

**EXPLAINING CONSUMERS' WILLINGNESS TO PAY FOR LOCAL AND  
ORGANIC FOOD USING EXTENDED THEORY OF PLANNED BEHAVIOR  
MODEL**

by

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## **ABSTRACT**

Organic food has witnessed rapid growth for more than two decades, while local food has gained popularity in recent years. This thesis was dedicated to investigate the motivations behind the intention and purchasing behavior of organic and local foods consumers employing an extended version of the Theory of Planned Behavior (TPB) model. Additionally, a Food Fashion Involvement (FFI) scale was developed to assist in explaining intention and WTP for trendy food.

Eleven experimental sessions were conducted in Newark, Delaware using a sample of 128 subjects recruited from the surrounding region. Each session included several rounds of experimental auctions and questionnaires. Sweet corn and strawberry jams were chosen as experimental products respectively representing fresh and processed categories. Generally, participants exhibited the highest WTP for organic, followed by local food. For the analysis, two methods were adapted, factor analysis and tobit regression. Factor analysis was conducted on outcome beliefs and evaluation items. Latent factors were identified for consumers' perception of organic and local. Tobit regression models were constructed using intention and WTP as the dependent variables and social demographics, the FFI scale and the TPB items as independent variables. Results of the tobit regression suggested FFI scale to be a constructive predictor of intention and WTP, especially for fresh produce. Variables of the TPB demonstrated different significance across eight models, and General Attitude and Perceived Availability were found to have the most explanation power.

In order to add more dimension to the study, models were compared from three angles, including intention versus WTP, organic versus local and fresh versus processed. Results implied that a high intention did not necessarily lead to a high WTP, vice versa. Additionally, the TPB model could predict organic purchasing intentions better than the local version. Models for fresh products also demonstrated more significance than the processed ones.

## **Chapter 1**

### **INTRODUCTION**

#### **1.1 Background and Motivation**

Organic food and local food are two popular trends that have attracted increasing attention from researchers and consumers. The sales of organic food grew by approximately 20% per year during the 1990s (Dimitri and Green, 2002), and even though the growth rate has slowed down in recent years, it continued to increase in the range of 10 to 20% per year between 2000 and 2005 (Klonsky and Richter, 2007). In order to regulate and promote the organic industry, the United States Department of Agriculture (USDA) constructed the regulatory framework of the National Organic Program (NOP) in October 2002, which implemented uniform standards for products to be certified as organic.

As for locally grown products, direct-to-consumer sales have increased from 0.3 percent of total agricultural sales to 0.4 percent in 2007. In the meantime, compared to \$551 million of direct-to-consumer marketing in 1997, the total amount reached \$1.2 billion in current dollar sales in 2007, according to the Census of Agriculture, 2007. Farmers markets are one of the most important outlets of local food. Based on the data from USDA's Agricultural Marketing Service (AMS), between 1994 and 2010, the number of farmers markets recorded in the United States has more than tripled from 1,755 to 6,132. Also, according to the National Farmer Market Managers Survey conducted in 2005, sales at farmers markets were slightly

over \$1 billion annually and more than 25 percent of vendors at surveyed markets derived their sole source of farm income from farmers markets. Government is paying significant attention and providing many avenues of support to the development of local food industry, examples including Federal State Marketing Improvement Programs and the National Farmers' Market Promotion Program. The burgeoning of these two industries is partly because more individuals started to realize the importance of a healthy and safe diet as well as having environmental concerns and altruistic reasons for their food choices (Hu et al., 2009; Thilmany, Bond and Bond, 2008).

Even though the local food industry has witnessed a continuous and dramatic increase in recent years, no uniform definitions have been proposed due to the differences among regions, consumers and local markets (Local Food System, USDA, 2010). Albeit lacking definition and specification, consumers still present a preference for local food in most recent studies (e.g. Hu et al., 2009; Ernst and Darby, 2008; McNull, 2007). One possible explanation for this surprising popularity is that consumers linked the word local to the attributes they desired. Therefore, understanding how consumers perceive local would be constructive in adapting marketing strategies and promoting future development of the local food industry.

With respect to organic food, it has been officially defined by USDA with specific and strict requirements on the production process. However, from the perspective of consumers, whether the stated features of organic are convincing or not, and important or not, remain uncertain. Examining how consumers perceive organic attributes and the motivations behind their purchase will be a constructive addition to the literature. Meanwhile, as the two niche markets are often compared and marketed

together, local and organic food will be studied individually and simultaneously for a better understanding of both.

## **1.2 Purpose**

The purpose of this thesis was to use an extended version of the theory of planned behavior (TPB) to examine consumers' willingness to pay (WTP) for local and organic foods elicited from an auction experiment. The TPB is a widely applied behavioral model designed to explore the determinants of an individual's decision to enact a particular behavior, and it has gained some success and credibility in predicting a variety of behaviors (Ajzen, 1988, 1991; Godin and Kok, 1996). An extended version of the TPB was applied which allowed us to analyze many possible aspects that could have an influence on consumers' decisions of purchasing local and organic food. Two food products, sweet corn and strawberry jams, were selected for this study, each in three versions: conventional, organic and local. Instead of treating WTP as a behavior intention as in most of the previous research (Ajzen and Driver, 1992; Pouta and Rekola, 2001; Werner et al., 2002), we used WTP as an indication of the actual behavior since we adapted the method of experimental auctions to mimic the real market scenario and elicit consumers' WTP closest to one's actual preference. The differences between behavioral intention and behavior were also studied by constructing another model using the TPB variables with behavioral intention as the dependent variable. Compared with the one with WTP as the dependent variable, we can acquire a better understanding of when intention would turn into action and what factors would cause this process to fail. Meanwhile, we can test how the TPB performs as a psychological model in predicting consumer behavior of purchasing sustainable food products.

Another objective was to identify key factors that could increase or decrease one's WTP for local and organic food. We included psychological variables from the TPB model, a fashion involvement scale that reflected how consumers perceived themselves in relation to searching, preparing and consuming trendy foods, and social demographic variables. Not only did this study discuss the basic three factors of the TPB (attitude, subjective norm and perceived behavior control), but two extended predictors, self-identity and personal norm were included. Additionally, the perceived behavior control will be measured from two aspects: perceived consumer effectiveness and perceived availability, respectively focusing on evaluating one's inner control influenced by one's beliefs and external barriers affected by practical difficulties, in accordance with the findings from Vermeir & Verbeke (2007) and Nurse et al. (2010). Tobit regressions were used in analyzing and interpreting data.

Results of this research will benefit producers, marketers and policy makers by providing information on what factors can influence consumer preferences towards local and organic food. With this knowledge, more appropriate labeling and consumer publicity can be achieved. It can also offer insights on how consumers perceive the term of local. Referring to the theoretical aspect, results of the thesis can provide some evidence on how the TPB model works in the real world scenario and which determinants functioned more effectively.

### **1.3 Organization of Thesis**

Following this introduction is a detailed literature review chapter. There, the TPB model will be introduced. Detailed discussion of its two main functions, predicting behavioral intention and behavior, is discussed and distinguished. Then traditional variables and extended variables of the TPB model: attitude, subjective

norms, perceived behavior control, self-identity and personal norm are defined separately and a general review on each variable is provided. For the second part, past studies and findings of organic and local food are examined. The main focus is to investigate what variables have been most commonly discussed and how they behaved as determinants in the past literature that focused on examining consumer choices of organic and local food. Social demographic variables are also included in the examination.

In chapter three, we continue to discuss the experimental design and data analysis methods adapted in this thesis. To start with, the population and sample are introduced. Then, the process of the experiments is described and the dependent and independent variables are listed and presented based on the layout of the questionnaire. The experimental auction method is explained as well as a short review of its application. The next part focuses on the data analysis methods, which involves factor analysis and Tobit regression. The concepts and applications of each method are introduced in detail in order to better interpret the results in the part following.

Chapter four starts with the display and discussion of the demographic and the key psychological variables. Then factor analysis results focused on outcome beliefs and outcome evaluation items are interpreted and new variables will stem from this process. Finally, regression models are specified and analyzed by Tobit model.

In the following chapter, the results from the Tobit models will be interpreted in detail individually. Variance part will also be included. To start with Chapter five will be a discussion and summary of the results, including comparisons by intention versus WTP, organic versus local and fresh versus processed versions.

Then the final part of the thesis will first focus on theoretical and practical implications, followed by limitations of the study and possible future research topics.

## **Chapter 2**

### **LITERATURE REVIEW**

This chapter reviews the literature on consumer purchase behavior of local and organic food across several disciplines. First, the literature based on which we formed the scale of Food Fashion Involvement (FFI) is examined. Then, a detailed examination of the literature that applies to the original and extended version of TPB model is used to display the basic structure of the behavioral model from which we adapted most of our psychological variables. Finally, past literature that involved the topic of organic or local food is introduced, focused on the food attributes used to investigate and social demographic variables that had an influence on the demand or WTP for local and organic.

#### **2.1 Food Fashion Involvement Scale**

The concept of involvement has been widely used in studies of consumer behavior in the past and demonstrated to be a robust measure of topics like consumer identity, brand loyalty and purchase decisions (Summers, 1970; Laurent and Kapferer, 1985; Chae, Black and Heimeyer, 2005; Chen, 2007). Generally speaking, if a product is considered to produce high involvement for consumers, then a consumer would take substantial time and efforts before making a choice decision, while if a product produces low involvement, then the cost of searching for its information, keeping brand loyalty, changing for a substitute product or competing brand is minimum (Bell and Marshall, 2003).

The concept of food involvement was introduced by Goody (1982), describing it as the level of importance food has in a person's life, displayed in aspects like how much people like to talk about food or how do they engage in food related activities. These can be categorized more specifically in five phases of the life cycle of food, including acquisition, preparation, cooking, eating, and disposal. Since different people have different perceptions referring to how important food is, intuitively food involvement should be able to predict consumer behavior to some extent on food choices. Bell and Marshall (2001, 2003) constructed the Food Involvement Scale (FIS) which applied twelve items covering all five of Goody's food provisioning process. They proposed that consumers with higher level of food involvement exhibited greater ability to discriminate different food products and greater differences in hedonic ratings. Local and organic food holds distinct characteristics from those that are produced conventionally and consumer choices of them should be able to be predicted by at least some of the FIS items. Therefore, five items from the FIS were selected in the formation of the new food fashion involvement (FFI) scale developed in this thesis, measuring food involvement from the perspectives of cooking, preparation and eating.

After accounting for the traditional and prevailing aspects in the measurement of one's food involvement scale, such as taste and cooking, we take into consideration its fashionable or trendy characteristics. The concept of fashion, which is often used for describing a current trend in how a person dresses up, is borrowed to reflect the trendy attributes of food. Food presents several characteristics that resemble fashionable products. First of all, food trend varies in product and time. For example, super fruits like acai and pomegranates attracted attention from consumers of developed countries since 2005, but the heat has been cooled down and diverted

recently. Secondly, there are TV shows and magazines introducing popular food, ways of cooking and interesting restaurants to the public. Besides, not only specific food products, but food brands and versions attract consumers as well. For example, blueberry itself is a popular fruit, while blueberry produced by certain farms or without pesticides might be desired by different groups of consumers. For each consumer, the amount of time and energy they devoted to the activities of learning, distinguishing purchasing and preparing food products differ, and consumers who pay more attention to them indicate a higher involvement level. In order to capture this difference, several items were adapted from the literature on Fashion Involvement (Summers, 1970; Chae, Black and Heimeyer, 2006) combined with selected items from the FIS (Bell and Marshall, 2001; 2003) and newly constructed items to form a new variable named Food Fashion Involvement (FFI). This variable was designed to predict consumer behavior for trendy food in particular, which in our case was local and organic food.

## **2.2 Theory of Planned Behavior**

In the efforts of interpreting consumer behavior, many explanatory theories have been proposed. The reason why we chose the Theory of Planned Behavior model over others was its advantage of breaking down one's purchasing intention into specific determinants. The TPB model originated from the discussion of the expectancy-value models (Fishbein, 1963) which linked evaluative criteria and the concept of attitude together and later formed the basis for the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), then the theory of planned behavior (TPB) (Ajzen, 1985; 1991).

One central idea behind the TRA and the TPB is that the direct factor motivating people to conduct a certain behavior is the behavioral intention. Extended from this basic hypothesis, the TRA applied two variables of attitude and subjective norm in the prediction of people's behavioral intention of engaging in a particular behavior. Since it lacked consideration of volitional control, the TPB was further developed with the addition of perceived behavior control, taking into account the feasibility of the behavior in a given context. The TPB model has emerged into one of the most influential and popular conceptual frameworks for the study of human action (Ajzen 2001). It has been applied to the interpretation of many human behaviors in the food industry, including purchasing fair trade grocery products, the use of gene technology in food production and consumer choices of organic and local food (Sparks et al., 1995; Shaw et al., 2000; Michaelidou and Hassan, 2008; Nurse et al. 2010).

In the original TPB model (Ajzen and Fishbein, 1980), three major determinants of behavioral intention were proposed, including Attitude, Subjective Norm (SN) and Perceived Behavior Control (PBC), which were constructed on the basis of salient beliefs that were elicited from a preliminary questionnaire. As a general rule, the behavioral intentions would be greater if one has a greater attitude, SN or PBC (Ajzen and Madden, 1986; Sheeran, Trafimow and Armitage, 2003).

The TPB model postulates that salient beliefs are the prevailing determinants of a person's intentions and actions. Three kinds of salient beliefs, behavioral beliefs, normative beliefs and control beliefs are distinguished to separately influence the underlying determinants of attitudes, subjective norm and behavioral control. In this study, a pilot questionnaire consisting of nine open-ended questions was designed to elicit consumers' salient beliefs on locally and organically produced

food. It was handed out to 25 randomly chosen subjects during the University of Delaware's Ag Day. We included the top 75% of the salient beliefs that appeared in the questionnaire in composing the items in the final questionnaire.

The expectancy-value model is used in the composition of attitude and SN by linking values and actions. According to Feather's expectancy-value model (1982, 1992), a person's behavior is a combative effect of the expectations an individual holds towards the behavior and the person's subjective valuation of the consequences that might occur following the conduction of the certain behavior. When this model is applied to the TPB, taking attitude as an example, the expectancy-value products will be the result of objects' expectation of the attributes and the value placed on the specific attributes in a multiplicative form (Eagly and Chaiken, 1993). The expectancy-value model will also apply to SN items.

Although several meta-analyses studies have shown that the three components of the TPB model can explain the behavioral intention fairly well, the level of prediction is still relatively low, with variance explained less than 40% (Sheeran and Taylor; 1999; Godin and Kok, 1996). In this thesis, two extended variables, Self-Identity (SI) and Personal Norm (PN) were included in the models as well. These two variables have been demonstrated to contribute to explaining human behavior in the past (Rise et al., 2010; Bissonnette and Contento, 2001; Sparks, Guthrie et al., 1997; Ajzen, 1992). One more addition of perceived consumer effectiveness (PCE) was considered under the criterion of PBC, which measure how much consumers believe that their decision as an individual would influence the environmental and food system. In the following part, a detailed literature review is illustrated in the efforts of laying the theoretical groundwork for the thesis.

### **2.2.1 Intention**

Intentions represent a person's motivation or behavioral plans that can directly lead to actual behavior with appropriate opportunities and resources. As a general rule, a stronger intention leads to a greater possibility of performing the behavior in question. The variable of Intention is a central factor in both the TRA and TPB models. With that in common, the TPB model distanced itself by considering PBC as a constructive addition of volitional control, collectively predict behavior achievement (Fishbein & Ajzen, 1975; Ajzen, 1991). Intuitively, only when a person can decide whether to perform or not to perform the behavior can he/she turn motivation into behavior.

Empirical evidence supported the high correlation of motivation and action by the examination of various behaviors, like voting (Fishbein and Ajzen, 1981) and mother's choice of feeding method (Manstead, Proffitt and Smart, 1983). A common conclusion reached was that when behaviors do not highly involve with control issues, it can be predicted by intentions with considerable accuracy. Some literature raised different opinions, demonstrating that intention or the combination of intention and PBC did not lend strong evidence to the actual behavior (Godin and Kok, 1996; Eagly and Chaiken, 1993; Bagozzi, 1992). Eagly and Chaiken (1993) criticized the TPB model for its lack of clarification of the nature of intention and behavior relationship. A meta-analysis of the TPB conducted by Godin and Kok (1996) also indicated that intentions and PBC account for only 34% of behavior in question.

Traditionally, intention is denoted by directly asking whether the person intended to do a certain behavior within a time period in the near future. As a substitute, WTP has also been used as an indication of behavioral intention in several papers (Ajzen and Driver, 1992 ; Pouta and Rekola, 2001; Nurse et al. 2010).

However, almost all of the past research (except for Nurse et al. 2010) we are aware of has applied the stated WTP instead of the revealed WTP we applied in the thesis.

### **2.2.2 Attitude**

Attitude refers to the overall favorable or unfavorable evaluations of the behavior in question by the individual (Ajzen, 1985, 1987, 1991). Fishbein and Ajzen applied the expectancy-value model in the formation of attitude, according to which, attitude can be developed from the salient beliefs people hold about the object of the attitude in the form of certain outcomes. Also individuals' subjective value on each outcome is considered in a multiplicative fashion enhancing the degree of one's preference. According to the TPB (Ajzen, 1991), if one holds a positive attitude towards engaging in a behavior, he/she is more likely to conduct that behavior. When the behavior in question is whether to purchase a food product or not, the salient beliefs and evaluations respectively translate to the consequences of consuming such product and how important those are for him/her. For example, the behavioral belief item of when I purchase local food, I will be obtaining fresher food (strongly disagree to strongly agree) will be multiplied with the evaluation item of obtaining fresher food is (very unimportant to very important) to me. These expectancy-value products are then summed up over the n salient beliefs as shown in Equation 2.1.

$$Attitude = \sum BehavioralBeliefs \times Evaluation \quad 2.1$$

Many previous studies have demonstrated the significance of attitude in the regression on intention or behavior. For instance, Roberts (1996) found that when the attitude variable was included in examining the consumption behavior of green

consumers in the 1990s, R square was increased from 6% to 45%. Kaiser and Gutscher (2003) stated that attitude not only predicted behavioral intention, it also predicted the self-reported environmental behavior, like examining car use for the next university trip. Shen et al. (2003) supported the literature by the finding that Chinese consumers' attitude towards behavioral intention of United States manufactured apparel was significant and attitude explained more variation than subjective norms in the intention model. Attitude was also found to be an important predictor in studies of sustainable food consumptions. For instance, Saba and Messina (2003) found attitude to be a significant predictor of intention of eating organic fruits and vegetables of a representative sample of the Italian population.

Besides eliciting attitude with expectancy-value model using salient beliefs and subjective evaluation, general attitude towards purchasing local and organic product was also measured by two items adapted from Ajzen and Fishbein (1980). Then the mean value was calculated and checked for correlation with the same attitude based on salient beliefs. If the correlation is significant, general attitude items would be used as the attitude variable in the regression model. Sparks and Shepherd (1992) adapted this method in the study of green consumerism. The general attitude items were found to be significantly positively correlated with the multiplicative summation of outcome beliefs and evaluations. Then they included only the general attitude items in the regression towards one's intention of consuming organic vegetables in the next week and found that it was a significant predictor to behavioral intention.

### 2.2.3 Subjective Norm

Subjective norm (SN) is a social factor referring to the perceived social pressure to perform or not to perform a given behavior (Ajzen, 1985, 1987, 1991). The desire to act as others think you should act is usually induced by a sense of self pride for socially valued acts, like paper recycling. If one fails to deliver, he/she could feel shamed or wrong. The social pressure mainly stems from the socially important others, most frequently referred ones including family, friends and social groups who care about the behavior in question. Items for SN were formed from normative beliefs which determined by underlying belief structures and elicited by a preliminary survey asking general consumers whose suggestions or preferences were important to them. Then according to expectancy-value model, SN is a function of normative beliefs which is the subjective likelihood that specific salient groups or individuals think the person should or should not perform the behavior multiplies with the person's motivation to comply with that referent (Fishbein, 1975).

$$SN = \sum (NormativeBelief \times MotivationtoApply) \quad 2.2$$

Kalafatis et al. (1999) found that SN had a significant influence on consumers' choice of purchasing an environmentally friendly product. Also, Kaiser and Gutscher (2003) found that the SN can significantly predict the behavior intention of restricting car use. However, some studies showed SN to be the weakest predictor of intention, which might reflect the lesser importance of normative factors as determinants of intentions in the study of behavior (Godin & Kok, 1996; van den Putte, 1991). Tarkiainen and Sundqvist (2005) proposed that the reason for SN's explanation power to be relatively weak was due to the correlation between attitudes

and SN. Therefore, they examined the relationships between SN and attitudes and intention to buy organic food in a selected sample of Finnish consumers and the results indicated that SN affected behavioral intention indirectly through attitude formation.

#### **2.2.4 Perceived Behavior Control (PBC)**

The third antecedent of intention is the degree of perceived behavioral control which refers to the perceived ease or difficulty of performing the behavior (Ajzen, 1985, 1987, 1991). When people feel they lack the resources or opportunities to perform the behavior, they are unlikely to form strong intentions to do so. Although PBC has received wide empirical support in early applications (e.g. Conner and Sparks, 1996; Ajzen, 1991), many researchers raised the problem that PBC only captured external constraining influences while failing to incorporate internal dimension (e.g. self-efficacy). Sparks et al. (1997) discussed the proposed issues and found that perceived difficulty and perceived control did load onto separate factors and only perceived difficulty demonstrated predictive effects on intention in the two studies they conducted. In order to capture both the inner control and external barriers, two predictors, perceived availability (Nurse et al., 2010; Vermeir and Verbeke, 2008; Vermeir and Verbeke, 2006; Sparks and Shepherd, 1992) and perceived consumer effectiveness (Nurse et al., 2010; Vermeir and Verbeke, 2008; Roberts, 1996) were introduced into the TPB model.

Perceived availability (PA) refers to the perceived ease or difficulty for a consumer to obtain or consume a certain product. Vermeir and Verbeke (2006) indicated that the intention to purchase sustainable food was hampered by consumers' low perceived availability of the product in question, despite a high motivation for consumers to choose sustainable food. Verbeke and Vermeir (2008) further support

their notion in another study on consumers' sustainable food choices and also included a second PBC variable of PCE.

Perceived consumer effectiveness (PCE) is a measure of the subject's judgment in the ability of individual consumers to affect environmental resource problems (Antil, 1978). It reflects how effective one perceives his/her action in the given context, and if subjects have strong faith in their behavior influence, they tend to show more concern and initiative for the problem in question. Webster (1975) found in his study that socially conscious consumers felt strongly about their ability of affecting the pollution situation and they considered the social impact of their purchases. In examining consumers' likelihood of performing ecologically conscious consumer behavior, Berger and Corbin (1992) indicated that PCE had a significant influence. Also, Roberts (1996) concluded that PCE was the best predictor of performing ecologically conscious behaviors. A more recent research by Vermeir and Verbeke (2007) examined PCE and perceived availability at the same time in exploring sustainable food consumption among young adults in Belgium. They found that in combination, they explained 57.5% of the variance. Nurse et al. (2010) studied the effect of PCE on local, organic and fair trade apples and tomatoes in a choice set experiment, and their results indicated PCE to be significantly related to the marginal attribute values of the products, except for local tomatoes.

### **2.2.5 Self-identity**

Self-identity refers to salient and enduring characteristics of one's self-perception or self-concept (Rise and Sheeran, 2010; Sparks and Guthrie, 1998). According to identity theory (Thoits and Virshup, 1997), when people answer the question "who am I?", its social meaning will also be considered, for example, one's

social demographic characters, social roles and social types. The question of whether self-identity should be included in the TPB model has invoked debates among many researchers (Thompson and Rise, 2002; Fekadu and Kraft, 2001; Conner and Flesch, 2001). Based on the discussion, Rise et al. (2010) provided a meta-analysis of 40 studies on self-identity and the TPB, therefore constituted the most systematic analysis of the self-identity /intention relation to data. They reached a conclusion that self-identity captured 6% additional variance in explaining behavioral intention after the three key components, attitude, subjective norms and PBC were taken into consideration. According to O’Keefe’s (2002) additional-variable paradigm, self-identity should be included as an additional predictor in the TPB.

There are many examples of how self-identity contributes to the explanation of behavioral intention. Sparks and Shepherd (1992) applied the statement “I think of myself as a green consumer” as an indication of self-identity and found that it correlated highly ( $r = 0.37$ ) with the behavioral intention of purchasing organic food. In another study by Sparks and Guthrie (1998), they used “I think of myself as a health conscious person” as an addition to attitude, SN, PBC and perceived moral obligation. It increased the R square from .69 to .72. Shaw, Shiu and Clark (2000) also included a self-identity variable with the other TPB variables in predicting the purchase of fair trade groceries, and found that it slightly improved the R square by .03.

### **2.2.6 Personal Norms**

Personal norm refers to an individual’s own values involved with a certain behavior (Cialdini, Kallgren, and Reno, 1991). This notion is closely related to moral norms which refer to an individual’s perception of the moral correctness or

incorrectness of performing a behavior (Ajzen, 1991; Sparks, 1994). Moral norms are particularly important and meaningful when examining issues that have ethical or moral implications and it has been suggested to be a constructive factor in many studies (Randall and Gibson, 1991; Beck and Ajzen, 1991). Compared with subjective norms, which evaluate how one perceives opinions or pressures of socially important others, personal norms capture one's self-evaluation of whether should act on or violate what he/she believe is ethical. When considering subjective norms, one tries to meet the expectations of socially important others, while when considering personal norms, one has his/her own expectations to achieve. Self-ID and personal norms are two concepts that easily mixed up as well. For self-ID, there is no moral evaluation taken into consideration, simply the question of "who am I" when conducting certain behavior. While for personal norms, the focus is on "do I feel guilty if fail to meet my expectation" concerning the behavior in question.

Ebreo et al. (1999) applied the personal norm in the analysis of recycling and found that it had the greatest predictive relationship with conservation attributes. Nordlund and Garville (2003) found that a personal moral obligation to reduce car use, in order to reduce the environmental problems, can positively influence the willingness to reduce car use. A number of studies have also found measures of personal norms to be predictive of intentions to eat genetically modified food (Sparks, Shepherd, & Frewer, 1995) and buy milk (Raats, 1995).

### **2.3 Local and Organic Food**

This thesis focused on the study of two versions of food products: local and organic. The attributes of local and organic themselves fall into the category of credence attributes, whose quality cannot be judged either before or after inspection,

purchase, and usage (Caswell, J. and Mojduszka, E, 1996). Such attributes require efficient information dissemination and trust from consumers (Hu, Woods and Bastin, 2009). This research will explore the factors influencing consumers' WTP for the two credence attributes and provide future guidance for labeling and marketing.

### **2.3.1 Local Food**

Numerous studies have showed that consumers would pay a premium for local food. Brown (2003) indicated that 22% of surveyed Missouri consumers would pay a 5% or more price premium for local fresh produce. Carpio and Messa (2009) found that South Carolinians were willing to pay an average premium of about 27% for state-grown produce and about 23% for state-grown animal products relative to out-of-state products. Darby et al. (2006) suggested that consumers were willing to pay more for local food, especially those frequenting direct markets like a farmers market, which would pay 54 cents more per quart for fresh local strawberries. Loureiro and Hine (2002) showed that Colorado consumers were willing to pay a higher premium for local than for organic or GMO-free potatoes. Thilmany (2008) found that consumers were willing to pay a significant amount for food items produced locally. Costanigro et al. (2010) used primary data from a choice experiment and found that the value of the local claims trumped that of organic in apples. Darby et al. (2008) suggested that consumer demand does indeed exist for locally produced foods and that this demand is independent of other attributes like greater freshness. Hinson and Bruchhause (2005) indicated that respondents had a strong WTP for local berries. James (2009) found that among local, sugar-free and organic, the locally grown designation had the largest positive effect on the likelihood of a product being selected. Only Brooker and Eastwood (1987, 1989) demonstrated

opposite opinions on paying premiums for locally grown in their study of Tennessee consumers, in which they revealed that many consumers were unwilling to pay a premium for local food. However, this study was conducted prior to the current trend in local food and we are unaware of any other studies supporting this point.

So what are the attributes that attract consumers to local food? In 2009, the Food Marketing Institute conducted an online national survey with a sample of 2,040 U.S. grocery shoppers and the respondents ranked freshness (82%), supporting the local economy (75%) and taste (58%) as the top three reasons for purchasing local food. Many other studies have examined different attributes and their effect on consumers' preferences. Several studies have indicated that greater freshness and higher quality were the most cited reasons for purchasing local produce, especially in direct marketing channels, like farmers market (Brown, 2003; Eastwood et al., 1999; Govindasamy et al., 1998; Stephenson and Lev, 2004 and Wolf et al. 2005). Nutrition, which is often considered as an extension of quality and freshness, is another drive for local food market patrons (Eastwood, 1999 and Keeling et al., 2009). Those who paid much attention to supporting the local economy and farmers were unsurprisingly more willing to select local produce over others (Eastwood et al., 1999; Gallons et al., 1997 and Stephenson and Lev, 2004). Batte et al. (2010) on the other hand, found that price was the most important attribute influencing consumer choice for a processed, multi-ingredient food product—blackberry jam. To summarize, consumer preferences towards local food were generally motivated by a combination of personal benefits as well as altruistic factors as suggested by past literature.

Despite consumers' belief of the existence of these characteristics above, whether local food can offer the benefits or not requires more empirical studies.

Several studies have provided evidence on the benefits of developing local. A report by the USDA suggested that localization could have a positive influence on increasing local income and raising the local employment rate by the location shifting of intermediate stages of food production and direct-to-consumer marketing (USDA, 2010), which would very possibly result in economic growth. As for some other popular attributes associated with the notion of local, like healthy diet, food safety, and less food miles, for now no sufficient empirical evidence has been provided.

Human factors, on the other hand, could offer some explanations on consumers' purchasing decisions as well. Two national studies indicated that education and income levels could equally and significantly influence the purchase of local food (Keeling-Bond et al., 2009; Zepeda and Li, 2006). Brown (2003) also found that consumers with a household income over \$50,000 or a graduate / professional degree, tended to pay more for local in the examination of Missouri consumers. Gender and farming experience were found to be significant predictors for purchasing local in this study. According to the work of Batte and Hooker (2006), females, consumers with children, older consumers and those with higher income per household member were all likely to pay a higher price for local. Adams (2008) indicated that females were willing to spend \$0.49 more for local food than males. Also, respondents who relied on a garden for some of their fruits and vegetables had a \$0.65 price premium for local produce compared to those who did not. Unbergre et al. (2009) found that consumers who were younger, had no children living at home, had higher incomes, and who spent a lower percentage of their income on groceries were more likely to be willing to purchase and to pay a premium for regionally produced, natural beef.

Considering the uncertainties on local food definition and influence, as well as the surprisingly fast growth of the industry, one can see that consumers' choice of local food is a complex behavior involving further examination. Therefore, we combined the TPB with social demographic variables to achieve a multi-faceted and comprehensive understanding of consumers' behavior of purchasing local food.

### **2.3.2 Organic Food**

According to the standard specified by the USDA, organic food needs to be produced without antibiotics, chemical fertilizer, growth hormones, and synthetic pesticides. Organically raised animals are also required to have access to pasture/free range and be fed with organic feed. With the credibility of the USDA and consumer demand, organic food has constantly displayed a higher value and popularity as a niche market. Huang (1993) reported that the majority of consumers indicated a ten percent more WTP for organically grown produce. Govindasamy and Italia (1999) also suggested that a majority of consumers would be willing to pay a premium to obtain organic produce in their survey of various grocery retail establishments in New Jersey. Gil, Gracia, and Sanchez (2000) found that consumers in Spain would pay about 12 percent more for organic red meats and chicken. Additionally, Dransfield et al. (2005) suggested that in France and the Netherlands, one-fifth of consumers would offer 20 percent extra for organic pork.

Organic characteristics and social demographic information can both influence consumers' choice of organic produce. Many studies have indicated that consumers expected organic food to be safer, healthier and high quality (Brennan et al., 2003; Michaelidou & Hassan, 2008). Tregear et al. (1994) conducted telephone interviews of 152 households and found that 29 percent of respondents claimed to

have purchased organic food before and 45 percent of this group claimed the main reason for purchasing organic was concern for their own health while another 9 percent chose organic because of its less environmental damage. Again, price was the most commonly cited reason for not buying organic food. McEachern and Willock (2004) examined consumers' perception of organic meat in the United Kingdom, and found that the main drivers of organic meat purchasing activity were higher perceived standards of animal welfare and health benefits. On the other side, the top three major barriers to not purchasing organic meat were price (56%), a perceived difference in flavor and taste (18%) and the fact that most organic meat in the U.K. was imported (7%). Tsakiridou et al. (2006) found that regular buyers of organic strongly believed that organic consumption was an important element in environmental protection and health concerns were the driving force behind organic consumption for older consumers and families with children.

Thompson (1998) reviewed the findings on social demographic variables in a number of studies on purchasing organic products from 1987 and 1997, and found there were substantial variations across different results. Overall, households with higher income were more likely to purchase organic, which contradicted the findings of the Hartman Group (1996) stating that households with income under \$25,000 or over \$50,000 were the groups most likely to purchase organic products. Age was only significant in three studies out of twelve and education varied in its significance across the studies. Tsakiridou et al. (2006) found that consumers with higher education and income levels seemed to be in favor of organics. Cluster analysis conducted by Cowan and Hutchinson (1996) showed that the cluster of "organic purists" were mostly full-time employed, with smaller households of one or two persons, and more likely to be

highly educated and in a higher income category. Loureiro, McCluskey and Mittelhammer (2001) examined the relationship between socio-demographic characteristics and organic apple purchasing behavior. Results suggested that organic apples attracted consumers with children, higher income, and a concern for the environment. Hill and Lynchehaun (2002) found that purchase of organic milk was statistically related to income but not age or lifestyle choices. In McEachern and Willock (2004)'s study, the addition of farming experience turned out to be positively correlated with the purchase of organic meat. Krystallis and Chryssohidis (2005) found that younger consumers were more likely to be organic purchasers. In the next chapter, we would proceed in the discussion of methodologies that adopted in this thesis.

### **Chapter 3**

## **METHODOLOGY**

The main objective of this thesis was to analyze how an extended TPB model performed in the prediction of consumers' behavior towards local and organic foods and to compare the models of behavioral intention with actual behavior. In addition, we would like to explore consumers' demand for organic and local food, and more importantly, how did their perceptions influence the purchase decision. We chose to use experimental auctions to elicit subjects' WTP since auctions use real products and real money to create an experimental setting similar to the real world scenario where participants have a greater incentive to reveal their true values (Fox et al. 1996). These were accompanied by surveys to obtain systematic and general information on the subjects.

Eleven sessions of economic experiments were conducted between July 28th and August 19th, 2010. In total, 128 subjects participated in the experimental auction and filled out a questionnaire which included questions of an extended version of the TPB and other issues. Each session lasted about one and a half hours and consisted of eight to nineteen subjects. All sessions were held in the Experimental Economics Laboratory for Policy and Behavioral Research at the University of Delaware. Each participant received approximately \$45 minus the expense for purchasing food if applicable.

Subjects were recruited through many channels including handing out flyers at supermarkets and during Ag Day, which is a university annual event that

attracts people from neighboring states, as well as advertising on local classified ads and Craig's List. The experiment was described as a "food marketing study" by the University of Delaware to avoid mentioning phrases like local food or organic food.

### **3.1 Experimental Design**

All the experiments were designed on the interface of Qualtrics and conducted on computers with the aid of presentation and PowerPoint display. In order to avoid order effects bias, items within each section were randomized, except for the part eliciting social demographic information. In this part, the questions were designed to start with easier, less personal ones and gradually transitioned to a more personal level. Each session consisted of several rounds of questionnaires and food auctions. First, subjects were asked to complete a questionnaire on food involvement, shopping habits and demographic information. From these items, the variable of FFI was generated, and at the same time, a general understanding of subjects was acquired. In the second part, experimental auctions were used to elicit subjects' WTP for each version of the food products. Definitions for each version were provided if available. We selected the commonly employed Vickrey fourth-price auction in the process of eliciting WTP. In order to make sure every subject grasped the basic idea and principle of the auction, a practice auction was conducted and PowerPoint slides were shown and explained to the subjects prior to the actual auctions. The main purpose was to explain clearly that the best strategy was to bid one's true value, with bidding higher leading to the possibility of losing money and bidding lower creating the chance to miss out on a possible profit. Each subject practiced an auction using induced values against computer bidders, where the three highest bidders actually purchased one item at the price of the fourth highest bid.

After making sure that everyone understood the mechanism, two rounds of food auctions were conducted. The food products chosen were strawberry jam and sweet corn in three versions—conventional, organic and locally-grown. The main reason of choosing these two products was that they are common products available in all three versions. Moreover, they separately represented the fresh and processed food categories and both have been examined in past literature which allowed for further comparisons on the results.

As several studies have shown that how information is presented can influence purchase likelihood and WTP significantly (Gifford and Bernard 2004, 2008; Berger and Smith, 1998; Verbeke and Ward, 2001), factual and neutral definitions were provided to the subjects. Conventional food was described as neither organic nor local, with no information as to whether they were produced using antibiotics, hormones and other practices allowed in farming, but within government standards and limits. Organic food was defined according to the USDA standards discussed earlier. As for local food, no standard definition was provided, only mentioning that they can be assumed to be from close by since they were just purchased. Subjects were informed that only one auction would be binding, and the binding auction was pre-decided and sealed in an envelope visible to all and would be opened by a volunteer from the subjects after the entire experiment was finished following Bernard and Bernard (2009).

After the auctions, another questionnaire which focused on the TPB was filled out by the subjects. The multi-item constructs included outcome evaluation, outcome beliefs, general attitudes, social identity, subjective norms and perceived

behavior control. All the items were displayed on seven-point scales. Details on the questionnaire will be given in the following section.

### **3.2 Questionnaire Design**

The questionnaire conducted during the experiments were designed to measure the following variables: food fashion involvement, outcome beliefs, outcome evaluations, general attitudes, subjective norms, self-identity, subjective norms, perceived behavioral control, social demographic information and consumers' shopping habit. The main purpose of the questionnaire was to acquire evaluation of the TPB model. Items were constructed based on the past literature and amended in accordance with the context of organic and local food purchase.

#### **3.2.1 Food Fashion Involvement (FFI)**

Seventeen items were included in the questionnaire, and they were constructed and measured by a seven point scale, with 1 indicating strongly disagree and 7 indicating strongly agree as shown in Table 3.1. In order to check whether consumers perceived the involvement items from two aspects, an explanatory factor analysis was conducted on the original items and according to the principle of eigenvalue larger than one, two factors were elicited. However, nine items had the problem of lacking significant loading. Therefore, we deleted the items that did not load on either of the factors, and then eight items were left for further analysis.

**Table 3.1 Original Food Fashion Involvement Items.**

Number	Item
1.1.	I like to try new foods
1.2.	I think I have a very healthy diet
1.3.	Food quality is more important than price
1.4.	I eat mainly to satisfy my hunger
1.5.	When I travel, I enjoy trying area specialties
1.6.	I eat out a lot
1.7.	I grow a lot of my food in my garden
1.8.	I enjoy cooking
1.9.	I rarely talk about food
1.10.	I don't have the time to eat or cook like I'd like to
1.11.	I like shopping for food or cooking supplies
1.12.	I am loyal to my favorite brand foods
1.13.	My family and friends turn to me for advice on foods and cooking
1.14.	The latest food and cooking trends matter to me
1.15.	I like to watch food and cooking shows
1.16.	I like to try new recipes
1.17.	I prefer "comfort food" to trendy food

Another round of explanatory factor analysis was conducted on the remaining items and again two factors were discovered. The first factor included five items, which were the first five items listed in Table 3.2. Item 2.5 loaded slightly below the standard of 0.50 (0.40), but was retained because it made sense intuitively. The second factor contained three items, which were 2.6, 2.7 and 2.8, linking more closely to the trendy side of food, but the factor loading of item 2.8 related to both factors. The eight items in total are very coherent and reliable with a Cronbach's alpha of .808. Examining the three items that related to the theme of fashion food, we found that they all revealed one's adventurous attitude about food, by stating whether one would like to try new products and methods of cooking. Since the boundary

between traditional and trendy side of food could not be distinctly marked and more overlapping could be discovered by examining the meanings of the items, we applied the coherent unity of eight items as the FFI scale.

**Table 3.2 Food Fashion Involvement Items.**

Number	Item
2.1.	I enjoy cooking
2.2.	I like shopping for food or cooking supplies
2.3.	My family and friends turn to me for advice on foods and cooking
2.4.	The latest food and cooking trends matter to me
2.5.	I like to watch food and cooking shows
2.6.	I like to try new foods
2.7.	When I travel, I enjoy trying area specialties
2.8.	I like to try new recipes

If examining it more carefully, they can be roughly categorized as two groups, with potential overlapping on both sides. Item 2.3, 2.4, 2.5 and 2.8 measure how subjects enjoy preparing their own food, which is the more traditional side of food consumption, while item 2.1, 2.2, 2.6 and 2.7 evaluate how they perceive new foods and food trends, which reflect the fashionable side of one's food consumption.

### **3.2.2 Outcome Beliefs and Outcome Evaluations**

The items of outcome beliefs were designed to evaluate consumers' perception of local and organic food as well as how they reacted to some popular impressions of new food trends. There were in total twenty-one items in this section, thirteen of which targeted local food and eight for organic food. All items were measured with a 1 to 7 likert type scale; with 1 indicating strongly disagree while 7

indicating strongly agree. Table 3.3 illustrates all the items for outcome beliefs of local food.

**Table 3.3 Outcome Beliefs Items for Local Food.**

Number	Item
3.1.	If I purchase local food, I'll be Obtaining fresher food
3.2.	If I purchase local food, I'll be Purchasing better tasting food
3.3.	If I purchase local food, I'll be Improving my health and the health of my family
3.4.	If I purchase local food, I'll be Supporting small family farms
3.5.	If I purchase local food, I'll be Improving animal welfare
3.6.	If I purchase local food, I'll be Reducing gasoline consumption due to transportation (lower food miles)
3.7.	If I purchase local food, I'll be Supporting the rural community
3.8.	If I purchase local food, I'll be Getting better quality food
3.9.	If I purchase local food, I'll be Purchasing safer food
3.10.	If I purchase local food, I'll be Developing personal relationship with farmers
3.11.	If I purchase local food, I'll be Supporting sustainable farming practices
3.12.	If I purchase local food, I'll be Able to tell where the food is from
3.13.	If I purchase local food, I'll be Benefiting the environment

Items 3.1, 3.2, 3.3, 3.8, 3.9, 3.10 and 3.12 measured consumers' personal considerations like freshness, taste, health, quality, safety and personal relationship with farmers, when they chose local food. Two of the items (3.4 and 3.7) were designed to examine whether consumers pay much attention to supporting farms and rural community. Finally, four items (3.5, 3.6, 3.11 and 3.13) were designed to measure the general attitude towards environmental protection and animal welfare.

The construction of items for organic were basically the same as local food, excluding the somehow unique perceptions of local food, including freshness,

origin, supporting rural community, supporting family farms and lower food miles, as shown in Table 3.4.

**Table 3.4 Outcome Beliefs Items for Organic Food.**

Number	Item
4.1.	If I purchase organic food, I'll be Purchasing better tasting food
4.2.	If I purchase organic food, I'll be Improving my health and the health of my family
4.3.	If I purchase organic food, I'll be Improving animal welfare
4.4.	If I purchase organic food, I'll be Getting better quality food
4.5.	If I purchase organic food, I'll be Purchasing safer food
4.6.	If I purchase organic food, I'll be Benefitting the environment
4.7.	If I purchase organic food, I'll be Supporting small family farms
4.8.	If I purchase organic food, I'll be Supporting sustainable farming practices

Outcome evaluation items were included in accordance with outcome beliefs items in order to obtain how important each belief was to the subjects. Detailed items were listed in Table 3.5. Then using the expectancy-value model, outcome evaluation items were multiplied with outcome belief items to form a variable called Attitude. This variable will mainly serve as information provider relating to how consumers think about local and organic food. In the regression analysis, the variable Attitude would be presented in a simpler way measured by a seven-point scale elicited by another four items. Details would be discussed in the next section of General Attitude.

**Table 3.5 Outcome Evaluation Items for Local and Organic Food.**

Number	Item
5.1.	Obtaining fresher food is Very Unimportant-Very Important
5.2.	Purchasing better tasting food Very Unimportant-Very Important
5.3.	Improving my health and the health of my family Very Unimportant-Very Important
5.4.	Supporting small family farms is Very Unimportant-Very Important
5.5.	Improving animal welfare is Very Unimportant-Very Important
5.6.	Reducing gasoline consumption due to transportation (lower food miles) is Very Unimportant-Very Important
5.7.	Supporting the rural community is Very Unimportant-Very Important
5.8.	Purchasing safer food is Very Unimportant-Very Important
5.9.	Developing personal relationship with farmers is Very Unimportant-Very Important
5.10.	Getting better quality food is Very Unimportant-Very Important
5.11.	Benefiting the environment is Very Unimportant-Very Important
5.12.	Supporting sustainable farming practices is Very Unimportant-Very Important
5.13.	Able to tell where the food is from is Very Unimportant-Very Important

### **3.2.3 General Attitude**

After obtaining the information on consumers' attitude on each attribute, four items on consumers' general attitude of purchasing local and organic were included in the questionnaire, as shown in Table 3.6. The variables created from the four items were named GeneralAttL for local food and GeneralAttO for organic food. The correlation between this variable and Attitude elicited from outcome beliefs/evaluation items would be calculated. If significant, only the GeneralAttL and GeneralAttO would be included in the final regression model for an easier interpretation. The two groups of items were also measured by a seven point scale, measuring the overall perception of whether they believe purchasing local and organic food is right and appropriate.

**Table 3.6 General Attitude Items for Local and Organic Food.**

Number	Item
6.1.	Buying organic food is Bad:Good
6.2.	Buying organic food is Foolish:Wise
6.3.	Buying local food is Bad:Good
6.4.	Buying local food is Foolish:Wise

### **3.2.4 Subjective Norm**

When subjective norm was first introduced by Ajzen and Fishbein's model in 1980, it was measured by responses to normative beliefs of socially important others, like family or friends, multiplied by one's motivation to comply. Normative beliefs which indicated the social pressure experienced when making decisions of purchasing organic and local were elicited in the preliminary survey and the responses corresponded to what has been generally discussed in the literature. According to Shaw et al. (2000), subjective norm can be measured by one single item representing all referent others, as in: "Most people who are important to me think I should purchase organic cotton apparel products". Therefore, we used the single item format and formed a new variable named SubNormL/SubNormO as shown in Table 3.7.

**Table 3.7 Subjective Norm Items for Local and Organic Food.**

Number	Item
7.1.	I tend to do what people who are important to me think I should do
7.2.	Most people who are important to me think I should purchase local food
7.3.	Most people who are important to me think I should purchase organic

### 3.2.5 Perceived Availability (PA)

Nine items were included in the evaluation of PA with six of them for local food (PAL), and five for organic (PAO), as shown in Table 3.8. Items were adapted from several papers (Ajzen and Madden, 1986; Ajzen and Timko, 1986; Chan and Fishbein, 1993), and included additional ones to capture the somewhat unique barriers for purchasing local and organic food. Since it has been reported that the construct of PA items lack inner reliability, Cronbach's alpha and Pearson's correlation between items were calculated to form a more robust scale for PA.

**Table 3.8 Perceived Behavior Control Items for Local and Organic Food.**

Number	Item
8.1.	If I wanted to, it would be easy to purchase organic food
8.2.	If I wanted to, it would be easy to purchase local food
8.3.	Local food is too expensive
8.4.	It's difficult to find local food
8.5.	Organic food is too expensive
8.6.	It's difficult to find organic food
8.7.	Local food varies greatly in quality
8.8.	Organic food varies greatly in quality
8.9.	Food advertised as local isn't always really local

### 3.2.6 Perceived Consumer Effectiveness (PCE)

PCE measured one's evaluation of his/her ability to influence the outcome of a solution by way of his/her action, and it has been found to be a significant predictor in environmentally related projects (Antil, 1978; Webster, 1975). Roberts (1996) constructed four items measuring subjects' PCE, and this thesis adapted two to form a variable named PCE: "Since one person cannot have any effect upon pollution and natural resource problems, it doesn't make any difference what I do" and "Each

consumers' behavior can have a positive effect on society by purchasing products sold by socially responsible companies". Item 8.1 and 8.2 kept the essence of these two questions while being adjusted according to the impact organic and local food might have on the environment and food system. They were significantly correlated by .8195 and also measured by a seven point scale.

**Table 3.9 Perceived Consumer Effectiveness Items for Local and Organic Food.**

Number	Item
9.1.	No matter what I buy, I can't have an influence on the environment by myself
9.2.	No matter what I buy, I can't influence the food system by myself

### 3.2.7 Self-identity (SelfID)

The construction of self-identity items involved self and environmental concerns based on the particular attributes of organic and local. One item was adapted from Sparks and Shepherd (1992), "I think of myself as a 'green consumer'", examining how green consumerism effects consumers' self-evaluation and accordingly influences their intention and behavior. Another item was also added from Sparks and Shepherd (1992), "I think of myself as a health-conscious consumer." which was designed to detect consumers' health-conscious identification. Finally, two items were included to directly evaluate self-identity on purchasing organic and local. All items were measured with a 1 to 7 likert type scale, with 1 representing strongly disagree and 7 strongly agree. Detailed items are shown in Table 3.10. The variables formed by those items were named SelfIDL and SelfIDO in the future analysis.

**Table 3.10 Self-Identity Items for Local and Organic Food.**

Number	Item
10.1.	I consider myself a typical buyer of local food
10.2.	I consider myself a typical buyer of organic food
10.3.	I consider myself a green consumer
10.4.	I think of myself as a health conscious consumer

### **3.2.8 Personal Norms (PN)**

Personal norm was measured by an item proposed by Schwartz (1980) and later frequently applied in the literature (Shaw et al., 2000; Thøgersen and Olander, 2006), “I feel that I have an ethical obligation to purchase organic cotton apparel products.” We adapted the question and changed it correspondingly to local and organic food, respectively named as PNL and PNO. Another item stressing how people feel when purchasing organic and local was added to form a more reliable measurement. Therefore, organic and local each had two items for the personal norm variable. They were also measured in a seven point scale. Items for personal norms are displayed in Table 3-11.

**Table 3.11 Personal Norm Items for Local and Organic Food.**

Number	Item
11.1.	I feel that I have an ethical obligation to purchase local food
11.2.	I feel that I have an ethical obligation to purchase organic food
11.3.	Buying organic food makes me feel like a better person
11.4.	Buying local food makes me feel like a better person

### 3.2.9 Behavioral Intention

As Azjen and Fishbein (1980) suggested in their proposal of the TPB model, behavioral intention was the direct antecedent of the actual behavior and three key variables from the TPB model: attitude, subjective norm and perceived behavior control can effectively predict behavioral intention. In the case of this thesis, the behavioral intention should be one's intention of purchasing organic and local in the near future. The items used here are displayed in Table 3.12.

**Table 3.12 Behavioral Intention Items for Local and Organic Food.**

Number	Item
12.1.	I will look for organic food next time I go food shopping
12.2.	How often in the next two months do you intend to buy organic fresh produce
12.3.	How often in the next two months do you intend to buy organic processed foods (e.g. bread, jam)
12.4.	I will look for locally grown food next time I go food shopping
12.5.	How often in the next two months do you intend to buy local fresh produce
12.6.	How often in the next two months do you intend to buy local processed foods (e.g. bread, jam)

Eagly and Chaiken, (1993) suggested that it would be constructive to include a time constraint on the intention since it could improve the predictive ability of attitude and subjective norm. Therefore, temporal contexts like “in the next time I go food shopping” and “next two months” were included in every item. Two items, 12.1 and 12.4, measured the intention as a whole and were measured on a seven-point scale. More specific questions were asked for each category of food product, fresh and processed, in accordance with the model with corn and strawberry jam bids. These

items, 12.2, 12.3, 12.5 and 12.6 were measured on a five-point scale, also diverting the question slightly to the frequency of purchase, with 1 indicating “Not at all” and 5 “Very often”.

### **3.3 Data Analysis**

#### **3.3.1 Factor Analysis**

The factor analysis applied in this thesis mainly aimed at identifying the latent structure of different sets of variables as well as served as a data reduction vehicle. In this way, more composite variables can be generated and included in the regression equation. Additionally, it contributes to the understanding of variables in dissecting them into sub-dimensions that express similar meanings. Moreover, it contributes to the understanding of the latent dimensions and more specific explanation of dependent variables. In this thesis, factor analysis was conducted on outcome beliefs and evaluation items in order to discover whether there exists any latent dimensions that could be grouped together to explain subjects’ attitude.

Based on the main objectives, common factor analysis was selected for this analysis. A first look at the sample size satisfied the basic requirements that it should reach at least for 50 (128 for this research) and there must be more observations than variables. In this thesis, the factor analysis was conducted separately on the items of several questionnaire sections including the outcome beliefs section for organic and local and perceived behavior control sections.

The process of factor analysis started with an assessment of the appropriateness, including checking the Barlett test of sphericity and sampling adequacy. The Barlett test of sphericity is a statistical test for significant correlations

among at least some of the variables. Significance ( $<.05$ ) indicates sufficient correlations exist for conducting factor analysis. The measure of sampling adequacy (MSA) is another measure for the appropriateness of factor analysis. It is an index ranging from 0 to 1, with 1 indicating each variable is perfectly predicted by the other variables without error. In order to proceed, MSA has to reach .05, any value below which would be deleted one at a time. Data reaching the basic requirement will then be examined with common factor analysis. The first step is to determine how many factors should be retained and two criteria were applied: eigenvalue above 1 and the scree test. Total variance explained and whether communalities are above .50 would also be considered for the number of factors. The rotation method applied was Varimax, which is the most popular orthogonal factor rotation method and maximizes the sum of variances of required loadings of the factor matrix. Factor loadings were examined and the ones with cross-loading issues were omitted. Finally, factors with loading above .50 were retained and named individually for future analysis.

In order to assess the reliability of the new factors generated from factor analysis, Cronbach's alpha was conducted to evaluate the consistency between multiple items. Cronbach's alpha is a reliability coefficient that is most widely used for examining the consistency of the entire scale. It ranges from 0 to 1, with .70 being the generally agreed lower limit. In this thesis, Cronbach's alpha was applied to the factors generated after factor analysis in the section of outcome beliefs and PBC. It was also utilized on other sections like food fashion involvement, self-identity and personal norm in order to check whether the construct was robust enough.

### 3.3.2 Tobit Regression

In this thesis, we intend to predict behavioral intention and WTP for organic and local food products using a list of extended TPB variables combined with selected social demographic variables. Considering the dependent variables in this study were censored, Tobit regression models were applied. The Tobit model was first developed by James Tobin in 1958. It refers to censored or truncated regression models in which the range of the dependent variable is constrained in some way (Amemiya, 1985). Here, the data is censored because of the boundary for auction bids and intention scales.

In this model, a two-limit Tobit model was adapted since both bids and the intention scales were censored by upper and lower bounds (Kaiser et al., 1992). Equation 3.4 shows that two variables,  $L_i$  and  $R_i$  were created to capture the censoring.

$$y_i = \begin{cases} L_i & \text{if } y_i^* \leq L_i \\ \beta x_i + e_i & \text{if } L_i < y_i^* < R_i \\ R_i & \text{if } y_i^* \geq R_i \end{cases} \quad 3.4$$

where  $y_i$  = Observed dependent variable,

$y_i^*$  = Latent variable,

$L_i$  = Censored variable for left-censored data,

$R_i$  = Censored variable for right-censored data,

$x_i$  = Matrix of independent variables (including an intercept term),

$\beta$  = Vector of unknown regression parameters to be estimated,

$e_i$  = Vector of errors, assumed to come from the standard normal distribution.

**Chapter 4**  
**STATISTICAL ANALYSIS**

**4.1 Respondent Demographics and Descriptive Information of Key Individual Items**

**4.1.1 Descriptive Information for WTP and Demographic Information**

WTP was measured by subjects' bid for each of the food products, ranging from \$0 to \$10 representing the amount of money they would pay in order to get that product. Even though the WTP is not the retail price one would pay in the real world market, they do work like a contract because one has to pay with real money if the round is bounded. Therefore, WTP elicited from experimental auction can be treated like the scenario that is most similar to the actual behavior. The simple statistics of the different bids are listed in Table 4.1.

**Table 4.1 Simple Statistics for Conventional, Local and Organic Bids**

Variable	Number	Mean	Std Dev	Min	Max
Cornconv	128	2.17	1.35	0	8
Cornlocal	128	2.65	1.47	0	8
Cornorga	128	2.90	1.60	0	8
Jamconv	128	2.31	1.09	0	5
Jamlocal	128	2.94	1.37	0	7
Jamorga	128	3.16	1.45	0	8

Demographic information on the sample appears in Table 4.1, compared with Delaware Census data. The gender of respondents was distributed fairly evenly, with slightly more females (57.03%) than males (42.97%). The age of participants spanned widely from 18 to 79 with most people came from the age group of 25 to 44 (48.44%). The average age was about 39, skewing towards the younger side, considering that only 9 participants were over 65.

The majority of subjects reported at least some college education (82.03%), which represented a more educated pool compared to Delaware census data of 2010 (56.2%). This might due to the geographic location of the experiment, Newark being a college city with people living in the neighboring area more educated. As for household income, 13 participants (10.16%) reported a total before tax household income of less than \$10,000, somewhat larger than the state level (5.3%). More than 40% of subjects fell into the range of \$15,000 and \$49,000, compared to about 33.8% in the census data. A smaller, yet still considerable amount of subjects (35.15%) reported a household income from \$50,000 to \$149,999. The state level was about the same as the survey sample (33.8%). Correspondingly, fewer respondents reported a household income above \$150,000 from survey and census data, respectively 7.82% and 8.7%.

Whether the subjects were the primary shopper of their household was asked as well, and 92 (71.88%) reported that they were. Meanwhile, 36 (28.13%) of the subjects had children below the age of 18 in their household, which is about the same as the state census data (29.1%).

**Table 4.2 Summary of Social Demographic Variables**

Characteristic	Questionnaire		Census
	Number	Frequency	Frequency
Sex			
Male	55	42.97	48.5
Female	73	57.03	51.5
Age			
18-24	22	17.19	9.4
25-44	62	48.44	26.6
45-64	35	27.34	26.5
65 and over	9	7.03	14.1
Education			
High school or below	23	17.97	43.8
College or above	105	82.03	56.2
Income			
Less than \$10,000	13	10.16	5.3
\$10,000 to \$14,999	4	3.13	4.5
\$15,000 to \$24,999	20	15.63	10.3
\$25,000 to \$34,999	16	12.5	9.9
\$35,000 to \$49,999	20	15.63	13.6
\$50,000 to \$74,999	19	14.84	20.1
\$75,000 to \$99,999	11	8.59	13.4
\$100,000 to \$149,999	15	11.72	14.2
\$150,000 to \$199,999	6	4.69	4.9
\$200,000 or more	4	3.13	3.8
Primary Shopper			
Yes	92	71.88	
No	36	28.13	
Children			
Yes	36	28.13	29.1
No	92	71.88	70.9

Source: Delaware Census 2010 Data <http://www.uscensus2010data.com/10-delaware-household-education-immigration-demographics>

From the analysis of the demographic data, generally speaking, the subjects in this study were younger and more highly educated than typical Delaware consumers. They also tend to be the primary shopper of a household without children under 18 years old.

Since there is no official definition for local food, a section for detecting consumers' opinions for it was designed, asking the subjects to evaluate several popular perspectives. Each item was measured by a seven point scale with one indicating strongly disagree and seven strongly agree. From the results shown in Table 4.3, we can see that consumers tend to agree the most on the definition of within 25 miles. They showed relatively positive opinions on the distance except for 400 miles. The top three popular definitions were within 25 miles, within 50 miles and within my state.

**Table 4.3 Summary of Consumers' Perspectives on Local Definition**

Distance	Mean	St Dev
25 miles	5.91	1.52
50 miles	5.40	1.42
100 miles	4.27	1.84
400 miles	2.58	1.61
Within my county	4.73	2.08
Within my state	5.14	1.64
Within my or any neighboring State	4.70	1.60

#### **4.1.2 Descriptive Information for Key Psychological Items**

In order to obtain a general description of the psychological variables, the correlation between each item and scale mean was calculated. The items with no

significance were deleted and the ones with correlations greater than 0.7 were reported and discussed (Bissonnette and Contento, 2001). Since all the items were measured by a seven point scale, with 4 being neutral, consumers rated 1, 2 or 3 were grouped as the ones holding negative opinions while those rated 5, 6 and 7 were grouped as the ones holding positive opinions.

About 79% of the subjects reported that they enjoyed cooking and 75% liked shopping for food or cooking supplies. Most of the participants (87.5%) liked to try new recipes and slightly less than half of them (43.75%) were good resources for foods and cooking advices for their family and friends. Table 4.2 displayed the results discussed above.

**Table 4.4 Simple Statistic Items for FFI Items.**

FFI	M	Percent
I enjoy cooking	5.57	79%
I like shopping for food or cooking supplies	5.25	75%
I like to try new recipes	5.73	87.50%
My family and friends turn to me for advice on foods and cooking	4.02	43.75%

As shown in Table 4.3, local food was considered to be safer, healthier, taste better and with higher quality by most of the people interviewed (respectively 57.81%, 60.16%, 67.97% and 74.22%). The attributes of better tasting and higher quality were particularly highly valued with a mean of 5.07 and 5.14 out of a seven point scale. As for the impact on benefiting the environment and supporting sustainable farming practices, subjects did tend to hold a positive opinion towards them (respectively 70.31% and 67.19%). Slightly greater than half of the respondents

(57.81%) believed by purchasing local, one can develop personal relationship with farmers, which was a relatively distinct advantage that can be obtained by choosing local products.

As for organic food, consumers in general had more faith in them than local. Most people believed organic food to be safer, healthier, taste better, and with better quality (respectively 82.81%, 81.25%, 63.28% and 72.66%). Then also tended to trust its ability of supporting sustainable farming practices (64.84%) but only about half of the subjects thought purchasing organic can support small family farms (50.78%).

**Table 4.5 Simple Statistic Items for Outcome Beliefs Items.**

Outcome Beliefs	Local		Organic	
	M	Percent	M	Percent
Safe	4.80	57.81%	5.62	82.81%
Healthy	4.96	60.16%	5.61	81.25%
Tasty	5.07	67.97%	5.01	63.28%
Of high quality	5.14	74.22%	5.42	72.66%
Benefiting the environment	5.16	70.31%		
Supporting sustainable farming practice	5.05	67.19%	4.98	64.88%
Developing personal relationship with farmers	4.59	57.81%		
Supporting small family farms			4.60	50.78%

In evaluating the importance of each food attribute, summary of simple statistics were demonstrated in Table 4.4. Freshness, safety and healthiness were the three qualities that most subjects valued greatly (respectively 92.97%, 90.62% and 94.53%). Environmentally related attributes, including benefiting the environment, supporting sustainable farming practices, supporting the rural community and

supporting small family farms, on the other hand, although did not receive as much importance, still voted by three fourths of the participants (respectively 75.78%, 75%, 74.22%, and 77.34%).

From the perspective of people’s general perception of purchasing local and organic, 81.25% of them believed that it was good to choose organic while the percentage for local was 85.16%. While referring to whether the behavior of choosing the two products was foolish or wise, the number decreased slightly to 71.09% and 78.12% for organic and local, indicating a slight preference for local.

**Table 4.6 Simple Statistic Items for Outcome Evaluation and General Attitude Items**

Outcome Evaluation	M	Percent
Fresh	6.05	92.97%
Safe	5.83	90.62%
Healthy	6.21	94.53%
Benefiting the environment	5.27	75.78%
Supporting sustainable farming practice	5.20	75.00%
Supporting the rural community	5.04	74.22%
Supporting small family farms	5.16	77.34%
General Attitude	M	Percent
It is good to purchase local food	5.93	85.16%
It is wise to purchase local food	5.70	78.12%
It is good to purchase organic food	5.76	81.25%
It is wise to purchase organic food	5.37	71.09%

In responding to the questions of whether most people who are important to them think they should purchase organic and local, most people replied with a negative answer. Only 25.78% and 35.16% of them believed they were under social

pressure to purchase organic and local. Meanwhile, only 26.56% of the subjects hold the opinion that they tend to do what people who are important to them think they should do. Details were illustrated in Table 4.5.

**Table 4.7 Simple Statistic Items for Subjective Norms Items.**

Subjective Norm	M	Percent
Most people who are important to me think I should purchase local food	3.77	35.16%
Most people who are important to me think I should purchase organic food	3.48	25.78%
I tend to do what people who are important to me think I should do	3.24	26.56%

When asking about the perceived difficulties of purchasing organic and local food, 57.81% of the subjects believed that it is relatively easy to find organic food and 62.50% of them thought that if they wanted to, it would be easy to purchase organic food. The numbers for local food were similar with 51.56 % believing local was easy to find and 71.09% thinking they would be able to acquire them easily if they wanted to. The number to some extent explained that it did take some effort to purchase local, but they were definitely not unattainable. Table 4.6 summarized the results discussed before.

**Table 4.8 Simple Statistic Items for PA Items.**

PA	M	Percent
It's easy to find organic food	3.38	57.81%
If I wanted to, it would be easy to purchase organic food	3.38	62.50%
It's easy to find local food	3.63	51.56%
If I wanted to, it would be easy to purchase local food	3.11	71.09%

Most of the respondents (82.03%) agreed with the statement that they are a healthy consumer, yet only about half of them (45.31%) perceived themselves as green consumer, while even less considered themselves as typical organic buyer (28.12%). The subjects felt more obliged to purchase local food than organic in general (respectively 48.44% and 28.12%). 59.37% of them also believed that purchasing local makes them feel like a better person, while the number for organic food was 38.28%. See Table 4.7 for summary of results.

**Table 4.9 Simple Statistic Items for Self-identity and Personal Norms Items.**

Self-identity	M	Percent
I think of myself as a health conscious consumer	5.42	82.03%
I consider myself a green consumer	4.41	45.31%
I consider myself a typical buyer of organic food	3.34	28.12%
Personal Norm	M	Percent
I feel that I have an ethical obligation to purchase local food	4.11	48.44%
Buying local food makes me feel like a better person	4.63	59.37%
I feel that I have an ethical obligation to purchase organic food	3.47	28.12%
Buying organic food makes me feel like a better person	3.98	38.28%

## 4.2 Factor Analysis

One of the data analysis methods applied was exploratory factor analysis. It was conducted separately on the items that comprised variables of local and organic outcome beliefs, and outcome evaluation items. The reason why it was conducted on the selected variables was because they represented the most listed reasons and its corresponding importance of one's incentives behind purchasing local and organic. However, since outcome beliefs items for local and organic respectively contained thirteen and eight items while outcome evaluation contained thirteen items as well,

factor analysis was applied as a data reduction method in order to discover the relations between items and which factor contribute the most to consumers' food choices.

As discussed in the past chapter, all the items were measured by a 7-likert scale. In order to keep consistent with the original measurement, after isolating latent factors from the original variables, the mean and standard deviation of the newly formed variables were calculated and used for further explaining consumer attitudes. The value of variance accounted for referred to the percent of total variance that was common among the variables in the factor.

#### **4.2.1 Outcome Beliefs**

For local food, thirteen items were designed to understand consumer's attitude, from which, factors analysis elicited three latent dimensions, respectively named as Direct Gain, Local Gain and Environmental Gain. The items under each and their loading appear in Table 4.7.

**Table 4.10 Factor Analysis of Outcome Beliefs for Local Food**

Items	Loading
Direct Gain	
2.1. If I purchase local food, I'll be Obtaining fresher food	0.59
2.2. If I purchase local food, I'll be Purchasing better tasting food	0.90
2.3. If I purchase local food, I'll be Improving my health and the health of my family	0.65
2.8. If I purchase local food, I'll be Getting better quality food	0.79
2.9. If I purchase local food, I'll be Purchasing safer food	0.62
Eigenvalue=22.69 Variance accounted for=76.4% Cronbach's alpha=0.91	
Local Gain	
2.4. If I purchase local food, I'll be Supporting small family farms	0.88
2.7. If I purchase local food, I'll be Supporting the rural community	0.69
2.10. If I purchase local food, I'll be Developing personal relationship with farmers	0.60
2.11. If I purchase local food, I'll be Supporting sustainable farming practices	0.63
2.12. If I purchase local food, I'll be Able to tell where the food is from	0.58
Eigenvalue=5.04 Variance accounted for=16.97% Cronbach's alpha=0.85	
Environmental Gain	
2.5. If I purchase local food, I'll be Improving animal welfare	0.68
2.13. If I purchase local food, I'll be Benefiting the environment	0.66
Eigenvalue=1.97 Variance accounted for=6.63% Cronbach's alpha=0.75	

The first factor, Direct Gain, was created by the five items that were significantly loaded. Generally speaking, items with a loading larger than 0.6 would be kept for further analysis. In this case, however, even though Item 2.1 loaded slightly less (0.59), it was retained due to its intuitive rationale. These five items all referred to the direct gain consumers receive when making the decision of purchasing local, including freshness, taste, healthiness, quality and safety. This factor accounted for 76.4% of the variance between the items with an Eigenvalue of 22.69 which showed considerable weight explained by it. Reliability test of Cronbach's alpha indicated that the factor of Direct Gain was highly reliable (0.91). The mean value of the respondents was 5.17 (SD = 1.14) out of a scale of 7, indicating that participants held a relatively positive opinion about obtaining personal benefits by purchasing local food.

The second variable was named Local Gain and created from the five items loading onto this factor. All of the five items were consumer gains by purchasing food from local farms, including supporting local farm, supporting rural community, developing personal relationship with farmers, supporting sustainable farming practices and knowing food origin. As in the factor of Direct Gain, origin loaded slightly below 0.6 but was kept for further analysis because of its intuitive appeal. Cronbach's alpha for the five items was 0.85 which suggested strong internal consistency. Factor two accounted for 16.97% of the variance with an Eigenvalue of 5.04. Local Gain had a mean of 5.29 (SD = 1.05), which suggested that the subjects slightly agreed with the statements that purchasing local food would bring some unique benefits that only local persists.

Two items loaded onto the third factor named Environmental Gain and they represented the environmental benefits brought by consuming local food. By the standard of an Eigenvalue larger than one and examining the screen test graph, this factor was retained with an Eigenvalue of 1.97. It explained relatively small percent of variance, 6.63, between the items and Cronbach's alpha value (0.75) suggested the two items were a reliable construct. This factor had a mean of 4.81 (SD = 1.20), indicating a slightly positive opinion towards the environmental benefits brought by purchasing local.

A corresponding factor analysis was conducted on eight organic outcome beliefs items and two factors were elicited, leaving out two items (3.3 and 3.6) for lack of significant loadings. The details appear in Table 4.8.

**Table 4.11 Factor Analysis of Outcome Beliefs for Organic Food**

Items	Loading
DirectGainO	
3.1. If I purchase organic food, I'll be Purchasing better tasting food	0.75
3.2. If I purchase organic food, I'll be Improving my health and the health of my family	0.85
3.4. If I purchase organic food, I'll be Getting better quality food	0.80
3.5. If I purchase organic food, I'll be Purchasing safer food	0.80
Eigenvalue=17 Variance accounted for=82.91% Cronbach's alpha=0.9154	
OrganicGain	
3.7. If I purchase organic food, I'll be Supporting small family farms	0.76
3.8. If I purchase organic food, I'll be Supporting sustainable farming practices	0.87
Eigenvalue=3.5 Variance accounted for=17.09% Cronbach's alpha=0.8358	

The first factor was named DirectGainO and consisted of four items that all stated possible self-benefits behind the choice of organic food. The only difference between this dimension and that of local food was that it left out the item of being able to obtain fresher food. This was likely because consumers generally related freshness more to local produce than organic. This factor explained 82.91% of the total variance and had a high reliability score of 0.9154, which suggested it was a robust and coherent dimension. By adding up all four items then divided by four to return to a 7-point scale, the mean was calculated as 5.41 (SD = 1.22) and it showed that participants tended to agree with statements of organic food being beneficial to one's diet.

The second factor, named OrganicGain, had an Eigenvalue of 3.5 and accounted for 17.09% of the total variance. Only two items were loaded significantly on this factor but they were a reliable construct with a Cronbach's alpha of 0.8358. Three items were eliminated here since it was assumed that organic does not involve directly with farmers or impact on local communities. This item had a mean of 4.79 (SD = 1.22) which suggested a slightly positive belief on improving farming practices by choosing organic.

The factor related to environmental protection was not significantly loaded and therefore was dismissed. This might indicate consumers' lack of confidence on organic food's environmental impact. Future studies could include more specific questions for a deeper exploration.

#### **4.2.2 Outcome Evaluations**

After assessing what behavioral beliefs the subjects held, the corresponding outcome evaluation items were evaluated. A factor analysis on the thirteen items of outcome evaluation items revealed three latent dimensions under the construct, respectively named Personal Evaluation, Community Evaluation and Environmental Evaluation. Two items were deleted due to lack of significant loading. Details for factor loading appeared in Table 4.9.

**Table 4.12 Factor Analysis of Outcome Evaluation Items**

	Items	Loading
Personal Evaluation		
	When you are purchasing food, how important is it to you that you are:	
4.1.	Obtaining fresher food	0.80
4.2.	Purchasing better tasting food	0.76
4.3.	Improving my health and the health of my family	0.61
4.8.	Getting better quality food	0.84
4.9.	Purchasing safer food	0.61
	Eigenvalue=27.63	
	Variance accounted for=75.87%	
	Cronbach's alpha=0.89	
Community Evaluation		
	When you are purchasing food, how important is it to you that you are:	
4.4.	Supporting small family farms	0.92
4.7.	Supporting the rural community	0.73
4.10.	Developing personal relationship with farmers	0.62
4.11.	Supporting sustainable farming practices	0.61
	Eigenvalue=6.77	
	Variance accounted for=18.59%	
	Cronbach's alpha=0.87	
Environmental Evaluation		
	When you are purchasing food, how important is it to you that you are:	
4.5.	Reducing gasoline consumption due to transportation (lower food miles)	0.60
4.13.	Benefiting the environment	0.66
	Eigenvalue=2.02	
	Variance accounted for=5.54%	
	Cronbach's alpha=0.76	

The first factor of Personal Evaluation had the same construct with local food outcome beliefs, in which all five items concentrated on personal gains from purchasing food. It accounted for 75.87% of the total variance and the Eigenvalue for this factor was 27.63. Besides being a factor with strong explanation power, it also formed a reliable measure with a Cronbach's alpha of 0.89. It had a mean value of 6.01 (SD = 0.98) which suggested that obtaining food of higher quality was generally important to consumers when they made food choices. These results were consistent with previous findings of Hustvedt (2006), indicating that the primary concern for consumers who choose organic food is quality instead of environment.

The second factor consisted of four items focused on how important the community benefits would be when purchasing food. This factor was similar to the second factor of local outcome beliefs—Local Gain, without the item of being able to tell where the food is from, which might not be something that consumers would weigh a lot. It had an Eigenvalue of 6.77 and explained 18.59% of the total variance. A Cronbach's alpha score of 0.87 indicated strong inner reliability among the items. The factor of Community Evaluation had a mean of 4.79 (SD = 1.22) which suggested a slight positive attitude on obtaining community benefits.

The third factor, Environmental Evaluation, had two items both eliciting consumers' perception on environmental gains with an Eigenvalue of 2.02. This factor explained 5.54% of the total variance with a Cronbach's alpha of 0.76. This factor differed from the third factor for local food by missing the item of improving animal welfare and adding the one of reducing gasoline consumption. This might be due to consumers' higher valuation on less food miles than animal welfare. The mean

of this factor was 5.07 (SD = 1.39) and indicated they tend to treat environmental factors as a somewhat important aspect when considering buying food.

### **4.3 Regression Analysis**

A Tobit regression model was developed to predict consumers' future behavioral intention and WTP using the independent variables of Food Fashion Involvement, General Attitudes, Subjective Norm, Perceived Availability, Perceived Consumer Effectiveness, Personal Norm, Self-Identity, Age, Income, Male, Education, Children and Primary Shopper. The first four variables fell into the category of the original TPB model, while the extended variables of Personal Norm and Self-Identity were included as an addition tested to be constructive in explaining behavioral intention.

Generally speaking, there are two steps in understanding consumer choices, including examining behavioral intention and behavior itself. Therefore, two sets of models were examined, using future behavioral intention in the intention model and WTP as a proxy for purchase behavior in the behavior model. The food products chosen for the behavior intention models were sweet corn and strawberry jams of local and organic versions, representing fresh vegetables and processed products. They were measured by a seven point scale on purchase frequency in the next two months, with the choices of "Not at all", "Rarely", "Occasionally", "Often" and "Very Often". Since one cannot measure the marginal value of the two ends, for example, "Not at all" might mean not to purchase in the following two months, but it might also mean that consumer would not choose local produce ever, so responses were assumed to be censored.

Given the possible existence of heteroskedasticity, which would cause inefficient estimates in Tobit regression, each model was fitted with the variance being a function of the attributes and demographic variables (Bernard, Pesek and Pan, 2007; Bernard, Zhang and Gifford, 2006). This process was conducted in SAS's QLIM procedure.

### 4.3.1 Models and Hypothesis for Intention

#### 4.3.1.1 Econometric Models

Based on the past literature and intuition, the following econometric equations were proposed in order to explain the relationship between various variables and behavioral purchase intention of fresh and processed local food.

$$\begin{aligned}
 FPlocfresh / FPlocprocessed = & \beta_0 + \beta_1 FFI + \beta_2 GeneralAtt L + \beta_3 SelfIDL \\
 & + \beta_4 PCE + \beta_5 PAL + \beta_6 SubNormL + \beta_7 PNL \\
 & + \beta_8 Age + \beta_9 Income + \beta_{10} Male + \beta_{11} Education \quad 4.3 \\
 & + \beta_{12} Children + \beta_{13} Prmaryshopper + \varepsilon
 \end{aligned}$$

$$\begin{aligned}
 FPorgfresh / FPorgprocessed = & \beta_0 + \beta_1 FFI + \beta_2 GeneralAtt O + \beta_3 SelfIDO \\
 & + \beta_4 PCE + \beta_5 PAO + \beta_6 SubNormO + \beta_7 PNO \\
 & + \beta_8 Age + \beta_9 Income + \beta_{10} Male + \beta_{11} Education \quad 4.4 \\
 & + \beta_{12} Children + \beta_{13} Prmaryshopper + \varepsilon
 \end{aligned}$$

#### 4.3.1.2 Hypothesis

According to the past literature and intuition, hypothesis for each of the variables were anticipated and listed in Table 4.10 separately for FPlocfresh, FPlocprocessed, FPorgfresh and FPorgprocessed. Further explanations appear below.

**Table 4.13 Hypothesis about Parameter Coefficients for FPlocalfresh, FPlocprocessed, FPorgfresh and FPorgprocessed**

Fplocfresh/Fplocprocessed			Fporgfresh/Fporgprocessed		
Variable	Parameter	Expected Sign	Variable	Parameter	Expected Sign
FFI	$\beta_1$	+	FFI	$\beta_1$	+
GeneralAttL	$\beta_2$	+	GeneralAtt	$\beta_2$	+
SelfIDL	$\beta_3$	+	SelfID	$\beta_3$	+
PCE	$\beta_4$	-	PCE	$\beta_4$	-
PAL	$\beta_5$	-	PA	$\beta_5$	-
SubNormL	$\beta_6$	+	SubNorm	$\beta_6$	+
PNL	$\beta_7$	+	PN	$\beta_7$	+
Age	$\beta_8$	+	Age	$\beta_8$	+/-
Income	$\beta_9$	+	Income	$\beta_9$	+
Male	$\beta_{10}$	+/-	Male	$\beta_{10}$	+/-
Education	$\beta_{11}$	+	Education	$\beta_{11}$	+
Children	$\beta_{12}$	+	Children	$\beta_{12}$	+
Primaryshopper	$\beta_{13}$	-	Primaryshopper	$\beta_{13}$	-

The FFI reflects how people involve themselves in various food related activities in life, which on some level indicates how much people care about and enjoy food. Therefore, it was hypothesized to be positively related to future behavioral intention. General Attitude examined consumers' general perception on local and organic food, and intuitively the more positive consumers' attitudes were, the more likely they would be to choose these two versions of food products. Self-identity demonstrates whether one perceives him/herself as healthy, green or local/organic consumer, so a higher score should induce a stronger future behavioral intention. As for PCE and PA, they both reflect perceived difficulties psychologically and materially, therefore, they are expected to lower purchase likelihood in the future. Social Norm indicates how others' opinions affect one's possibility of conducting certain behavior,

and it should positively influence one's decision of choosing local and organic food. Finally, Personal Norm was hypothesized to positively predict future behavior because it indicates one's perceived moral evaluation of choosing local and organic, which means whether they feel they have the responsibility to purchase them.

As for the demographic variables, Income and Education were expected to result in higher purchase likelihood as specialty food tends to be more expensive, especially organic food, and people with higher education might be more aware of food safety issues and would like to choose local and organic more. Age was hypothesized to positively predict behavioral intention for local food due to the deeper attachment to traditional farming by older people, while for organic food, the sign expectation was unclear, since younger consumers might be into the latest food more and older consumers could tend to choose organic for safety and nutrition. Two other variables, Male and Children, also had unclear hypotheses. Females might prefer local and organic more for the sake of paying more attention to food related issues while males may be less price aware. As for households with children under 18 years old, parents could be under strong incentives to buy foods that are popularly believed to be safer and healthier hoping to provide a better diet for their growing children. On the other hand, it is also possible that the parents are satisfied with consuming conventional food and not willing to invest in a local or organic diet simply because they are raising a child. Primary Shopper was anticipated to be negatively related to behavioral intention since they tend to be less impulsive buyers and make more careful decisions according to budget and needs.

### 4.3.2 Models and Hypothesis for WTP

#### 4.3.2.1 Economic and Econometric Models

The same set of variables was applied in the model with WTP as dependent variables for future comparison as shown in Table 4.10 and Table 4.11. The corresponding econometric models are given by Equation 4.5 and Equation 4.6.

$$\begin{aligned} \text{CornLocal} / \text{JamLocal} = & \beta_0 + \beta_1 \text{FFI} + \beta_2 \text{GeneralAtt L} + \beta_3 \text{SelfIDL} \\ & + \beta_4 \text{PCE} + \beta_5 \text{PAL} + \beta_6 \text{SubNormL} + \beta_7 \text{PNL} \\ & + \beta_8 \text{Age} + \beta_9 \text{Income} + \beta_{10} \text{Male} + \beta_{11} \text{Education} \\ & + \beta_{12} \text{Children} + \beta_{13} \text{Primaryshopper} + \varepsilon \end{aligned} \quad 4.5$$

$$\begin{aligned} \text{CornOrganic} / \text{JamOrganic} = & \beta_0 + \beta_1 \text{FFI} + \beta_2 \text{GeneralAtt O} + \beta_3 \text{SelfIDO} \\ & + \beta_4 \text{PCE} + \beta_5 \text{PAO} + \beta_6 \text{SubNormO} + \beta_7 \text{PNO} \\ & + \beta_8 \text{Age} + \beta_9 \text{Income} + \beta_{10} \text{Male} + \beta_{11} \text{Education} \\ & + \beta_{12} \text{Children} + \beta_{13} \text{Primaryshopper} + \varepsilon \end{aligned} \quad 4.6$$

#### 4.3.2.2 Hypothesis

Since WTP should just be an extension of behavioral intention, the hypotheses for the parameters were basically the same. The only difference between them might be the significance of PA. Consider that if consumers are only asked about their intention, one might not care about how hard it is to acquire the product. However, when actual behavior is under consideration, PA might become more significant. Considering the fact that the behavior in this thesis is indicated by WTP from experimental auctions, this effect might be reduced, which would be further examined in the following analysis. The hypotheses for the WTP dependent variables

are shown in Table 4.12. Reasons behind the hypotheses were the same as discussed above.

**Table 4.14 Hypothesis about Parameter Coefficients for CornLocal, JamLocal, CornOrganic and JamOrganic**

CornLocal/JamLocal			CornOrganic/JamOrganic		
Variable	Parameter	Expected Sign	Variable	Parameter	Expected Sign
FFI	$\beta_1$	+	FFI	$\beta_1$	+
GeneralAttL	$\beta_2$	+	GeneralAttO	$\beta_2$	+
SelfIDL	$\beta_3$	+	SelfIDO	$\beta_3$	+
PCE	$\beta_4$	-	PCE	$\beta_4$	-
PAL	$\beta_5$	-	PAO	$\beta_5$	-
SubNormL	$\beta_6$	+	SubNormO	$\beta_6$	+
PNL	$\beta_7$	+	PNO	$\beta_7$	+
Age	$\beta_8$	+/-	Age	$\beta_8$	+/-
Income	$\beta_9$	+	Income	$\beta_9$	+
Male	$\beta_{10}$	+/-	Male	$\beta_{10}$	+/-
Education	$\beta_{11}$	+	Education	$\beta_{11}$	+
Children	$\beta_{12}$	+	Children	$\beta_{12}$	+
Primaryshopper	$\beta_{13}$	-	Primaryshopper	$\beta_{13}$	-

## **Chapter 5**

### **RESULTS**

#### **5.1 Results Comparison of FPlocfresh Model and Cornlocal Model**

Parameter estimates for fresh local products purchasing intention and WTP of local sweet corn from the Tobit regression models are presented in Table 5.1.

**Table 5.1 Tobit Regression Results of FPlocfresh and CornLocal**

Model Section	Parameter	Future Behavioral intention		WTP	
		Estimates	P value	Estimates	P value
Regression					
	Intercept	0.0619	0.9399	4.6912	<.0001
	FFI	<b>0.4224</b>	<.0001	<b>-0.1905</b>	0.0891
	GeneralAttL	<b>0.2403</b>	0.0211	<b>0.2494</b>	0.0077
	SelfIDL	0.0542	0.5426	-0.1104	0.2018
	PCE	-0.0847	0.1599	-0.0425	0.5104
	PAL	<b>-0.2829</b>	<.0001	<b>-0.2000</b>	0.0039
	SubNormL	<b>0.0343</b>	0.0097	-0.0175	0.1206
	PNL	0.0753	0.3337	<b>0.1628</b>	0.0174
	Age	<b>0.0258</b>	<.0001	<b>-0.0336</b>	<.0001
	Income	-0.0005	0.7402	<b>0.0054</b>	0.0008
	Male	<b>-0.6737</b>	0.0024	-0.6285	0.1185
	Education	0.0363	0.8837	0.2721	0.194
	Children	-0.2069	0.3358	-0.2418	0.2548
	Primaryshopper	-0.1570	0.4868	-0.3208	0.1782
	_Sigma	0.1606	0.0534	0.6358	<.0001
Variance					
	FFI	<b>0.8383</b>	<.0001		
	PCE			<b>0.3898</b>	0.0014
	SubNormL			<b>-0.0780</b>	0.0062
	PNL			<b>0.4263</b>	0.0008
	Income	<b>-0.0065</b>	0.0798		
	Education			<b>-1.8814</b>	0.0015
	Children			<b>-1.0316</b>	0.0661

Note: Bold coefficients are significant at the 10% or lower

### 5.1.1 Factors significant in both models

The variable of FFI was statistically significant but with different signs in the two models. In predicting behavioral intention, FFI found to increase a consumers' likelihood to purchase by 0.42. While in predicting WTP, it presented a

negative influence of decreasing one's WTP by \$0.19. This suggested that even though consumers with high FFI scale had an inclination to select local products in the future but they were reluctant to pay more for them. GeneralAttL on the other hand, displayed consistent and positive signs across the two models, significant at the 5% and 1% level respectively. Therefore, if increasing the GeneralAttL rating by 1, a consumer would display a behavioral intention that was 0.24 point higher and a price premium of \$0.25. PAL was found to have negative signs in both as hypothesized, decreasing consumers' intention by 0.28 and WTP by \$0.20. This indicated that when consumers felt in less control of their behaviors, they tended to lower their likelihood to conduct such behaviors. Age showed significance in both models as well, however presented opposite signs. In the intention model, a person that was older by 10 years would have an intention rating of 0.26 higher, while a WTP of \$0.34 lower. It might indicate that even though older people tended to have a stronger intention to purchase local, they are reluctant to pay more for them.

### **5.1.2 Factors significant in only one model**

For the intention model, SubNormL and Male were both significant at the 1% level. SubNormL displayed a positive sign and was small in magnitude. It suggested that the social pressure for choosing local does exist but it does not have a big influence. Male had a negative influence on purchasing intention and was substantial in magnitude. It suggested that a males had a lower intention by 0.67 points.

For the WTP model, PN and income were significant at the 5% and 1% level, respectively, with both having a positive influence on consumer bids. The effect of changes in PN was moderate, with a one unit change increasing consumer bids by

\$0.16. Income, on the other hand, presented with a magnitude of 0.0054. Since it was measured by thousand dollars, a \$10,000 increase in income would increase the WTP by 5.4 cents, which was shown to be a relatively trivial effect.

### **5.1.3 Factors not significant in either model and the heteroskedasticity model**

Self-identity, PCE, Education, Children and Primary Shopper were not significant in either of the models. Therefore, we did not find evidence that these variables could significantly affect the behavioral intention for locally produced fresh products and the WTP for local sweet corn.

Heteroskedasticity issues were discovered in both the models, two variables, FFI and income in the intention model and five variables, PCE, SubNormL, PNL, Education and Children in the WTP model. Consumers with higher FFI were found to have a higher variance in their ratings on intention to purchase fresh local produce. One of the demographic variables, income, had a negative effect on variance, suggesting a bigger variance difference in the lower income group. For the WTP model, more variables are found to have heteroskedasticity issues. Two of the TPB variables, PCE and PNL, showed negative signs in the variance section, which means that consumer with higher PCE and PNL scores differed in their WTP ratings and therefore formed a wider spread in their bidding values. One possible explanation for the variance of PCE might be due to the fact that some consumers do not see local food as an effective solution for alleviating environmental and food system problems. Therefore, even though they tended to have confidence in their behavioral influence, they were reluctant to pay more for local produce. As for PNL, it indicates that not everyone who felt under an ethical obligation to purchase local would like to pay a

large premium, probably simply due to differences in one's own value system. In terms of demographics, two variables, education and children were found to have a negative effect on variance. It seems that consumers who are less educated and have no children in the household would differ more in their decisions of local and organic.

## **5.2 Model Comparison of FPlocprocessed and JamLocal**

Models with behavioral intention for locally produced processed food and WTP for strawberry jams were compared together. Parameter estimates are presented in Table 5.2.

**Table 5.2. Tobit Regression Results of FPlocprocessed and JamLocal**

Model Section	Parameter	Future Behavioral intention		WTP	
		Estimates	P value	Estimates	P value
Regression					
	Intercept	3.2393	0.0122	2.4859	0.0334
	FFI	<b>0.3170</b>	0.0286	0.0791	0.557
	GeneralAttL	0.0658	0.6104	<b>0.2627</b>	0.0302
	SelfIDL	-0.1312	0.3084	-0.0556	0.6424
	PCE	0.0014	0.9879	0.0496	0.5203
	PAL	<b>-0.2719</b>	0.0056	<b>-0.1479</b>	0.0982
	SubNormL	<b>0.0475</b>	0.0046	-0.0145	0.3246
	PNL	-0.0613	0.5854	0.0339	0.7332
	Age	-0.0119	0.1904	<b>-0.0162</b>	0.0596
	Income	-0.0002	0.9172	<b>0.0047</b>	0.0389
	Male	<b>-0.4964</b>	0.0847	-0.0568	0.8613
	Education	-0.4062	0.2613	-0.1216	0.6462
	Children	-0.5525	0.0708	-0.1141	0.6833
	Primaryshopper	-0.0225	0.9436	<b>-0.5852</b>	0.0484
	_Sigma	0.6932	<.0001	1.3147	<.0001
Variance					
	PCE	<b>0.2886</b>	0.0133		

Note: Bold coefficients are significant at the 10% or lower

### 5.2.1 Factors significant in both models

Only one variable, PAL, was significant in both models respectively at the 1% and 10% level, and had a relatively large magnitude, especially in the behavioral intention model. As hypothesized before, PAL was found to decrease the intention score and WTP, respectively by 0.27 and \$0.15, which suggested that the barriers consumers came across when they tried to purchase local food did influence their choices in a negative fashion.

### **5.2.2 Factors significant in only one model**

For the intention model, four more independent variables were significant, including FFI, SubNormL, Male and Children. FFI displayed a positive sign and had a large magnitude of 0.32, which coincides with the intention model for fresh local produce, indicating that consumers of high FFI scale had an inclination to choose local over conventional. SubNormL was significant at the 1% level, but presented a relatively small influence on intention with a coefficient of 0.048. It might suggest that consumers do not take the opinions of important others as a very important factor when choosing local. Females were found to prefer local more than males, also households with children under 18 years old. Female consumers had an intention score that was 0.50 higher than male consumers, while the variable Children displayed the largest magnitude in the intention model with a coefficient of 0.55, which suggested a larger desire for purchasing local, probably out of health and safety concerns.

For the WTP model, four more variables were significant as well, including GeneralAttL, Age, Income and PrimaryShopper. GeneralAttL was significant at the 5% level and had the positive effect as expected with a coefficient of 0.26. Age was still negatively influencing WTP with a magnitude of 0.016, suggesting that if a consumer was ten years older, then he/she would pay a premium of \$0.16. Income was significant at the 5% level and had the expected sign, with a \$10,000 increase in income leading to a 4.7 cents price premium. Finally, Primary Shopper displayed a large magnitude and was significant at the 5% level. A Primary Shopper of a household would pay \$0.59 dollars less than others when selecting locally produced strawberry jams.

### **5.2.3 Factors not significant in either models**

SelfIDL, PCE, PNL and Education were the four variables that were not significant in either of the models. Three of these, SelfIDL, PCE and Education, overlapped with the last group of models for FPlocfresh and Cornlocal. So far there was no sufficient evidence in concluding that these variables have a significant influence on the behavioral intention for locally produced processed products and the WTP for local strawberry.

In examining the variance, only PCE was found to be significant in the intention model suggesting a more diverse variance in the intention scores of consumers with higher PCE. It indicates that local processed produce was only valued highly by some consumers who believe their decisions could have a significant influence on the food and environmental system.

### **5.3 Model Comparison of FPorgprocessed and Cornorganic**

Models of behavioral intention for organically produced fresh food and bids for organic sweet corn were compared together. Parameter estimates are presented in Table 5.3.

**Table 5.3. Tobit Regression Results of FPorgfresh and Cornorga**

Model Section	Parameter	Future Behavioral intention		WTP	
		Estimates	P value	Estimates	P value
Regression					
	Intercept	0.0983	0.9273	3.3633	0.0028
	FFI	<b>-0.2561</b>	0.0196	<b>0.265</b>	0.0257
	GeneralAttO	0.1541	0.1149	<b>0.3295</b>	0.0021
	SelfIDO	<b>0.5561</b>	<.0001	<b>-0.2139</b>	0.0919
	PCE	<b>-0.1256</b>	0.0574	-0.0550	0.4234
	PAO	<b>-0.2099</b>	0.0278	0.0015	0.989
	SubNormO	<b>0.0248</b>	0.0503	-0.0163	0.2211
	PNO	<b>0.3119</b>	0.0002	0.0454	0.6327
	Age	-0.0104	0.1146	<b>-0.0255</b>	0.0004
	Income	<b>0.0041</b>	0.0171	0.0012	0.5122
	Male	0.0863	0.6827	-0.0697	0.7703
	Education	0.3021	0.2438	<b>-0.8997</b>	0.0213
	Children	-0.0727	0.7408	-0.0311	0.8858
	Primaryshopper	<b>0.482</b>	0.0388	<b>-1.0838</b>	<.0001
	_Sigma	0.9141	<.0001	0.6399	<.0001
Variance					
	GeneralAttO			<b>0.5174</b>	<.0001
	SelfIDO	<b>-2.0114</b>	0.0078		
	PCE	<b>1.2023</b>	0.0056		
	SubNormO			<b>-0.0449</b>	0.0519
	Male			<b>0.7800</b>	0.0467
	Education			<b>-1.7418</b>	0.0011
	Children			<b>-1.7323</b>	0.0043

Note: Bold coefficients are significant at the 10% or lower

### **5.3.1 Factors significant in both models**

In the organic models for fresh products, three sets of variables were significant in both models, including FFI, SelfIDO and PrimaryShopper. Again, FFI was found to have different signs in the two models, both significant at the 5% level. If a consumer rated his/her FFI scale by 1 point higher, then his/her intention to purchase organic fresh products would be 0.26 points lower, but instead, his/her WTP for purchasing local sweet corn was \$0.27 higher. This result contrasted with those from the local fresh models, the reason of which might due to different perception of local versus organic. On one hand, organic food seems to distance itself from average consumers by being a “fancy” new food, while local food reminds people of what food used to be like, causing a preference for local in the intention model. On the other hand, the organic industry has a reputation for providing higher quality food and generally speaking, they are more accessible than local food, which could lead to a higher premium in the WTP model.

SelfIDO demonstrated opposite signs also, having a positive influence on behavioral intention with the largest magnitude of 0.56, and decreasing the WTP by \$0.21. It suggested that even though consumers with a high score of self-identity would like to purchase organic, they might not be willing to pay a premium for them. The variable Primaryshopper had the same signs as SelfIDO, with being the primary shopper in the household increasing behavioral intention by 0.48 point and decreasing WTP by \$1.08, which was a remarkably significant influence. One possible explanation for the opposite signs might be due to primary shoppers' familiarity with market prices and weighing among other household commodities.

### 5.3.2 Factors significant in only one model

Seven variables were significant in only one model, including GeneralAttO, PCE, PAO, SubNormO, PNO, Age, Income and Education. For the Intention model, three more psychological variables showed significance, among which PAO had the highest level of significance (5%) and the largest magnitude of 0.21, with a negative sign as predicted. PCE had not been significant in the former models, but displayed a negative sign at the 10% level in the Intention model for organic food, decreasing the intention scale by 0.13. SubNormO, nonetheless, had shown constant significance and a positive relationship throughout all the Intention models so far, though with a small magnitude in this model. The variable PNO both exhibited the expected sign and showed a large magnitude, with a one-point increase in PNO adding 0.31 to the value of behavioral intention for organically produced fresh products. Besides psychological variables, the demographic variable Income was significant with a magnitude of 0.0041. Since income was measured by thousand dollars, if increase income by \$10,000, consumers' WTP would rise by 4.1 cents, which was a relatively small magnitude.

For the WTP model, three more independent variables were statistically significant, including GeneralAttO, Age and Education. GeneralAttO was significant and positive at the 1% level with a large magnitude of 0.27. Age was found to have a negative influence on the WTP and if two consumers have an age difference of 20 years, then the younger consumer would like to pay \$0.52 more for organic corn than the older one. Education also presented a negative sign with a large magnitude of 0.90 indicating that more educated consumers tended to be willing to pay less for organic sweet corn. One possible reason might be due to the fact that they had more doubts

about organic farming and were more aware of the increasing industrial trend in organic business.

### **5.3.3 Factors not significant either model and the heteroskedasticity model**

The variables PNO, Male and Children were not significant in either of the models. Therefore, we could not demonstrate the hypothesis that the three variables significantly affected behavioral intention for organically produced fresh products and the WTP for organic sweet corn.

In examining the heteroskedasticity issues in the intention model, two TPB variables were found to be significant, SelfIDO in negative and PCE in positive signs. Consumers with lower self-identity scores were found to have a larger variance in their intention scores, since they did not tend to perceive themselves as a typical organic, green and healthy conscious consumer, their WTP was influenced by many other different factors which might lead to a larger difference in their bids. As for PCE, it has shown significance in two other models, including the WTP model for local sweet corn and the intention model for local processed produce. Its effect on variance has constantly been negative, which might also be explained by the reasons mentioned before, that some of the consumers with high PCE scores did not see organic food as a practical approach in improving the food and environmental system.

For the variance results of the WTP model, the effect of GeneralAttO on variance was found to be positive, which was quite interesting since intuitively a higher attitude score should induce a larger WTP. This might suggest that despite one's high evaluation on purchasing organic, how it should be priced differed by people. SubNorm showed a negative effect on variance, which coincided with the

result for the WTP model of local sweet corn, indicating that if consumers considered the opinions of the socially important others as less important, they would vary more on their WTP. As for demographic variables, three of them were found to be significant, Male, Education and Children. Male consumers tended to have different values on their WTP for organic sweet corn, which could be explained by them often being an impulsive buyer when choosing products with instrumental functions (Dittmar et al. 1995). Education and Children showed significance in the local sweet corn model as well, so the same reasons might also apply. People that were less educated and childless might have less access to food knowledge and need not concern about feeding the children with poor quality food.

#### **5.4 Model Comparison of FPorgprocessed and Jamorganic**

Models of behavioral intention for organically produced processed food and bids for strawberry jam were compared together. Parameter estimates are presented in Table 5.4.

**Table 5.4. Tobit Regression Results of FPorgprocess and Jamorga**

Model Section	Parameter	Future Behavioral intention		WTP	
		Estimates	P value	Estimates	P value
Regression					
	Intercept	1.6016	0.2517	2.9505	0.0244
	FFI	-0.1161	0.396	<b>0.2374</b>	0.0783
	GeneralAttO	-0.1445	0.268	-0.0057	0.9625
	SelfIDO	<b>0.5501</b>	0.0001	0.0713	0.6284
	PCE	<b>-0.3371</b>	<.0001	0.0137	0.8641
	PAO	0.0423	0.7495	0.0290	0.8069
	SubNormO	<b>0.0281</b>	0.064	<b>-0.0263</b>	0.0852
	PNO	<b>0.2319</b>	0.0291	-0.0139	0.8976
	Age	<b>-0.0194</b>	0.0201	<b>-0.0156</b>	0.0561
	Income	0.0014	0.4749	0.0011	0.6178
	Male	0.0394	0.8776	<b>-0.4390</b>	0.0983
	Education	-0.1234	0.7099	0.2704	0.4151
	Children	-0.2147	0.3879	0.2233	0.4386
	Primaryshopper	0.2937	0.3119	<b>-0.9542</b>	0.0011
	_Sigma	0.9238	<.0001	1.2816	<.0001
Variance					
	GeneralAttO	<b>-0.9925</b>	0.089	<b>-3.6431</b>	0.1023
	PAO	<b>1.4539</b>	0.0152		
	Income	<b>-0.0267</b>	0.0892	<b>-0.0991</b>	0.0583
	Children			<b>21.2620</b>	0.0704

Note: Bold coefficients are significant at the 10% or lower

#### 5.4.1 Factors not significant either model and the heteroskedasticity model

Only two variables, SubNormO and Age, were significant in both models at the level less than 10%. SubNormO presented different signs in each model, being positive in predicting Intention and negative in predicting WTP. This result was consistent with the previous models in increasing behavioral intention, but the first

time significant in the WTP model. Both parameters were small in magnitude indicating the relatively small effect the socially important others have on consumer decisions. Age showed the same negative signs for both models, suggesting that for organic processed food, older people tended to have a weaker intention and a lower WTP as well. Results indicated that a consumer that was 50 years old would rate 0.38 lower in intention score for organic processed food and \$0.32 lower in WTP for strawberry jams than a consumer that was 30 years old.

#### **5.4.2 Factors not significant either model and the heteroskedasticity model**

Three variables were significant only in the Intention model, including SelfIDO, PCE and PNO, all of which were psychological variables from the TPB. SelfIDO had the expected sign and was significant at the 1% level with a large magnitude of 0.55, indicating that each one-point increase in SelfIDO would increase 0.55 on the intention score. PCE was found to be significant again coinciding with the intention model for organic fresh produce, decreasing the intention score by 0.34.

For the WTP model, three variables, FFI, Male and Primaryshopper, were statistically significant. FFI was significant at the 10% level and displayed the expected sign with a one-point increase in FFI adding \$0.24 to the auction bids. Male was significant at the 10% level as well and with a large magnitude of 0.44, indicating that female consumers would like to pay \$0.44 more for organic strawberry jams than male consumers. Finally, the variable Primaryshopper was found to exhibit the expected negative sign and have the largest magnitude within this model, suggesting that being the primary shopper of the household would decrease one's WTP for

organic strawberry jam by \$0.95, which was consistent with the result of two out of three models.

#### **5.4.3 Factors not significant either model and the heteroskedasticity model**

The variables of GeneralAttO, PBC, Income, Education and Children were not statistically significant at either of the two models, since the p-value was greater than 0.10, which suggested that there existed no sufficient evidence to conclude that these variables could significantly explain behavioral intention for organically processed products and the WTP for organic strawberry jams.

As for the heteroskedasticity part, general attitude was found to be significant with a negative sign, in contrast with the result of the intention model for organic fresh produce, which might be explained by the fact that organic food was still demanded even though some consumers did not believe they acquire much by purchasing them. One possible explanation for this might be due to their low evaluation on other kinds of food as well, and organic food could become the best of the worst. PAO showed a positive effect on its variance, which meant that consumers who tended to believe organic processed product was hard to find varied much in their behavioral intention ratings. This might suggest that some consumers let the barriers stand in their way and preferred more convenient food, while some others would manage to find organic product despite perceived difficulties. Income also demonstrated a negative sign, suggesting a lower income level leads to more diverse intention scores, which makes sense since consumers with lower income might prefer to put their money where they need the most, and organic food might not be the option.

Finally, for the WTP model of organic strawberry jams, two variables, Income and Children, were found to be significant, while another variable, GeneralAttO was very close to be significant at 10% level, and was also included in the variance part. GeneralAttO and income showed negative signs in accordance with the organic intention model for processed produce and could be explained similarly. For the former, consumers might still price the market valued product higher over others, and for the latter, income constrains one's desire and ability to pay a large premium. As for the variable Children, two other models have showed significance in negative signs already (WTP model for local sweet corn and WTP model for organic sweet), but in this model, the result was found to be positive. One possible explanation for this might due to the fact that strawberry jams were not of top concern for some consumers who had children in their household. They would rather spend more on other produce, like fresh fruits and vegetables, than paying a high premium for strawberry jams.

## **Chapter 6**

### **DISCUSSION AND CONCLUSION**

The final chapter of the thesis was divided into two parts, discussion and conclusion. In order to interpret and understand the results of the eight models from multiple perspectives, the discussion part was divided into three parts, examining the findings for each independent variable individually, comparing intention and WTP within and between different models, and demonstrating how local and organic versions have different significant predictors. Finally, in the conclusion section, implications, limitations and ideas for future research will be discussed.

#### **6.1 Discussion**

##### **6.1.1 Summary of results for individual variable**

Variables have shown different signs and significance in each pair of the model comparisons. Each of the variables was listed and discussed shortly in the following section. Table 6.1 and Table 6.2 summarized the results for the TPB and demographic variables.

**Table 6.1. Summary of Results for the TPB Variables**

	Intention Model				WTP Model			
	Local fresh	Organic fresh	Local processed	Organic processed	Local corn	Organic corn	Local jams	Organic jams
FFI	+	-	+		-	+		+
GeneralAtt	+				+	+	+	
SelfID		+		+		-		
PCE		-		-				
PA	-	-	-		-			
SubNorm	+	+	+	+				-
PN		+		+	+			

FFI has shown nearly constant significance throughout the eight models except for the WTP model of local strawberry jams and the Intention model of locally produced processed products. A clear pattern throughout the models showed a positive influence on local intentions versus a negative influence on organic WTPs. These results indicate a strong preference for local food from the consumers with high FFI scores. While at the same time, this group tends to value organic food more, by being willing to offer more than \$0.20 each unit increased in FFI, at least for the two products selected. One possible reason for the local food preference might be due to the satisfaction gained by purchasing local food, like picking them up at a farmers market or interacting with local farmers. In other words, consumers might feel more involved with local than organic. However, they do think local food should cost less than organic, even though they would not choose organic food often in the month coming, they still would pay more for them.

General Attitude displayed a positive sign in all the models that they were significant, though not significant in three out of four models for organic products. This suggested that GeneralAtt was a better predictor in the local models with a

relatively large magnitude while there were no sufficient evidence suggesting the same results for organic food.

Self-identity on the other hand, behaved better in the organic models while insignificant in all of the local models with positive signs for intention and negative signs for WTP. This indicates that consumer do associate green, healthy consumption more with organic than local, and if they perceive themselves as consumers of such kind, they would intend to purchase organic food more often, though they were still reluctant to pay for a higher price for them.

PCE was one of the variables that did not perform very well in the models, with significance in only two of the original models, which were Intention models for organic fresh and processed products. It suggests that if consumers believe in their influence on the food and environmental system by their selection of food, they would try to patronize more in the stores that carry organic food.

Perceived Availability showed constant negative signs with large magnitude throughout the local models, and one model for the intention of organic fresh product. This suggests that availability issues is much more serious in local food than in organic food, since a growing number of grocery stores and healthy food stores carry the selection of organic produce nowadays, yet not so much with local food.

Subjective Norm showed significance in all the intention models and one of the WTP models of organic strawberry jams, though all with relatively small magnitude. This indicates that there does exist social pressure for consumers to choose local and organic, yet the influence is not very strong. While it affects consumers' intention of purchasing these products, subjective norm tended not to have an influence on the WTP.

Personal Norm was only significant in the intention models for organic products, and one model for the WTP of locally produced sweet corn. This suggests that moral obligation influences consumers in some degree, especially on organic food. Even though consumers would not pay a higher premium for organic, they feel they are more obliged to choose organic produce. Moreover, they would actually be willing to pay more for local sweet corn.

**Table 6.2. Summary of Results for the Social Demographic Variables**

	Intention Model				WTP Model			
	Local fresh	Organic fresh	Local processed	Organic processed	local corn	organic corn	local jams	organic jams
Age	+			-	-	-	-	-
Income		+			+			
Male	-		-					-
Education						-		
Children			-					
Primary shopper		+				-	-	-

Age showed significance in the all four WTP models with a relatively small magnitude, suggesting that older consumers tend to pay slightly less for all versions of food products. Age did demonstrate a higher intention towards the local fresh product, which might be due to the stronger attachment towards locally grown by older people. And again, age displayed a negative estimate in the intention model of organic processed product, indicating less enthusiasm referring to the more “fashionable” food.

Income was significant in only two models—WTP models for local sweet corn and local strawberry jams, suggesting that consumers with higher income tend to be willing to pay more for local products. It is interesting to know that income is not significant in any of the organic models. It might indicate that the local trend is more popular than the organic trend among people with high incomes.

Male was significant in three modes, including both intention models for local food and one WTP model for organic strawberry jams. A negative influence was found to exist in all the significant models, suggesting that being male could decrease one's WTP and behavioral intention. It might be an indication of fashionable food's greater popularity among female consumers.

Education showed significance in only one of the eight models, which was the WTP model for organic sweet corn. Meanwhile, the sign for it was opposite to our hypothesis, showing that consumers of higher education level tend to bid less than others. This might be explained by their better knowledge of food product, and knowing there are more substitutes other than organic that can satisfy their needs. Another possible explanation for it was that subjects recruited did not particularly like organic sweet corn.

The variable of Children was also significant in only one of the eight models, behavioral intention for local processed food. It might indicate a lack of interest for local and organic from consumers with children under 18 in the household.

Primary Shopper showed significance in three out of four WTP models exhibiting the expected negative signs. It shows that primary shoppers do not believe these new food forms should be priced too much. This might be due to their consumption habits, and the possibility that they are used to the pricing mechanism in

the conventional food market. This variable did demonstrate a positive influence on intention to purchase organic fresh produce, suggesting that even though they consider choosing organic in the future, they are still reluctant to pay a premium for it.

### **6.1.2 Intention VS. WTP**

Overall, intention models performed better than the WTP models, especially for the TPB variables. Since in the questionnaire, intention was defined as the behavioral intention for fresh or processed products, while WTP was measured for specific food products, sweet corn and strawberry jams, a direct comparison is difficult. It is entirely possible that consumers who stated that they would look for organic and local products in the near future would prefer to choose other products instead of the ones that we had in the questionnaire. It is also entirely possible that the two products selected in the experiment were not “fashionable”, and alleviated the predicting effect of FFI scale. Besides this reason, an interesting pattern was found comparing the two sets of models together. A few variables were found to have opposite signs for intention and WTP models (e.g. FFI, SelfID). To sum up the reasons discussed before, we can conclude that a stronger intention does not necessarily lead to a higher price premium, and vice versa. Taking the FFI variable in the local models for fresh products for example, despite one’s preference for local and claimed higher intention to purchase it, they still valued local sweet corn as a less expensive product. The choice of product might be an important factor, and future studies could select products after evaluating whether they are fashionable or not. Since past literature either used stated preference methods to elicit WTP (e.g. Verbeke and Vermeir, 2008), or did not compare intention with WTP (e.g. Nurse et al. 2010), we could not directly compare with other results. This finding is also different from the intention-behavior

gap (Sheeran, 2002; 2005), because as long as one does not bid zero on a food product, he/she can be seen as someone who will purchase the product, once the price is equal to or lower than his/her bid. Therefore, we can similarly name this difference in stated intention and auction bid as an intention-WTP gap. Future studies can further explore the existence of this issue and discuss why this gap appears.

### **6.1.3 Local version Vs. organic version**

Comparing the models for local with the ones for organic, we discovered several interesting findings. First of all, SelfID and PCE only showed significance in the Intention models for organic food, not local food, which might indicate that consumers tended to relate organic food with healthy, pro-environmental consumption more than local food. Since organic food is clearly defined by USDA while the definition for local remains unknown, it is intuitively justified that more consumers are convinced with the stated organic attributes.

PA in another case, only showed significance in one of the four models for organic, but successfully predicted all four for local. This result suggests that the influence of barriers for purchasing local exceeds the ones for organic. Since local products are sold through relatively limited channels, like farmers markets and CSA, while most of the chain supermarkets and natural food stores now carry a selection of organic food, it seems relatively more easy to obtain organic than local.

Income demonstrated the signs as expected in the models they were significant, which included both of the local WTP models and one of the organic intention model. The fact that people with higher income would like to pay more for local food instead of organic food was worth noticing. It might indicate that some consumers are already satisfied with what local has provided and organic in another

case, might offer more than they required. Therefore, organic was not valued that much in consumers' minds, even for the ones that most likely have the ability to afford organic products.

## **6.2 Conclusion**

There is no doubt that the markets for organic and local food increased and are continuing to grow. The reason why consumers are seeking organic and local has invoked discussions and debates among researchers. Most frequently mentioned explanations include consumers' expectations of getting higher quality products, concerns on food safety issues and environment damages brought by conventional farming, etc. Factor analysis conducted in this thesis analyzed and summarized the reasons, and we found that the most important benefits consumers wish to gain are the ones that direct benefit them or their family. The community dimension benefits brought by local and organic farming were the second considerations for consumers. Surprisingly, environmental benefits were of the least concern, and there did not even form a significant factor in the outcome beliefs of organic, which suggested that organic farming might not be perceived as environmental friendly as it should be.

This thesis was dedicated to discovering the motivations and underlying dimensions behind the purchase behavior of organic and local food. More importantly, to examine what factors could contribute to paying a price premium for organic and local. In order to mimic the real world behavior and obtain a WTP that can reflect one's true valuation, we adapted the stated preference method of experimental auctions in which participants used real money to purchase real products, incorporating market feedback and receiving real economic consequences at the site (Lusk and Shogren, 2008). Since Ajzen's TPB model has witnessed great success in

explaining the consumers' food choices in sustainable food consumption (e.g. Nurse, 2010; Chen, 2007; Bissonnette, 2001; Conner, 1993), we also adapted the TPB in our research in an attempt to find psychological variables that could significantly predict consumer behavior. Additionally, inspired by the food involvement scale constructed by Bell and Marshall (2001) as well as fashion involvement items applied in studies of women's fashion opinions (Summers, 1970), we created a new measurement of FFI more suitable in the research of trendy food, like organic and local. In combining TPB variables, FFI scale and social demographic information, we attempted to explain consumers' behavioral intention and WTP for organic and local from a wider dimension. This is the first research so far that combined experimental auctions with the TPB and social demographic variables in one model. The construction of FFI scale is another innovation by this thesis.

### **6.2.1 Implications**

The main theoretical implication of this study was the introduction of FFI scale in explaining consumer choices for trendy food versions. It was constructed as a reliable measurement and found to be significant in six out of eight models. Although it displayed different signs in predicting different model versions, clear patterns were discovered. Obviously, more empirical evidence is required for ascertaining how the FFI scale performs in predicting other forms of trendy food or food versions in order to acquire a valid predictor in future studies. It remains a possible and promising contribution to future studies.

As to whether the psychological variables from the TPB model contributed to the explanation of consumer behavior or not, generally speaking, they offered more perspectives in understanding consumer choices of organic and local.

Comparing different models, TPB variables predicted intention better than WTP, especially the intention for organic food. This might imply the existence of an intention-behavior gap, and price can be interpreted as the main barrier, since as long as the price is low enough, most of the consumers who had a WTP larger than zero would be likely to turn their intention into purchase behavior. Attitude and PA were the two variables that were significant in more than half the models, suggesting them to be the most effective predictors. PBC was displayed to be the least significance variable, which only successfully predicted two organic intention models.

Practical implications lie on many aspects. First of all, from the outcome evaluation items, we discovered the top three outcomes one wishes to achieve when making the purchase decision: healthy, fresh and safe. To categorize all the benefits one perceived by factor analysis, we found that consumers emphasized the most on their personal benefits. Producers or marketers can stress those factors with more efforts in order to attract more consumers. Secondly, even though more concerns are rising criticizing the organic industry for being industrialized and losing its true organic meaning (Cloud, 2007), participants in our study did tend to trust and value organic food still. Organic bids were higher than conventional and local versions for both sweet corn and strawberry jams. Many other studies have suggested that consumers valued the local attribute more than organic (e.g. Darby et al., 2008; Costanigro et al., 2010), but the findings of this thesis did not support this notion. Two indications can be achieved from the organic and local WTP models. On one hand, organic food still has room for growth. A typical buyer of organic food suggested by the WTP model is relatively less educated and holds a positive attitude towards purchasing organic. Primary shopper of the household had high intention yet

lower WTP for organic, which implies that they are a potential market for organic consumption. Marketers can adapt strategies targeting the higher WTP group and try to attract primary shoppers, in order to enlarge the organic market. On the other hand, consumers from Delaware seem to be less enthusiastic about local food. One reason discovered from the models was having difficulties getting the local food they wanted, suggested by the negative influence of perceived availability across all four local models. Increasing purchase channels and advertising in residential areas would most likely to attract potential consumers. It is implied from the WTP models that consumers who would pay a price premium for local are younger, having higher income and holding a positive attitude towards local. Promoting marketing channels like CSA to consumers of these groups might receive better feedbacks and larger sales. Since the state promoting program for local in Delaware only existed for a short period of time, it also seems necessary to educate people about the advantages of going local, like reducing food miles.

### **6.2.2 Limitations and Future Research Topics**

There are a number of limitations of this research. First of all, the sample selected was mainly consumers from the state of Delaware, mostly due to the geological constraints of conducting an on-site experimental auction. Therefore, the findings from this thesis might not apply nationwide. This sample limitation might also affect the validation of the FFI scale. It is necessary to expand the sample to other states or areas in order to test how valid the FFI scale is. Besides, although the FFI scale has played an important role in our model and successfully predicted behavioral intention and WTP, whether it is a constructive addition in examining organic and local food or would it have a substantial influence on other forms of trendy food still

needs to be examined. Future studies could not only focus on organic and local, but expand to other food forms like non-genetically modified food or free-ranged poultry and eggs.

Another limitation is that in our experiment, only two products, sweet corn and strawberry jams were studied. The WTP of the two products can only be treated as a substitute for consumers' choice of fresh and processed food. In order to achieve a better understanding of consumer preference and avoid bias towards specific food product, future studies might consider using a more comprehensive list, covering more kinds of products, including fruits, eggs, meat and bakery, even a basket of all commonly selected items. Also, to further test the validity of the FFI, further researchers might consider conducting a preliminary study to determine which foods are desired most by subjects with higher FFI scores and include them in the study.

A growing population of people starts to question the advantage of growing and consuming organic. Since now more organic farms are large and industrialized, and the problem of long distance travelling from organic farms to dinner tables have raised some dissatisfactions (Cloud, 2007), it would be interesting to find out how consumers perceived the negative information and reflect in their WTP. On the other hand, numerous studies and reviews have suggested organic crops have higher levels of vitamins, minerals and phytonutrients (Heaton, 2001). Meanwhile, animal and human feeding trials with organic food have provided some evidence that these differences are sufficient enough to promote human health (Magkos et al. 2006; Grindler-Pedersen et al., 2003), but so far there are no conclusive or official statements concerning this issue. An experiment that includes both the positive and negative messages would be interesting to conduct. This can also be done combining FFI

scales, examining whether consumers with different FFI scale would react to the information differently.

The results of this study and other studies focusing on incentives behind the local and organic purchasing behavior contribute to the understanding of markets. Marketers could advertise more intensely on the attributes consumers value the most and meet the needs of the market. For local farmers particularly, letting the consumers to know that local farming could provide high quality products as well as benefiting local community and environment might help improve their wellbeing. Future studies could also focus on examining the effects of advertising in accordance with what consumers desire and help construct an effective marketing strategy.

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## Appendix

### A QUESTIONNAIRE

Q.1 Please rate your agreement with the following statements

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
I enjoy cooking	<input type="radio"/>						
I like to try new foods	<input type="radio"/>						
I like shopping for food or cooking supplies	<input type="radio"/>						
I think I have a very healthy diet	<input type="radio"/>						
Food quality is more important than price	<input type="radio"/>						
I am loyal to my favorite brand foods	<input type="radio"/>						
When I travel, I enjoy trying area specialties	<input type="radio"/>						
I don't have the time to eat or cook like I'd like to	<input type="radio"/>						
I rarely talk about food	<input type="radio"/>						

Q.2 Please rate your agreement with the following statements

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
I grow a lot of my food in my garden	<input type="radio"/>						
My family and friends turn to me for advice on foods and cooking	<input type="radio"/>						
I prefer 'comfort food' to trendy food	<input type="radio"/>						
I eat out a lot	<input type="radio"/>						
The latest food and cooking trends matter to me	<input type="radio"/>						
I like to watch food and cooking shows	<input type="radio"/>						
I eat mainly just to satisfy my hunger	<input type="radio"/>						
I like to try new recipes	<input type="radio"/>						

Q.3 What is your gender?

- Male
- Female

- NJ
- PA
- Other

Q.4 What is your age?

Q.5 What is your ethnicity?

- White, not of Hispanic origin
- Black or African American
- Hispanic or Latino
- American Indian or Alaskan Native
- Asian
- Other (please specify)  
\_\_\_\_\_

Q.9 Are you the primary shopper in your household?

- Yes
- No

Q.10 Do you have children under 18 in your household?

- Yes
- No

Q.6 What is your total household income?

- Less than \$10,000
- \$10,000 to \$14,999
- \$15,000 to \$24,999
- \$25,000 to \$34,999
- \$35,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 to \$149,999
- \$150,000 to \$199,999
- \$200,000 or more

Q.7 What is your highest education you have completed?

- Less than High School
- High School
- Some College
- College
- Post Graduate

Q.8 What state do you live in?

- DE
- MD

Q.11 Please enter your bid for each of the following versions of an 18 oz jar of strawberry preserves

	Bids
Conventional	
Organic	
Locally Grown	
Organic and Local	

Q.12 Please enter your bids for each of the following versions of 5 ears of sweet corn

	Bids
Conventional	
Organic	
Locally Grown	
Organic and Local	

Q.13 When you are purchasing food, how important is it to you that you are:

	Very Unimportant	Unimportant	Somewhat Unimportant	Neutral	Somewhat Important	Important	Very Important
Obtaining fresher food	<input type="radio"/>						
Purchasing better tasting food	<input type="radio"/>						
Improving my health and the health of my family	<input type="radio"/>						
Supporting small family farms	<input type="radio"/>						
Improving animal welfare	<input type="radio"/>						
Reducing gasoline consumption due to transportation (lower food miles)	<input type="radio"/>						
Supporting the rural community	<input type="radio"/>						
Purchasing safer food	<input type="radio"/>						
Developing personal relationship with farmers	<input type="radio"/>						
Getting better quality food	<input type="radio"/>						
Benefiting the environment	<input type="radio"/>						
Supporting sustainable farming practices	<input type="radio"/>						

Able to tell where the food is from	<input type="radio"/>						
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Q.14 Please rate your agreement with the following statements.

If I purchase local food, I will be:

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
Obtaining fresher food	<input type="radio"/>						
Purchasing better tasting food	<input type="radio"/>						
Improving my health and the health of my family	<input type="radio"/>						
Supporting small family farms	<input type="radio"/>						
Improving animal welfare	<input type="radio"/>						
Reducing gasoline consumption due to transportation (lower food miles)	<input type="radio"/>						
Supporting the rural community	<input type="radio"/>						
Getting better quality food	<input type="radio"/>						
Purchasing safer food	<input type="radio"/>						
Developing personal relationship with farmers	<input type="radio"/>						
Supporting sustainable farming practices	<input type="radio"/>						
Able to tell	<input type="radio"/>						

where the food is from							
Benefiting the environment	<input type="radio"/>						

Q.15 Please rate your agreement with the following statements.

If I purchase organic food, I will be:

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
Purchasing better tasting food	<input type="radio"/>						
Improving my health and the health of my family	<input type="radio"/>						
Improving animal welfare	<input type="radio"/>						
Getting better quality food	<input type="radio"/>						
Purchasing safer food	<input type="radio"/>						
Benefitting the environment	<input type="radio"/>						
Supporting small family farms	<input type="radio"/>						
Supporting sustainable farming practices	<input type="radio"/>						

Q.16 Buying organic food is:

	1	2	3	4	5	6	7
Bad:Good	<input type="radio"/>						
Foolish:Wise	<input type="radio"/>						

Q.17 Buying local food is:

	1	2	3	4	5	6	7
Bad:Good	<input type="radio"/>						
Foolish:Wise	<input type="radio"/>						

Q.18 Please rate your agreement with the following statements

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
I consider myself a typical buyer of local food	<input type="radio"/>						
If I wanted to, it would be easy to purchase organic food	<input type="radio"/>						
I will look for organic food next time I go food shopping	<input type="radio"/>						
I tend to do what people who are important to me think I should do	<input type="radio"/>						
I felt I ought to bid more for organic food	<input type="radio"/>						
I consider myself a typical buyer of organic food	<input type="radio"/>						
I consider myself a green consumer	<input type="radio"/>						

I think of myself as a health conscious consumer	<input type="radio"/>						
I felt I ought to bid more for local food	<input type="radio"/>						

Q.19 Please rate your agreement with the following statements

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
Organic food is a fad	<input type="radio"/>						
Local food is a fad	<input type="radio"/>						
You can't feed the world with organic food	<input type="radio"/>						
Conventional farming practices are the most efficient	<input type="radio"/>						
There is nothing wrong with conventional farming practices	<input type="radio"/>						
Regions should specialize in producing foods they are best at	<input type="radio"/>						
No matter what I buy, I can't have an influence on the environment by myself	<input type="radio"/>						
No matter what I buy, I can't influence the food system by myself	<input type="radio"/>						

Q.20 Please rate your agreement with the following statements

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
Most people who are important to me think I should purchase local food	<input type="radio"/>						
Most people who are important to me think I should purchase organic food	<input type="radio"/>						
I feel that I have an ethical obligation to purchase local food	<input type="radio"/>						
If I wanted to, it would be easy to purchase local food	<input type="radio"/>						
I will look for locally grown food next time I go food shopping	<input type="radio"/>						
I feel that I have an ethical obligation	<input type="radio"/>						

to purchase organic food							
Buying organic food makes me feel like a better person	<input type="radio"/>						
Buying local food makes me feel like a better person	<input type="radio"/>						

Q.21 Please rate your agreement with the following statements

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
Local food is too expensive	<input type="radio"/>						
It's difficult to find local food	<input type="radio"/>						
Organic food is too expensive	<input type="radio"/>						
It's difficult to find organic food	<input type="radio"/>						
Local food varies greatly in quality	<input type="radio"/>						
Organic food varies greatly in quality	<input type="radio"/>						
Food advertised as local isn't always really local	<input type="radio"/>						

Q.22 Future How often in the next two months do you intend to buy foods in each of the following categories?

	Not at all	Rarely	Occasionally	Often	Very often
Organic fresh produce	<input type="radio"/>				
Organic dairy products	<input type="radio"/>				
Organic meats	<input type="radio"/>				
Organic processed foods (e.g. bread, jam)	<input type="radio"/>				
Organic eggs	<input type="radio"/>				
Local fresh produce	<input type="radio"/>				
Local dairy products	<input type="radio"/>				
Local meats	<input type="radio"/>				
Local processed foods (e.g. bread, jam)	<input type="radio"/>				
Local eggs	<input type="radio"/>				

*Certification of Human Subjects Training*

The University of Delaware certifies that Tong Wu  
(Name of researcher)

attended an institutional training session on the use of human subjects in research on

April 13, 2010.  
(Date)

The session included the following topics:

- The Belmont Report
- Federal regulations for using humans in research (45 CFR 46)
- The University's Federalwide Assurance
- Informed consent
- Institutional procedures
- Sources for additional information.

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