivation Variables and Future Participation

Variables	1	2	3	4.
1. Social Motivation	-	.210	.289	-.089
2. Market Motivation		-	.582**	.152
3. Cost Motivation			-	-.128
4. Future Participation				-

* $p < .05$, ** $p < .01$, *** $p < .001$

Additional Relationship and Correlations

It should be noted that a strong positive correlation was found between current participation and future participation, $r_s = .728$ ($p > .01$), indicating a significant relationship between the two variables. Though this was not an initial hypothesis, those who are currently participating tend to report a likelihood of participating in the future (see Appendix A).

Additionally, market motivation and cost motivation are strongly positively correlated, $r_s = .582$ ($p > .01$). Those who are motivated by market variables are more likely to be motivated by cost variables as well (see Table 9).

The overview of the results offer no support for the initial position that differences exist between socially motivated farmers and market motivated farmers. Further discourse on possible influences and consequences of the findings will be explored in the next chapter.

CHAPTER 5. DISCUSSION

Summary of Findings

This study explored the motivations of farmers in the four-county region of Becker, Clay, Otter Tail, and Wilkin counties in West-Central Minnesota. An original survey entitled Grower/Producer Survey was used to assess the production activity, market interests, motivations, and demographic information in order to examine whether there were demographic and motivational differences between those farmers who participate in Farm to School programs versus those who do not participate.

First, the study explored whether contextual characteristics (i.e., number of acres farmed, net farm profit, the earning of off-farm income, and age) influenced whether or not a farmer was participating or was likely to participate in FTS programs in the future. Next, the study explored whether the same contextual characteristics influenced how the farmers were motivated (i.e., social motivations or market motivations). Lastly, whether how a farmer was motivated (i.e., social motivations or market motivations) influenced a farmer's participation status (i.e., currently participating, not currently participating, at least somewhat likely to participate in the next five years, or not at all likely to participate in the next five years). Embeddedness theory was used to guide the research.

Research Question One

The first research question of this study centered on describing the “typical” FTS producer. Hypothesis one (i.e., there is an unknown relationship between context variables and the level of market embeddedness) was not wholly supported as there was no relationship between the market embeddedness score and two of the three context variables. One of the two components of the farm type variable did prove to be statistically related to market

embeddedness. Product variation was directly related to the market embeddedness variable; that is, as a respondent's product variation increased, the higher their market embeddedness score increased.

Hypothesis two (i.e., there is an unknown relationship between context variables and the level of social embeddedness) was not supported because of a lack of relationship between the context variables and the social embeddedness scores of the respondents. Additionally, there were no differences in the context variables between those respondents who were currently not participating in FTS and those who are currently are participating.

Research Question Two

The second research question was posed in order to understand what factors led growers to become initially involved in FTS. To answer this question, four separate hypotheses were developed (i.e., hypotheses 3-6). Hypothesis three stated there is an inverse relationship between the level of market embeddedness and the level of interest in current participation. This hypothesis was inconclusive due to the small sample.

Similarly, hypothesis four stated there is a direct relationship between the level of social embeddedness and the level of interest in current participation. Again, the number of respondents was too small to run statistical testing due to a large margin of error. The hypothesis was inconclusive.

Hypothesis five stated there is an inverse relationship between the level of market embeddedness and the level of interest in future participation. The hypothesis was not supported due to the lack of a statistically significant relationship between the market embeddedness score of a respondent and their response to the likelihood they would participate in FTS in the future.

Hypothesis six was also not supported. This hypothesis states there is a direct relationship between the level of social embeddedness and the level of interest in future participation. No statistically significant relationship was found between and respondent's social embeddedness score and the likelihood they would be participating in a FTS program in the future.

During the analysis, a third type of embeddedness score was exposed. Two variables of motivation, low production cost and low marketing costs, were found to be contributing to the total variance explained among the respondents. This third embeddedness score, Cost Embeddedness, while not proven to be statistically significant to the participation status of the respondents, was related to the market motivational variable. That is, if a respondent was motivated by cost variables, they were likely to also be motivated by market variables.

An additional, an unexpected relationship was discovered between those who indicated they were currently participating in FTS programs and those who were at least somewhat likely to participate in the future. That is, those who were currently involved in FTS were likely to continue to be involved in FTS over the next five years.

Future Research

Although the tests of this research failed to show significance related to whether a farmer participating in FTS is motivated by market needs *or* social benefits, the results are still in line with the majority of the literature. Izumi et al. (2010b) indicated that farmers are typically not motivated by one factor or the other, but instead a mix of motivations is commonly witnessed. It is necessary for a participant in the FTS context to gain more than economic value (Izumi et al., 2010a) *and* it is necessary to support one's business model by relying on social motivations.

Of the 36 respondents, only two indicated that all six market motivation variables were not at all important to them when deciding why they grow and sell the products they produce.

Similarly, none of the respondents indicated that that all six social motivation variables were not at all important to them. That is, no single respondent was not influenced by social motivations.

There were several important limitations to this study, which should be addressed before future research is attempted. First, questionnaire design issues should be addressed by including a more detailed product list. The questionnaire used for this research combined all storage vegetables, all perishable vegetables, and all fruits other than apples together into their own categories. Future researchers may wish to flush out individual products (i.e., carrots, onion, raspberries, squash, etc.) in order to provide a more detailed examination of interested farmers' ability to meet the needs of the community.

Secondly, although a representative list was compiled of interested farmers in the SHIP four-county region, a relatively small proportion of farmers responded, restricting the ability to conduct a detailed exploratory analysis. The number of farmers currently participating in FTS programs was exceptionally small and the ability to test for significance is greatly inhibited. Additionally, the initial sample frame of 84 participants was relatively small, contributing to the small number of respondents in the study. However, for the purposes of the current study, central limit theory suggests normality can be assumed after a sample size greater than 30 is obtained (Field, 2013). While this study is not generalizable to all farmers, limited error is assumed given that an $n = 36$ was achieved.

A larger initial sampling frame should be encouraged in future studies. In the current study, expanding the sampling frame into neighboring counties in Minnesota and North Dakota with similar populations and growing seasons may have led in an increase in response rate. Although an additional reminder letter was sent out following the initial mailing of the questionnaire in order to improve the response rate among the producers, the survey still resulted

in a relatively low response rate. Future researchers may wish to conduct inquiries into understanding differences between the Farm to School producers and farmers selling to more traditional wholesale markets. This would involve a larger initial population with the intention of obtaining a larger sample and different types of farmers could be compared. Additionally, to encourage participation in the future, an alternative method may be a better fit for this type of respondent. The use of an internet survey, such as Survey Monkey, may increase participation. Additionally, a notice of the study could be placed in University Extension newsletters or e-mail listservs.

Furthermore, the data were used as a secondary set to analyze responses to Farm to School markets specifically. Had the survey been exclusively Farm to School and had questions regarding market and social motivations been explicitly titled, the ability to discern between those wanting to participate and those who did not want to participate in Farm to School programs may have been more pronounced. That is, separating the motivations by social and market categories, instead of being interspersed, may have led to respondents choosing one section over the other.

Lastly, it may be beneficial for future researchers to complete a longitudinal study. One approach would be to identify farmers who are currently participating in Farm to School for the first time (i.e., completing their first season/school year with a school district), determine if they are willing to continue selling through this type of market for additional years, and then assess if the respondents are motivated by the same factors. This may be useful to understanding whether a farmer is perhaps motivated first by market factors and then recognizes the social motivations once they have become involved with the school district.

Implications

The results from this study indicate a larger study of currently active FTS participants may be necessary to fully understand the motivations of producers and the approach they utilize to selling to this type of market. This study, while useful in identifying some factors that lead farmers to want to continue or begin selling to Farm to School programs, is only the beginning of a larger initiative to promote school and community involvement in local food production and consumption. This study should be used as a springboard to conduct further analyses in order to identify what farmers want to participate in these types of markets. Funding such research could be beneficial to schools, state public health departments, and local United States Department of Agriculture officials who would like to see not only an increase in local food system involvement but also an increase in fresh fruit and vegetable consumption among school aged children.

Utilizing this study and other similar studies that evaluate the motivations of farmers alongside those studies that have identified the needs and motivations of school food preparation staff and directors could be beneficial to understanding the whole picture of Farm to School. If the needs of all participants can be met, this type of market is more likely to succeed. Moving forward, an increase in discourse among key school officials and their local farmers is vital to the success of Farm to School programs. Understanding each member's limitations and concerns is crucial and must be addressed before a fruitful agreement can be accomplished.

Closing Thoughts

Farm to School programs, along with several other types of direct to consumer or direct-to-institution markets are becoming increasingly popular. With the rise in participation in these markets comes a need for understanding all participants' perspectives in order to make their

endeavors beneficial. An increase in consumption of local foods, even if only part of one's dietary routine, can be helpful in increasing healthy food intake while benefiting neighbors and continuing an American tradition of the family farm. Further research with standardized methodology is needed to understand the impact on farmers, production managers, and consumers. If our schools are to continue to increase reliance on locally sourced products, more information is needed to help motivate farmers to begin and continue to participate in feeding the future generations.

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APPENDIX A. SPEARMAN'S RHO CORRELATION COEFFICIENT BETWEEN VARIABLES

Variables	1	2	3	4	5	6	7	8	9	10
1. Acreage	-	.051	-.320	.195	-.340	-.246	.013	.000	.135	.122
2. Product Variation		-	-.045	-.145	-.020	-.005	.486**	.186	.292	.204
3. Positive net farm profit			-	-.278	.099	.222	-.055	.048	.012	-.086
4. Adults earning off-farm income				-	-.361*	-.195	.262	.114	.288	.103
5. Age					-	.189	-.181	-.233	-.285	-.157
6. Social Motivation						-	.210	.289	-.089	.098
7. Market Motivation							-	.582**	.152	.115
8. Cost Motivation								-	-.128	-.007
9. Future Participation									-	.728**
10. Current Participation										-

*p<.05, **p<.01, ***p<.001

APPENDIX B. INSTITUTIONAL REVIEW BOARD LETTER



NORTH DAKOTA STATE UNIVERSITY

Institutional Review Board

Office of the Vice President for Research, Creative Activities and Technology Transfer

IRB/IR Dept. 6000

7357 NDSU Research Park Drive

Grand Forks, ND 58007

Phone: 701.785.8050

701.785.8050

Fax: 701.231.5020

Federalwide Assurance #7550-092478

IRB Certification of Exempt Human Research Project

January 22, 2013

Protocol #HS13136

"West Central Minnesota Grower/Producer Survey"

Richard Rathge

Dept. of Sociology/Anthropology, 424 IACC

Co-investigator(s) and research team: Kay Schwarzwalter, Jennie Lazarus

Study site(s): NDSU

Funding: n/a

It has been determined that this human subjects research project qualifies for exempt status (category # 2) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, *Protection of Human Subjects*).

Please also note the following:

- This determination of exemption expires 3 years from this date. If you wish to continue the research after 1/21/2016, the IRB must re-certify the protocol prior to this date.
- The project must be conducted as described in the approved protocol. If you wish to make changes, pre-approval is to be obtained from the IRB, unless the changes are necessary to eliminate an apparent immediate hazard to subjects. A *Protocol Amendment Request Form* is available on the IRB website.
- Prompt, written notification must be made to the IRB of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Any significant new findings that may affect the risks and benefits to participation will be reported in writing to the participants and the IRB.
- Research records may be subject to a random or directed audit at any time to verify compliance with IRB policies.

Thank you for complying with NDSU IRB procedures; best wishes for success with your project.

Sincerely,

Terry Grosz, MS, CIP

Manager, Human Research Protections Program

NDSU is an EO/AAE university.

APPENDIX C. COVER LETTERS

NDSU NORTH DAKOTA STATE UNIVERSITY

Center for Social Research
NDSU Dept. 8000, PO BOX 6050
Fargo, ND 58108-6050

T: 701-231-1058
F: 701-231-9730

January 21, 2012

Dear Grower/Producer:

You are invited to participate in a research study. The purpose of this study is to learn about the issues that local growers and food producers face when distributing and marketing their products in the region. We would also like to learn whether you would be interested in accessing new markets.

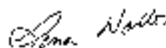
The study is sponsored by the University of Minnesota Extension and PartnerShip 4 Health, a component of the Statewide Health Improvement Program (SHIP). SHIP is an integral part of Minnesota's nation-leading 2008 health reform law. SHIP also strives to help Minnesotans lead longer, healthier lives.

The Center for Social Research at North Dakota State University (NDSU) in partnership with University of Minnesota Extension is conducting the study. Your household was selected from a list of area growers and food producers in the Becker, Clay, Otter Tail, and Wilkin county area in Minnesota and Cass County, North Dakota. A survey is included in this packet. The survey is voluntary and you can leave blank any question you don't want to answer. All responses are anonymous and will be reported in aggregate form. Data collected will be securely stored. Please take a few minutes to complete this important survey. For your convenience, we have enclosed a postage-paid return envelope.

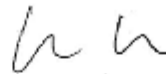
If you have any questions about this survey, contact Ryan Pesch, Extension Educator at pesch@umn.edu or 218-236-2270. If you have questions about your rights as a human research participant or to report a problem, contact NDSU's Human Research Protection Program at 701-231-8908.

Thank you for your participation.

Sincerely,



Gina Nolte
Director of Health Promotion
Clay County Public Health
715 11th Street North, Suite 303
Moorhead, MN 56560
www.partnerSHIP4Health.org



Ryan Pesch
Extension Educator
University of Minnesota, Extension
715 11th St N Ste 107C,
Moorhead, Minnesota



UNIVERSITY OF MINNESOTA | EXTENSION

NDSU NORTH DAKOTA STATE UNIVERSITY

Center for Social Research
NDSU Dept. 8000, PO BOX 6050
Fargo, ND 58108-6050

T: 701-231-1058
F: 701-231-9730

February 15, 2012

Dear Grower/Producer:

Two weeks ago we invited you to participate in a research study by completing a survey. The purpose of this study is to learn about the issues that local growers and food producers face when distributing and marketing their products in the region. We are also hoping to learn whether you would be interested in accessing new markets.

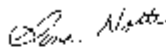
The University of Minnesota Extension and PartnerShip 4 Health, a component of the Statewide Health Improvement Program (SHIP) are sponsoring the study. The Center for Social Research at North Dakota State University (NDSU) in partnership with University of Minnesota Extension is conducting the survey.

The survey is voluntary and you can leave blank any question you don't want to answer. All responses are anonymous and will be reported in aggregate form. Data collected will be securely stored. If you haven't already done so, please take a few minutes to complete this important survey. It is necessary that we have your completed survey by **Thursday, February 28** so that you are included in the survey results.

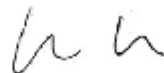
If you have questions about this survey, contact Ryan Pesch, Extension Educator at pesch@umn.edu or 218-236-2270. If you have misplaced your survey and would like another mailed to you, or if you would like us to conduct the survey by phone, contact Kay Schwarzwalter at the Center for Social Research at 701-231-1058 or kay.schwarzwalter@ndsu.edu. If you have questions about your rights as a human research participant or to report a problem, contact NDSU's Human Research Protection Program at 701-231-8908.

Thank you for your participation.

Sincerely,



Gina Nolte
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UNIVERSITY OF MINNESOTA | EXTENSION

APPENDIX D. SURVEY INSTRUMENT

GROWER/PRODUCER SURVEY

PRODUCTION AND DISTRIBUTION

Q1. How many acres (all land owned, leased, or used free of charge) did you farm in 2012? _____

Q2. What proportion of your total sales is each of the following products?

Product	% of total sales
Fruits	
Vegetables	
Meats	
Dairy	
Eggs	
Specialty products (i.e., honey, maple syrup)	
Other (specify)	
Total	100%

Q3. In the following list of products, please tell us a) which ones you currently grow and sell, and b) whether you would be interested in growing and selling if schools/institutions express interest.

Product	Currently grow and sell	Interested in growing and selling
Perishable vegetables	<input type="checkbox"/>	<input type="checkbox"/>
Storage vegetables	<input type="checkbox"/>	<input type="checkbox"/>
Fruit other than apples	<input type="checkbox"/>	<input type="checkbox"/>
Apples	<input type="checkbox"/>	<input type="checkbox"/>
Chicken or turkey	<input type="checkbox"/>	<input type="checkbox"/>
Eggs	<input type="checkbox"/>	<input type="checkbox"/>
Beef or pork	<input type="checkbox"/>	<input type="checkbox"/>
Honey	<input type="checkbox"/>	<input type="checkbox"/>
Grains	<input type="checkbox"/>	<input type="checkbox"/>
Dried beans	<input type="checkbox"/>	<input type="checkbox"/>
Maple syrup	<input type="checkbox"/>	<input type="checkbox"/>
Dairy products	<input type="checkbox"/>	<input type="checkbox"/>
Wild rice	<input type="checkbox"/>	<input type="checkbox"/>
Bison	<input type="checkbox"/>	<input type="checkbox"/>
Other (specify) _____	<input type="checkbox"/>	<input type="checkbox"/>

Q4. In which of the following months of the year do you sell the products you raise? *(Check all that apply)*

- | | | | |
|-----------------------------------|--------------------------------|------------------------------------|-----------------------------------|
| <input type="checkbox"/> January | <input type="checkbox"/> April | <input type="checkbox"/> July | <input type="checkbox"/> October |
| <input type="checkbox"/> February | <input type="checkbox"/> May | <input type="checkbox"/> August | <input type="checkbox"/> November |
| <input type="checkbox"/> March | <input type="checkbox"/> June | <input type="checkbox"/> September | <input type="checkbox"/> December |

Q5. Which of the following technologies do you employ on your operation? *(Check all that apply)*

- | | |
|---|---|
| <input type="checkbox"/> High tunnel | <input type="checkbox"/> On-farm freezer |
| <input type="checkbox"/> Greenhouse | <input type="checkbox"/> Dedicated delivery vehicle |
| <input type="checkbox"/> Low tunnel | <input type="checkbox"/> Website |
| <input type="checkbox"/> Mechanical cultivation | <input type="checkbox"/> Other (specify) _____ |
| <input type="checkbox"/> Walk-in cooler | |

Q6. For each of the following venues, please tell us: a) of the products you currently sell, what is the percentage of total sales for each venue and b) over the next 5 years, what is the likelihood that you will sell or continue to sell through these venues (using a 1 to 5 scale, with 1 "being not at all likely" and 5 being "very likely")?

Venues	a) % of total sales <u>CURRENTLY</u>	b) <u>OVER THE NEXT 5 YEARS</u>
		1=Not at all likely; 5=very likely
CONSUMER DIRECT		
Farmers Market	_____	1—2—3—4—5
Community Supported Agriculture (CSA)	_____	1—2—3—4—5
On-site (farm stand, U-Pick)	_____	1—2—3—4—5
Other Consumer direct (Specify) _____	_____	1—2—3—4—5
DIRECT TO STORE		
Natural food store/co-ops	_____	1—2—3—4—5
Conventional supermarket	_____	1—2—3—4—5
Restaurant/caterers	_____	1—2—3—4—5
Direct to institution (hospital, nursing home)	_____	1—2—3—4—5
Direct to School (Farm To School)	_____	1—2—3—4—5
Other direct to store (Specify) _____	_____	1—2—3—4—5
WHOLESALE		
Processor, packer	_____	1—2—3—4—5
Distributor, wholesaler, broker	_____	1—2—3—4—5
Grower cooperative	_____	1—2—3—4—5

Q7. What is your motivation or reasons for selling to consumer direct or direct to store markets? (Check all that apply)

- To educate customers/students about the food system and where their food comes from
- To provide a market for seconds
- To provide a market for surplus product
- To gain reliable customers
- To help diversify my market
- To reduce my farm's ecological footprint by selling to buyers close by
- To increase access to healthy locally grown food
- To build relationships within community
- For fair, steady prices
- For large volume orders
- For new revenue for my farm
- Other (specify) _____

Q8. How important are each of the following items when choosing how to sell the products you produce (using a 1 to 5 scale, with 1 being "not at all important" and 5 being "very important")?

Items	1=Not at all important; 5=very important
Highest Profits	1—2—3—4—5
The ability to produce at the level of my choosing	1—2—3—4—5
The ability to raise the products of my choosing	1—2—3—4—5
Low production costs	1—2—3—4—5
Low marketing costs	1—2—3—4—5
Relationships with customers	1—2—3—4—5
Short distance/Don't have to travel far	1—2—3—4—5
It is the only option I have to sell	1—2—3—4—5
Other (please specify) _____	1—2—3—4—5

Q9. During the 2012 growing season, how many MILES PER WEEK did you, family members, or employees drive in order to deliver products (including round trip mileage to drop off product and/or drive to farmers market)?
_____ miles per week

Q10. During the 2012 growing season, how many HOURS PER WEEK did you, family members, or employees spend on the following activities?

Hours per week

- a. On the phone related to selling what you produce _____
- b. On email related to selling what you produce _____
- c. Using social media (Facebook) related to selling what you produce _____
- d. Post-harvest handling such as boxing, washing, bunching _____
- e. Driving to deliver product or to reach farmers market _____
- f. Setting up/selling/breaking down at farmers market _____
- g. Website development and management _____
- h. Other major marketing/distributing activities (please specify) _____

Q11. How many hours per week on average do you spend marketing what you produce in the off season?

Q12. How difficult are each of the following issues for your farming operation (using a 1 to 5 scale, with 1 being "not at all difficult" and 5 being "very difficult")?

Issues	1=Not at all difficult; 5=very difficult
Labor costs	1-----2-----3-----4-----5
Fuel costs	1-----2-----3-----4-----5
Lack of processors	1-----2-----3-----4-----5
Marketing	1-----2-----3-----4-----5
Lack of distribution networks	1-----2-----3-----4-----5
Long travel distances to sell product	1-----2-----3-----4-----5
Meeting buyers' specifications	1-----2-----3-----4-----5
Liability/insurance costs	1-----2-----3-----4-----5
Finding customers	1-----2-----3-----4-----5
Production challenges	1-----2-----3-----4-----5
Food safety laws and regulation	1-----2-----3-----4-----5
Other (please specify) _____	1-----2-----3-----4-----5

FUTURE PLAN

Q13. What is your level of interest in taking part in the following distribution or marketing initiatives if they were to become available in your area over the next 5 years (using a 1 to 5 scale, with 1 being "not at all interested and 5 being "very interested")?

Distribution/Marketing initiatives	1=Not at all interested; 5=very interested
Cooperative processing facility	1-----2-----3-----4-----5
Distribution network of growers	1-----2-----3-----4-----5
Online buying club	1-----2-----3-----4-----5
Marketing	1-----2-----3-----4-----5
Regional labeling campaign	1-----2-----3-----4-----5
Farmer-led marketing cooperative	1-----2-----3-----4-----5
Online marketing cooperative	1-----2-----3-----4-----5
Regional consumer education campaign	1-----2-----3-----4-----5
Follow up meeting to discuss these options	1-----2-----3-----4-----5

Q14. Over the next 5 years, would you like to maintain, increase, or decrease overall farm production?

- Decrease (*By how much?*_____)
- Maintain.
- Increase (*By how much?*_____)

Q15. In the next 5 years, which would help your farm the most? (*Check all that apply*)

- Higher prices for what I sell
- More producer-run marketing cooperatives
- More processors
- More consumer education about local foods
- More support from state and federal agencies for local foods infrastructure
- More producer-run distribution cooperatives
- More farmers markets
- Follow up meeting to discuss these options
- Other (please specify)_____

Q16. Which of the following education or training topics would help you and your operation? (*Check all that apply*)

- | | |
|---|---|
| <input type="checkbox"/> Food safety/ GAPs | <input type="checkbox"/> Farm Finances |
| <input type="checkbox"/> Value-added processing | <input type="checkbox"/> Opportunities to meet face to face with institutions |
| <input type="checkbox"/> Value-added processing | <input type="checkbox"/> An agreement sample |
| <input type="checkbox"/> Marketing | <input type="checkbox"/> Knowing what products institutions want |
| <input type="checkbox"/> Ways to adjust production to meet demand | <input type="checkbox"/> Having my farm info shared with nearby institutions |
| <input type="checkbox"/> Season extension | <input type="checkbox"/> Other (please specify)_____ |
| <input type="checkbox"/> Post-harvest handling | |

PERSONAL CHARACTERISTICS

Q17. What is your age? _____

Q18. In 2012 what were total your gross farm sales?

- | | |
|--|--|
| <input type="checkbox"/> Less than \$5,000 | <input type="checkbox"/> \$25,000-\$49,999 |
| <input type="checkbox"/> \$5,000-\$9,999 | <input type="checkbox"/> \$50,000-\$99,999 |
| <input type="checkbox"/> \$10,000-\$24,999 | <input type="checkbox"/> \$100,000 or more |

Q19. Did you have a positive net farm profit in 2012?

- Yes
- No

Q20. Did any adult in your household earn off-farm income?

- Yes
- No

Q21. Is there anything else you would like to share about your experiences marketing and distributing foods in the region?