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Consumer behavior and willingness to pay for orgnaic [i.e. organic] products

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CONSUMER BEHAVIOR AND WILLINGNESS TO PAY FOR ORGANIC
PRODUCTS

A Thesis

Presented to

The Faculty of the Department of Environmental Studies

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

by

Pete (Chun-pei) Wang

August 2007

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ABSTRACT

CONSUMER BEHAVIOR AND WILLINGNESS TO PAY FOR ORGNAIC PRODUCTS

by Pete (Chun-pei) Wang

Today, an increasing number of consumers choose to purchase organic food to show their concern and support for products that benefit both people and the environment. Most consumers, however, know little about organic cotton, given the fact that conventional cotton farming is considered one of the most polluting farming practices in agribusiness. The results of my study indicate consumers' behavior of buying organic food is directly influenced by their knowledge of organic farming practices, environmental attitudes, and sociodemographic characteristics. On the other hand, consumers' behavior of buying organic cotton clothing is directly influenced by their environmental attitudes, and the frequency of organic food purchase. Knowledge of conventional farming also play a critical determinant in transforming organic food buyers into organic cotton buyers. Moreover, consumers are most concerned about organic cotton clothing's high premium price, poor product variety, lack of distribution points and lack of product information.

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Introduction

Environmental and Social Impacts of Conventional Cotton Farming

For centuries, cotton has served as one of the most popular natural commodities to humankind. Nowadays, cotton fields cover over 70 million acres of land on the earth's surface, and cotton is widely processed to produce cottonseed for livestock feed, cotton oil for food processing and, of course, fabric for clothing (The Fabric of Their Lies: Cotton's Devastating Legacy, 2002). The United States, the world's largest cotton producing country, provides over 20% of the global cotton supply, and the U.S cotton industry alone generates over \$6 billion of annual revenue. In fact, since 1996, each American has consumed more than 75 pounds of cotton per year (ERS/ USDA, 1996; ERS/ USDA, 2006). On a global scale, the demand for cotton continues to rise in developing economies, such as China and India, which consume 37% and 15%, respectively, of the world's cotton supply (Greene, 2003).

While cotton has provided people worldwide with comfort and convenience, modern cotton farming is perhaps the most environmentally devastating industry in agricultural history. While cotton is grown on only 2.4 % of the world's farmland, conventional cotton farming uses 25% of the world's insecticide and more than 10% of its pesticides. The purchase of these toxic chemicals costs U.S. taxpayers a total of \$2.6 billion every (Ingram, 2002; PANNA, 1998). On average, every t-shirt made with conventional cotton requires 1/3 pound of synthetic pesticides and insecticide to produce (The Fabric of Their Lies: Cotton's Devastating Legacy, 2002). In some developing countries, it is estimated that roughly 50% of all pesticides are applied in cotton

cultivation, and these pesticides have killed at least 20,000 people every year (PANUK, 2005).

In 2005, the conventional cotton industry received \$3.3 billion in farm subsidies from the U.S. government, making it the third largest farm subsidy recipient in the United States, after corn and wheat. Between 1995 and 2005, 81% of such cotton subsidies went to only 10% of the cotton growers, who were mainly corporate-owned and grew cotton using monocultural and chemical-intensive farming practices (Environmental Working Group, 2004). In California, 12 to 13 million pounds of pesticides are deposited onto cotton fields every year, amounting to 14 pounds of pesticides per acre.

The U.S. EPA has identified half of the most commonly used pesticides on cotton fields as carcinogenic (California Department of Pesticide Regulation, 2002; *The Fabric of Their Lies: Cotton's Devastating Legacy*, 2002). A 2002 report from the U.S. Center for Disease Control and Prevention states that every study participant contained approximately 13 types of pesticides in their bodies, and two of them have levels above the government safety threshold. Pesticides can enter the human body through contaminated water, soil, crops, and atmospheric transport. They can affect the health of children by contaminating breast milk, and they increase the risk of developing leukemia by nearly seven-fold (Jensen, Mazhitova and Zetterstrom, 1997; Lotus, 2004).

Conventional cotton farming also poses a great threat to local biodiversity. 83% of conventional cottonseeds grown in the United States are now genetically modified. Many scientists hold that genetically modified crops may contaminate native plant species, eliminate natural pollinators, and eventually modify the structure and integrity of

the local ecosystem (ERS/USDA, 2006). As a result, not only does chemical-intensive cotton farming pose significant health risks to all human beings, it also endangers the earth's fragile ecosystem.

Organic Cotton: An Alternative Choice

In contrast to conventional, chemical-intensive cotton farming, organically grown cotton represents an environmentally and socially responsible alternative. Because growing organically means that no toxic, synthetic fertilizers and pesticides can be used, organic farming maintains soil fertility and nutrients, and sustains the local ecosystem. Certified organic cotton fabric requires the implementation of environmentally friendly practices during the processing and manufacturing stages. These practices include the banning of the use of carcinogenic substances such as formaldehyde, heavy metals, and chlorine bleach, as well as the mandatory recycling or pre-treating of toxic discharges before they are released to the water source (Ferrigno, 2005; Sanfilippo, 2007). In addition, organic certification is the only standard that guarantees that the product does not contain any genetically modified crops and ingredients. Organic cotton therefore helps preserve local habitat and biodiversity (Coody, Riddle and Rosen, 2003; Greene, 2003).

The Organic Movement in the 21st Century

Many researchers believe the United States is currently experiencing a new wave in organic movements. Browne et al. (2000) describe this change as "a unique grassroots, consumer-driven economy that reflects consumers' concerns about the polluted environment, about their desires for food safety, and about environmental and social

justice.” Consumers have begun to realize that the extra price premium they are paying for an organic product not only buys them a healthier and safer product to consume but also, more importantly, buys their children a cleaner environment to sustain. Consumer interest in supporting organic farming has tremendously stimulated the annual retail sales of organic food in the United States. The annual sales growth has reached 20%, and has generated more than \$3.5 billion every year since 1996 (Dimitri and Greene, 2002).

As for organic cotton, after experiencing a near 60% drop in domestic production between 1995 and 1998 due to low market responses, it has finally regained consumer attention in the new millennium (The Organic Cotton War, 1997). Annual U.S. organic cotton production increased steadily to over 15% between 2003 and 2005, while the annual sales of organic cotton products is expected to grow by 15.5% between 2004 and 2008 (Myers and Stolton, 1999; OTA, 2006). Not only has organic cotton clothing become the prominent product line of some major clothing manufacturers such as Patagonia and Levi’s, the number of small-scale retailers and brands selling it grew from a few hundred to more than 1,200 by the end of 2005 (Organic Cotton Market Report, 2006). As Figure 1 indicates, global production, retail sales, and manufacturers’ demands for organic cotton have all been significantly increasing in the past few years. Although organic cotton still represents only about 0.06% of current global cotton production, it certainly has the potential to enjoy a similar success to that of organic foods in the near future (Burden, 2004).

Note. From "Organic Cotton Market Report 2006," by Organic Exchange

Figure 1. Global Growth of Organic Cotton Demand

Problem Statement

From the marketing perspective, the market for organic food has entered the “growth” stage, in which the majority of buyers have a basic understanding of the product’s features and benefits, and the market has established a stable growth in sales while more companies continue to introduce new products. In contrast, the organic cotton sector is still at its “introduction” stage, in which sales grow slowly, and the major objective for suppliers in this stage is to create consumer awareness, to educate the consumer about product benefits, and to stimulate product trial (Kerin, Hartley and Rudelius, 2004). With organic food, most buyers are already familiar with their direct health benefits such as “chemical-free” and “more nutritious” (Rabb and Grobe, 2005). In contrast, the majority of consumers might not consider organic cotton products as equally valuable because these products do not often deliver obvious and direct health benefits to users. Consumers are likely to buy a product only if they perceive some added value in that product. It is unlikely that they would buy an organic cotton product solely because of its environmentally friendly features. The major task of organic cotton marketers is therefore to understand the target market of organic cotton products, to educate them to think beyond their own self-interest and the product’s direct benefits, and finally to convince consumers to take into account the hidden social and environmental costs of producing conventional cotton apparel into their decision-making processes (Golding and Peattie, 2005).

In contrast to the numerous studies that have been conducted on organic food, only a handful of marketing research has been specifically focused on organic cotton

products. Companies considering selling organic cotton products will be unable to design and execute a successful marketing plan unless they first understand who their consumers are, how consumers evaluate these products, and what barriers consumers experience to buying organic cotton products. Without first addressing these issues, organic cotton apparel sales will continue to lag well behind organic food in the general marketplace.

Related Research

Consumer Attitude, Knowledge, and Willingness to Pay for Organic Food

Specific studies on organic food purchases show a positive relationship between buyers' awareness, attitude, and knowledge, and their willingness to pay (WTP) for organic food. William and Hammitt (2000) point out that not only do organic food buyers tend to be more ecologically conscious, they are also more likely than non-buyers to engage in health-promoting and environmentally supportive behavior. Frequent organic food buyers also often show a stronger concern for issues related to food safety – such as chemical overuse in agriculture, and pesticide residue on produces – as well as a stronger belief and confidence in certified organic products, and a better knowledge about organic farming practices than do less frequent buyers (Blake and others, 2003; Cranfield and Magnusson, 2003; Gil, Gracia and Sanchez, 2000; Raab and Grobe, 2005; Soler and Gil, 2004; Williams and Hammitt, 2000). Moreover, consumers with stronger positive attitudes towards organic food perceive higher values in organic food and believe organic food should be more expensive. They also tend to be less price-sensitive and willing to pay an extra 5% - 30% for different organic products (Bang and others, 2000; Blake and others, 2003; Gil, Gracia and Sanchez, 2000; Krystallis and Chryssohoidis, 2005; Soler and Gil, 2004; Tanner and Kast, 2003). However, some studies indicate that although organic food buyers show a high level of concern for the environment, they primarily choose to buy and consume organic food because they believe it is safer and has greater health benefits than conventional food. Its environmental benefits seem less important to them (Cranfield and Magnusson, 2003; Gil, Gracia and Sanchez, 2000).

Environmentally-Conscious Behavior Models and Mechanism

Theory of Reasoned Action (TRA). Two behavioral models are commonly adapted by researchers to explain the mechanism behind people's environmentally conscious behavior. Fishbein and Ajzen's theory of reasoned action (1975) states that people only perform the behavior that they believe will create the more desirable outcome to other alternatives (Fishbein and Ajzen, 1975). Bang et al. (2000) later simplify the TRA model and describe the formation of humans' environmentally conscious behavior as a linear relationship: knowledge-belief-attitude-behavior. This model posits that knowledge constructs one's belief, belief develops one's attitude, and attitude eventually motivates one's behavior. According to this model, an individual's attitude toward the environment has a greater impact on his/her motivation to perform an environmentally- conscious behavior than do knowledge and belief. The TRA model has been supported by studies on various environmentally-conscious behaviors (McCarty and Shrum, 1994; Bang and others, 2000; Laroche, Bergeron and Barbaro-Forleo, 2001).

Internal and External Factors. The survey study from Gardyn (2003) reports that although 80% of Americans state that their major reason for considering recycled paper products is the environmental benefit they offer, only 57% admitted to actually buying them. Similarly, other studies have found that when people make decisions in a market where they have freedom to access multiple choices, their behavior is always more complicated than the TRA describes. Tanner and Kast (2000) and Laroche, Bergeron and Barbaro-Forleo (2001) describe a consumer's purchase behavior as the artifact of both internal /personal variables (i.e. attitude, knowledge, past experience) and external/

contextual variables (i.e. product price and quality, and convenience), and no single variable has a pre-dominant effect on making their final decisions. In other words, an individual's environmentally conscious behavior is the reflection of his/her lifestyle, and is influenced by both an individual's personal factors, and external factors they are currently coming across.

A person's lifestyle, as defined by Lorek and Lucas (2003) defines, is a distinctive mode of living and pattern of actions that includes their "actual purchase experience... and their sensitivity to different external factors." The interactions between internal and external factors would help to explain why high concern over the environment was always found among the general public, but behaviors consistent with such concern were often lacking (Gardyn, 2003; Lohr and Semali, 2000; Ottman, 1994). Using the purchase of organic food as an example, Figure 2 highlights the possible personal and contextual factors consumers might face when making food-buying decisions. Major external factors with regard to purchasing organic food include premium price, inconvenient store locations, unclear product information, weak branding, and poor quality; consumers will not make long-term commitments to organic products until these external factors are well addressed by suppliers (Bergeron and Barbaro-Forleo, 2001; Gardyn, 2003; Hamm, 1995; Hill and Lynchehaun, 2000; Lohr, 2001; Lohr and Semali, 2000; Ottman, 1994; Tanner and Kast, 2003).

Figure 2. The Conceptual Framework of Factors Influencing a Consumer's Decision in Purchasing Organic Cotton Clothing (Source: Tanner and Kast, 2000; Laroche, Bergeron and Barbaro-Forleo, 2001).

Market Segmentation—Socioeconomics, Psychographics and Behavioristics

Market segmentation is the first step taken prior to developing marketing plans. In this process, marketers first identify the potential customers and group them based on their shared characteristics. Once people are grouped, each group becomes a potential target market segment, and it allows marketers to develop marketing strategies that specifically fit the characteristics of each market segment. Marketers typically group their target customers according to their demographics, psychographics, or behavioristic characteristics (Arens, 2004). Studies on consumers' socioeconomic backgrounds – such as age, income level, and education level – show that they do not always have a consistently significant effect on people's environmentally conscious behavior (ECB)

(Chan, 1999; Gil, Gracias and Sanchez, 2000; Guagnano, 2001; Jan, Fu and Huang, 2005; Laroche, Bergeron, and Barbaro- Forleo, 2001; Roberts, 1996). In contrast, both psychographic characteristics – including personal values, attitude and knowledge – and behavioristic patterns are considered the more effective indicators of people's environmentally conscious behavior. Previous studies found that green consumers are often supportive of green products, are more familiar with the environmental issues related to the products they purchase, and are more likely to participate in recycling and belong to environmental organizations than are consumers in other segments (Cranfield and Magnusson, 2003; Hunter and Rinner, 2004; Jan, Fu, Huang, 2005; Laroche, Bergeron and Barbaro- Forleo, 2001; McCarthy and Shrum, 1994; Tanner and Kast, 2003; Tracy and Oskamp, 1983; William and Hammitt, 2000).

Research Objectives

The objective of this exploratory marketing research is to identify the buyers of organic cotton clothing, to understand their perceptions of the clothing, and to further analyze their decision-making processes and purchase behavior of buying organic food and buying organic cotton clothing. First, I examine whether or not consumers' willingness to pay for organic cotton clothing (WTP) is significantly correlated with their socioeconomic background, psychographic attributes (knowledge and environmental attitude levels), and their behavioristic patterns (purchasing frequency of organic food). Second, I group the study sample into different segments based on their purchase behavior, and addresses the barriers consumers in each segment perceive when purchasing organic cotton products. Finally, this study discusses how marketers could better design their marketing plans based on the survey results.

Research Questions

This study is to exam if any significant relationship exists between consumers' willingness to pay for organic cotton clothing (WTP), environmental attitudes, knowledge about organic farming practices, and the purchasing frequency of organic foods. Specifically, this study will address the following research questions:

1. Is consumer stated WTP a valid indicator of their actual purchase behavior?
2. Are organic food buyers more likely to support organic cotton clothing than non-organic food buyers?
3. Are consumers' environmental attitudes and knowledge about organic farming practices statistically associated with their willingness to pay for organic cotton clothing?
4. What are the consumer perceptions of organic cotton clothing?
5. How can the marketing community understand their target market and increase consumer demand for organic cotton clothing through market research and segmentation?

Methods

Research data were collected at the following locations in San Francisco, CA- the Trader Joe's between 9th Street and Bryant Street, the Rainbow Co-op Grocery on 1745 Folsom Street, and the Safeway supermarket on 16th Street.

Study Site

The San Francisco Bay Area of Northern California is well- known for its diverse population, cultures and rich history of environmental and social movements. The Bay Area residents have a higher percentage of college graduates than the national average (40% vs. 26%), and 30% higher per capita income than the national average (\$34,079 vs. \$24,020) (Bay Area Census, 2005; U.S. Census, 2000). Residents in the Bay Area today can purchase a wide variety of organic products from numerous purchase points including national chain supermarkets, local grocery stores, and regional farmer's markets. In general, consumers in the San Francisco Bay Area are likely to be adequately informed about current environmental issues and have a basic understanding in organic farming practices and its benefits than those in other major cities.

Even though consumers could find similar food items from all three participating stores, each store apparently positions itself differently in the marketplace. Safeway and Trader Joe's are both major national chain supermarkets in North America, and sell both conventional grocery goods and organic products. Safeway is the third largest conventional supermarket chain in the U.S that recently introduced its new private organic label- "O Organic" (Haberkorn, 2006). Although today Safeway sells more than 150 different organic products, low-priced conventional food are still the major product

type sold in Safeway. Safeway is positioned to provide its customers highly recognized brands, convenient store locations and hours, relatively low product prices, and a large product variety. In contrast, the Rainbow Grocery is an independent grocery store owned and operated by its members. The majority of food sold at the Rainbow Grocery includes locally-grown, natural and organic products, and it tends to specifically target green consumers, who are more concerned about a product's added values, such as the environmental benefits in organic products, and the social justice in fair trade goods. Finally, Trader Joe's is likely to be positioned between the corporate-owned Safeway and independent Rainbow Grocery. Trader Joe's operates in only 23 states, selling more variety of natural and organic products than Safeway, but fewer than Rainbow Grocery. The distinctive characteristics of target customers among three study sites provides this research a solid ground to distinguish the differences between consumer attitude toward the environment, knowledge, frequency of organic foods purchase, and WTP for organic cotton clothing across the study sites.

Data Collection

Self-administrated questionnaires were distributed to adult shoppers using the convenience sampling method. At each study site, a table was set up near the entrances of the stores facilitating communication with shoppers. 150 surveys were collected at each study site between June and September 2006, and total of 450 surveys were completed.

The questionnaire, attached in Appendix 1, included a cover page describing study objectives, respondent's rights and confidentiality, and brief survey instructions.

The body of the questionnaire consisted of four sections: (1) Knowledge- six True/ False questions regarding consumer knowledge about conventional farming's environmental impacts, about the certification standards of organic products, and about organic cotton production and certification; (2) Attitude- six questions testing consumers' attitude toward the general environmental issues, toward supporting environmentally-friendly products, and toward organic foods; (3) Behavior- six questions addressing consumer purchase behavior and experience on buying organic foods and organic products, and (4) Sociodemographics- survey participant's demographic information, including gender, age, education level, income level, and ethnic background.

Data Analysis

Quantitative Questions Coding. In the Knowledge Section, one point was awarded for each correct answer while no point was awarded for wrong answers, and the sum represented each respondent's knowledge score. In the Attitude section, respondents' attitudes are measured based on the Likert-type scale, whose score was ranged between +12 (highly positive) and -12 (highly negative). Most questions in this section are taken directly from the previous studies on similar subjects (Cranfield and Magnusson, 2003; Dunlap Van Liere, 1978; Kinnear and Taylor, 1973; Tanner and Kast, 2003). In the Behavior section, respondents were asked to provide the main reasons why they would choose to buy organic cotton clothing, and also the major conflicts they had encountered when trying to buy organic cotton clothing. Respondents who stated they were willing to pay more for an organic cotton t-shirt were then asked to select the specific percentage of price premium they were willing to pay over regular cotton T-shirt

at the level of 10%, 50%, 100%, 150%, and 200% or more. The complete coding scheme for each section of survey is listed on Appendix 2.

Descriptive Statistics. Descriptive statistics of the sample's sociodemographic background, attitude and knowledge levels, willingness to pay for an organic cotton t-shirt (WTP), and frequency of organic food purchase were generated. The sample's sociodemographic data were compared with the data recorded in the 2005 Bay Area Census to study how closely the research sample represents the population of the San Francisco Bay Area.

Market Segmentation. In this study, market segments were formed based on the respondents' purchase behavioral patterns. I classified survey respondents into three groups based on their answers to Question 3- the frequency of organic food purchase in the past three months, and Question 4- whether they had purchased organic cotton clothing in the past six months. The mean of attitude, knowledge, WTP, and frequency of organic food purchase of each group were first calculated, and t-tests were then applied using Microsoft Excel to study whether there was a significant difference on each variable between groups.

Consumers' perceptions of organic cotton clothing from each segment were recorded according to their responses on Question 4(a) asking the major reasons attracting them to purchase organic cotton clothing, and Question 4(b) asking the major reasons they chose not to purchase organic cotton clothing. Studying consumers' perceptions of organic cotton clothing helps to understand consumers' motivations for buying organic cotton clothing, and also the potential barriers consumers had experienced

and encountered when making a purchase decision of organic cotton clothing. Finally, on the basis of the study sample responses, marketing recommendations for improving the two major marketing mixes of organic cotton clothing— price and promotion— were provided in the last section of this study.

Causality of Consumer Buying Organic Food and Organic Cotton Products.

Multiple regression tests were conducted to study the internal factors having significant effects on consumers' behavior of buying organic food and organic cotton clothing and on their WTP (Table 1). Consumers' behavior of buying organic food was studied through measuring the regressions between frequency of organic food purchase and internal variables, while the behavior of buying organic cotton clothing was studied through measuring the regressions between these variables and their purchase experience in the past six month.

Table 1. Dependent and Independent Variables of Statistical Tests.

CONSUMER BEHAVIOR	DEPENDENT VARIABLE	INDEPENDENT VARIABLE
I. Purchasing Organic Food	Frequency of Organic Food Purchase	1. Sociodemographics 2. Attitude toward the Environment 3. Knowledge about Organic Farming Practices
II. Purchasing Organic Cotton Clothing	1. Purchase of Organic Cotton Clothing in the Past Six Months 2. WTP	1. Frequency of Buying Organic Food in the Past Three Months 2. Sociodemographics 3. Attitude toward the Environment 4. Knowledge about Organic Farming Practices

Results

Descriptive Statistics

Socioeconomic Characteristics. The descriptive analysis of the survey data revealed that the majority of the study sample was aged between 20-39 years (52%), was at least college graduates (65%), and had a personal income of below \$3000 per month (65%). Table 2 shows the comparisons between the study sample and the San Francisco Bay Area population recorded in the 2005 Census, and it suggests that the study sample was biased towards female, white, lower income levels, and higher education levels (Bay Area Census, 2005).

Table 2. Comparative Demographics of the Study Sample and the Population of the San Francisco Bay Area.

SOURCE	GENDER		INCOME	AGE	EDUCATION	ETHNICITY	
	Male	Female	Monthly Personal Income	Median	College Degree and Above	White	Non- White
Study Sample	42%	58%	\$2,500	35	65%	65%	35%
San Francisco Bay Area Population in 2005	50%	50%	\$2,912	37.3	41%	57%	43%

Note. From "2005 American Community Survey Estimates," by U.S Census Bureau

Attitude and Knowledge. The vast majority of respondents showed positive attitudes toward the general environmental issues (85%), toward supporting environmentally-friendly products (90%), and toward organic food (92%). However,

only 39% of respondents, whose knowledge scores were above the average, showed adequate knowledge about organic farming practices, while the rest 61% of respondents were considered unknowledgeable about organic farming practices. In the specific knowledge category, 65% of respondents understood the negative impacts of conventional farming, while the majority of respondents (80%) was unfamiliar with organic certification standards, and organic cotton production and certification processes (67%). Results indicated that the majority of the study sample had positive environmental attitudes, but still lacked in-depth knowledge about organic farming practices.

Market Segmentation

Characteristics of Market Segments. The study sample was divided into three groups based on their answers to Question 3— the frequency of organic food purchase in the past three months, and Question 4— whether they had purchased organic cotton clothing in the past six months. These three groups are categorized as:

- I. **Conventional Food Buyer-** respondents who have never purchased organic food and organic cotton clothing in the past three months.
- II. **Organic Food Buyer-** respondents who have purchased organic food but not organic cotton clothing in the past three months.
- III. **Organic Cotton Buyer-** respondents who have purchased organic cotton clothing in the past three months.

74% of the study sample fell into the Organic Food Buyer category, followed by 22% into the Organic Cotton Buyer, while only 4% of respondents belonged to the

Conventional Food Buyer. T-tests suggested there was no significant difference in socioeconomic characteristics across different consumer segments; however, significant differences were found in knowledge, environmental attitudes, frequency of organic food purchase, and WTP between different segments (Table 3). Table 3 shows that consumers in the Organic Cotton Buyer group had the highest frequency of organic food purchase, and highest WTP among the three groups. Respondents in the Organic Cotton Buyer group also were more knowledgeable about the impacts of conventional farming practices than respondents in other groups; however, their environmental attitude was not significantly greater than those in the Organic Food Buyer group.

On the other hand, consumers in the Organic Food Buyer group showed the intermediate levels in knowledge, environmental attitudes, buying frequency of organic food, and WTP. Organic food buyers had significantly higher positive attitude toward supporting green products and toward organic food than conventional food buyers, and they were also more knowledgeable about the impacts of conventional farming practices than conventional food buyers. Finally, the results suggested there were no significant differences in consumers' attitudes toward the general environmental issues, knowledge about organic certification standards, and about organic cotton production and certification between each segment.

Table 3. T-tests of Factors between Each Consumer Segment (N=332).

FACTORS	T-TESTS		
	t- value (I-II) ¹	t- value (II-III) ²	t- value (I-III) ³
1. WTP	2.634**	5.096**	4.512**
2. Frequency of Organic Food Purchase	-43.994**	4.661**	-31.853**
3. Environmental Attitude	3.530**	1.375	3.041**
1) Attitude toward the General Environmental Issues	-1.624	-1.320	-1.994*
2) Attitude toward Supporting Environmentally-Friendly Products	-3.482**	0.632	-3.408**
3) Attitude toward Organic Food	-3.368**	0.383	-3.303**
4. Knowledge	2.773**	2.198**	4.512*
1) Knowledge about Conventional Farming Practices	-1.792*	3.498**	-2.847**
2) Knowledge about Organic Certification Standards	-1.474	-0.350	-1.178
3) Knowledge about Organic Cotton Production and Certification	-1.180	0.782	-1.502
¹ T-value between the Conventional Food Buyer and the Organic Food Buyer			
² T-value between the Organic Food Buyer and the Organic Cotton Buyer			
³ T-value between the Conventional Food Buyer and the Organic Cotton Buyer			
*p<0.05; **p<0.01			

Motivations for Buying Organic Cotton Clothing. Respondents were asked to provide their motivations and perceived barriers when buying organic cotton clothing in the Behavior section of the study survey. According to the survey responses, respondents in all three groups ranked organic cotton's superior environmental benefits and low-pesticide residue (or health benefits) as organic cotton clothing's major advantage or added value. Respondents in the Organic Cotton Buyer and Organic Food Buyer groups

were also more concerned about organic cotton farming's safer working conditions than those in the Conventional Food Buyer. In addition, almost 20% of conventional food buyers considered affordable product price as an important motivations for purchasing organic cotton products, compared to less than 5% in Organic Food Buyer and Organic Cotton Buyer group (Figure 3).

Figure 3. Consumer Motivations for Purchasing Organic Cotton Clothing.

Perceived Barriers. Figure 4 illustrates the major obstacles respondents had experienced when making purchase decisions on organic cotton clothing, and four major barriers were identified: high product price, poor product variety, lack of product information, and lack of distribution points. First, respondents across all three consumer segments described organic cotton's premium price as the major barrier. Both

conventional food buyers and organic food buyers considered lacking information about organic cotton as the major reason for not buying organic cotton clothing, while organic food buyers and organic cotton buyers identified poor product variety and lack of distribution points as their top barrier. In addition, 20% of conventional food buyers also perceived organic cotton clothing as lack of obvious direct health benefits to them, compared to less than 5% of organic food buyers and organic cotton buyers.

Figure 4. Perceived Barriers Influencing Consumers' Purchasing Decisions on Organic Cotton Clothing.

Behavioral Analysis of Organic Food Purchasing

Internal Factors Affecting Organic Food Purchase. As much as 94% of the study sample claimed they had purchased organic food at least once in the past three months, while 37% stated they purchased organic food every time they shopped. Two-tailed multiple regression analysis was applied to study the statistical associations between the

frequency of organic food purchases and respondents' socioeconomic background, knowledge, and environmental attitudes. Multiple regression analysis indicated that the frequency of organic food purchase was significantly associated with gender, age, ethnicity, knowledge about organic farming practices and environmental attitudes (Table 4). Regression coefficients concluded that consumers who purchased organic food more frequently tended to be female, younger, white, more knowledgeable about organic farming practices, and have stronger positive environmental attitudes.

In addition, because survey data were collected from 3 different study sites in San Francisco, I further examined whether data collected from each individual study site had any biased effects on the overall result. This "site effect" was tested by including the study sites (Safeway and Trader Joe's) as dummy variables, and its effect on the frequency of organic food purchase was listed in the Model 2 in Table 4. The results showed that the site effect had a significantly negative impact on the frequency of organic food purchase. However, the inclusion of site effect didn't alter the statistical relationships between frequency of organic food purchase and related independent variables.

Table 4. Coefficients and Standard Errors of Regression of Frequency of Organic Food Purchase on Independent Variables (N=329).

INDEPENDENT VARIABLE	MODEL 1 ¹		MODEL 2 ²	
	FREQUENCY COEFF.	STD. ERROR	FREQUENCY COEFF.	STD. ERROR
Environmental Attitudes	0.095**	0.015	0.079**	0.015
Knowledge about Organic Farming Practices	0.176**	0.046	0.144**	0.045
Gender (0= Male, 1= Female)	0.447**	0.113	0.432**	0.109
Age Category	-0.109*	0.044	-0.101*	0.042
Education Level	0.021	0.056	0.002	0.054
Income Level	0.044	0.040	0.064	0.039
Ethnicity (0=Non- white, 1=White)	0.498**	0.121	0.417**	0.118
Site Effect (Safeway)	-	-	-0.701**	0.137
Site Effect (Trader Joe's)	-	-	-0.280**	0.132
Intercept	0.955**	0.322	1.550**	0.333
R Square	0.282	0.993	0.336	0.957

¹ Regression model excluding the Site Effect

² Regression model including the Site Effect

*p<0.05; **p<0.01

Behavioral Analysis of Organic Cotton Clothing Purchasing

Internal Factors Affecting WTP. Only 10% of the study sample stated they were not at all willing to pay more for an organic cotton t-shirt, while 30% stated they were extremely willing to do so. 52% of survey respondents were willing to pay a 50% price premium for an organic cotton t-shirt, while 25% was willing to pay at least 100% more over a conventional cotton t-shirt. Multiple regression analysis was applied to examine the associations between consumers' willingness to pay for an organic cotton t-shirt (WTP) and internal variables, including socioeconomic background, knowledge, environmental attitudes, and the frequency of organic food purchase. Statistical results from the three models 1 listed in Table 5 indicated that WTP was only correlated with environmental attitudes and the frequency of organic food purchase at 99% confidence level. Individuals with greater positive environmental attitudes, and higher frequency of organic food purchase were significantly more willing to pay a higher premium price for organic cotton clothing, while respondents' demographic background and knowledge had no effects on their WTP.

Model 2 in Table 5 also included the site effect on WTP. The results showed that the site effect had the similar negative impact on WTP as seen on the frequency of organic food purchase, but the site effect didn't alter the statistical relationship between WTP and independent variables.

In addition, Model 3 in Table 5 tested whether the frequency of organic food purchase overpowered the effects from other independent variables on WTP by excluding the frequency of organic food purchase from the multiple regression analysis. The results

showed that the gender actually became a significant factor to consumer WTP when the effect from the frequency of organic food purchase was removed. This finding suggested that gender was an effective factor to WTP, but its effect was somehow suppressed by the effect from frequency of organic food purchase.

Table 5. Coefficients and Standard Errors of Regression of Willingness to Pay (WTP) on Independent Variables (N=329).

INDEPENDENT VARIABLE	MODEL 1 ¹		MODEL 2 ²		MODEL 3 ³	
	WTP COEFF.	STD. ERROR	WTP COEFF.	STD. ERROR	WTP COEFF.	STD. ERROR
Frequency of Organic Food Purchase	0.289**	0.052	0.263**	0.053	-	-
Attitude toward the Environment	0.041**	0.015	0.039**	0.015	0.060**	0.015
Knowledge about Organic Farming Practices	0.038	0.04	0.034	0.043	0.072	0.044
Gender	0.209	0.107	0.208	0.106	0.321**	0.107
Age Category	-0.016	0.041	-0.015	0.041	-0.042	0.042
Education Level	0.102	0.052	0.097	0.052	0.097	0.054
Income Level	0.008	0.037	0.017	0.037	0.034	0.039
Ethnicity	0.044	0.115	0.04	0.114	0.150	0.116
Site Effect (Safeway)	-	-	-0.272*	0.136	-0.456**	0.135
Site Effect (Trader Joe's)	-	-	-0.321*	0.127	-0.394**	0.130
Intercept	0.153	0.301	0.454	0.328	0.861**	0.328
R Square	0.238	0.918	0.255	0.911	0.197	0.944

¹ Regression model excluding the Site Effect

² Regression model including the Site Effect

³ Regression model excluding the Frequency of Organic Food Purchase variable

*p<0.05; **p<0.01

Internal Factors Affecting Organic Cotton Clothing Purchase Decision. Finally, the regression correlation analysis was applied to exam whether consumer stated WTP was a valid indicator of their actual purchase behavior through studying the associations between internal variables and survey participants' responses to the question of whether they have purchased organic cotton products in the past six months. Statistical analysis in Table 6 indicates that consumers who have purchased organic cotton products in the past six months tend to be female and tend to purchase organic food more frequently. In addition, the result also indicates a significant positive relationship between consumer decision on organic cotton clothing and their stated WTP; consumers who have purchased organic cotton clothing are willing to pay a higher price for organic cotton clothing than those who have never purchased it. The result suggests that consumer stated WTP is a statistically significant indicator of consumer actual purchase behavior.

Table 6. Coefficients and Standard Errors of Regression of Purchase of Organic Cotton Clothing on Independent Variables (N=329).

INDEPENDENT VARIABLE	MODEL 1 ¹		MODEL 2 ²	
	REGRESSION COEFF.	STD. ERROR	REGRESSION COEFF.	STD. ERROR
WTP	0.091**	0.024	0.093**	0.024
Frequency of Organic Food Purchase	0.053*	0.023	0.049*	0.024
Environmental Attitudes	-0.006	0.007	-0.007	0.007
Knowledge about Organic Farming Practices	0.023	0.019	0.022	0.019
Gender (0= Male, 1= Female)	0.112*	0.046	0.115*	0.046
Age Category	0.008	0.017	0.008	0.017
Education Level	-0.023	0.022	-0.024	0.022
Income Level	0.011	0.016	0.012	0.016
Ethnicity (0=Non-white, 1=White)	-0.011	0.049	-0.016	0.049
Site Effect (Safeway)	-	-	-0.020	0.059
Site Effect (Trader Joe's)	-	-	0.059	0.055
Intercept	-0.273	0.128	-0.267	0.141
R Square	0.137	0.390	0.143	0.390

¹ Regression model excluding the Site Effect

² Regression model including the Site Effect

*p<0.05; **p<0.01

Discussion

Consumer Education

Educating Consumers to Think Beyond Price Tags. The great success of organic food since the 1990s has indicated that a large number of today's consumers have learned to account for a product's direct and indirect costs and benefits when making purchasing decisions, and they therefore become willing to spend more to buy themselves safer food and support a cleaner environment. The same consumer education efforts must be incorporated into organic cotton marketing as well.

The huge subsidies (\$3.3 billion in 2005) the conventional cotton industry has received every year have guaranteed the low production costs of conventional cotton. This has in turn enabled conventional cotton corporations to control the cotton price in the global market and leave hundreds of local cotton farmers in many developing countries unable to compete (Environmental Working Group, 2004; Ferrigno, 2005). U.S. consumers must first be informed that the cheap cotton products they have been buying for decades are actually produced using their own tax contributions, so that the price tags of conventional cotton products do not truly reflect the actual costs to every American consumer—the loss of thousands of jobs in family farms and the deposition of one-third of a pound of chemical residue on every cotton t-shirt. Elzakker (1999) finds that if the environmental costs of cotton production, such as the costs to clean and prevent the pollution caused by pesticides, were incorporated into retail prices, a t-shirt made from conventional cotton actually costs 15% (~\$0.34) more than an organic one. Notice that this statistic has not yet included all of the indirect medical costs related to pesticide

illnesses. Therefore, organic cotton marketers must first inform the consumers that the price tags of conventional cotton products do not nearly indicate their costs to the environment and society, and that the price premium of organic products should be considered cotton's "right" price.

Using Eco-labeling and Product Labels. An eco-label is the unique certification scheme that helps consumers to distinguish greener, more environmental-friendly products and services. Not only can an authentic and trustworthy eco-label can serve as an effective education and marketing tool by emphasizing the hidden values of certified products, it can also help green products to gradually push less environmentally-friendly products out of the market in the long-run (Grankvist, Gahlstrand, and Biel, 2004). In the United States, the implementation of USDA's organic seal has successfully increased consumer demands for organic food, and almost half of grocery shoppers claim they are aware of this label when shopping for organic food (Organic Trade Associate 2003). There is no doubt a well-designed eco-label will be an effective education tool in raising American consumers' awareness, and also develop their confidence in certified organic cotton products. However, unlike the USDA label for organic food, there is currently no government-authorized eco-label to certify finished organic cotton products. Such products sold in the United States can only be certified through international non-governmental organizations, such as "SKAL" in the Netherlands, and the Soil Association in the United Kingdom, whose green seals carry very limited recognition in the United States. Nonetheless, the Organic Trade Association's (OTA) American

the United States. Nonetheless, the Organic Trade Association's (OTA) American Organic Standards for Fiber Processing (currently under review and revision) is likely to become the first eco-label for organic cotton fabric in the United States in 2007.

Instead of applying eco-labels that are unfamiliar to most consumers on their products, I have found that most organic cotton suppliers in the U.S use their product labels as the main education tool for providing consumers with information about organic cotton. Most product labels across the various price ranges I have seen include the message that emphasizes organic cotton's environmental, social and health benefits. A product label collected from speesees, an organic cotton baby clothing company in San Francisco whose product prices range from \$10 to \$40 highlights the features and benefits of its organic cotton clothing— "use 100% certified organic cotton, low-impact dyes...in sweatshop-free environments...creating a more sustainable future for the animal, plant and human." Similar information is also found on Wal-Mart's private organic cotton baby's clothing line "George," which targets the lower price range of the apparel market. George's product label emphasizes its organically-grown cotton as "extra soft," grown with "no pesticides, herbicides or synthetic fertilizers," which is "the way nature intended."

Education Taken Place in Retail Stores. Meyer (2001) finds that retail stores can also be an effective classroom for facilitating consumer education because most consumers unintentionally become aware of the existence of a new product when they shop, and they are more likely to read the product description if they find it interesting. Patagonia, one of pioneering apparel companies that switched to 100% organic cotton in

these programs include the distribution of pamphlets and the displaying of banners which inform consumers of the benefits of organic cotton products (Chouinard and Brown, 1997). Other apparel specialty retailers such as Nike and Levi's, also gradually incorporate similar in-store education programs after launching their new organic cotton lines. Meanwhile, in addition to traditional "bricks-and-mortar" points of purchase, I have found most companies selling organic cotton products also provide detail information about organic farming practices and organic cotton on their websites.

In contrast, I have not found similar education programs installed in non-apparel retail stores. Wal-Mart, for example, has become the world's top organic cotton buyer since it launched its private organic baby clothing label "George" in 2005. Although Wal-Mart does provide information related to organic cotton production on George's product labels, neither its stores nor website provide any in-depth information about their organic cotton products. Organic cotton suppliers should encourage all retail stores carrying organic cotton products to conduct education programs inside the stores and on store websites.

Demarketing of Conventional Cotton Products. Browne and others (2000) believes that the most remarkable accomplishment of the organic movement is that consumers learn they have the power not only to send their messages to suppliers to show what they really want, but to boycott the products they disapprove of, a process called demarketing. The economic power of demarketing was specifically measured by the Cooperative Bank in the United Kingdom in 2005, in which researchers reported that 35% of British consumers felt guilty about unethical purchases, compared to only 17% in

1999, and it estimated that 296 million GBP (~\$580 million USD) was spent by conscious consumers in boycotting apparel manufacturers that employ unethical practices such as abusing sweatshop labor or violating animal welfare (the Cooperative Bank, 2005). However, I have not found similar quantitative research focusing on conscious consumption in the United States. By demonstrating the collective economic power of conscious consumption, the conducting and release of such quantitative research is very likely to empower consumers and encourage them to purchase fewer conventional cotton products in any possible way.

Reducing Product Prices

High premium price has been identified by the survey respondents as the main barrier toward making organic products less appealing to a broader consumer base. However, simply reducing the sale price of organic cotton products by reducing its production costs could be problematic and unsustainable to the growth of organic cotton market.

As mentioned earlier, the annual sale of organic cotton products is expected to grow by 15.5% between 2004 and 2008. Undoubtedly, a continuously increasing demand will both expand the current market and drop the production costs of organic cotton products in the long-run. In fact, consumers can already find a set of organic cotton baby clothing or an adult graphic t-shirt for as little as \$8.00 from Wal-Mart, that is almost the same price as the conventional cotton t-shirts sold in stores (Wal-Mart, 2006). However, Wal-Mart's "every-day-low-price" policy on organic products has provoked great concern from both organic farmers and advocates who believe overly

reducing the price of organic products will actually diminish the fundamental value of organically grown products: supporting the health of people and the planet, and further reconnecting the bonds between food, people and the planet (Gogoi, 2006; Pollan, 2006). Latacz- Lohmann and Foster (1997) also points out that many consumers often treat price as the indicator of quality, so reducing the price premium of organic products might confuse those consumers who expect to pay more for products that are different from cheaper conventional ones. Besides, it is possible that many consumers will find a contradiction between the “brown” image of Wal-Mart, which has consistently been charged for its poor labor policies, and its new-found commitment to organic products. Thus, the bottom line of reducing the price premium of organic cotton products is that it will not work in isolation, and must be used with other marketing strategies (Latacz- Lohmann and Foster, 1997). As a result, this section provides three possible solutions that will significantly reduce the costs of finished organic cotton products without jeopardizing farmers, retailers, or the core values of organic cotton.

Considering Using Other Sustainable Cotton. Because the primary objective of growing organic cotton is to eliminate the intensive use of synthetic chemicals that threaten the ecosystem, as well as farm workers and consumers, manufacturers could achieve this goal by using other sustainable fabrics. This could significantly reduce the production costs of sustainable textiles without trading off the environmental and social benefits gained with 100% organic cotton. For example, a fabric that contains at least 95% organic cotton can still be certified as “organic” according to Organic Exchange’s OE 100 Standards.

Another alternative that has been found successful in California is the use of cotton that is grown using integrated pest management (IPM) practices. Cotton farmers in California who participate in the Sustainable Cotton Project's BASIC program and apply IPM practices have significantly reduced their pesticide consumption by 70% over conventional cotton fields. Not only is BASIC's IPM cotton GMO-free, it costs almost 20% less than imported organic cotton, or 65% less than domestic organic cotton (Sustainable Cotton Project, 2005; L. Grose, personal communication, October 19, 2006). Products made using 95% organic blend as well as BASIC cotton provide manufacturers and consumers a middle ground between cheap but environmentally- unfriendly 100% conventional cotton, and expensive but environmentally- friendly 100% organic cotton.

Reducing Subsidies on Conventional Cotton Fields. Agricultural subsidies have been a complicated and controversial economic and political issue throughout their 70-year history. It is difficult to predict all the possible outcomes of removing such huge subsidies on conventional cotton fields; however, the following cases will briefly reflect the effects that the removal of farm subsidies would have on organic cotton prices. Currently, the growing of organic cotton costs an average of 10% more than the growing of conventional cotton due to its labor-intensive practices. In India, one of the world's major organic cotton producers, conventional cotton farmers do not receive large subsidies on pesticides and other chemicals, and organic cotton actually costs 16% to 37% less to grow than conventional cotton because savings are made in buying fertilizers and pesticides (Elzakker, 1999). Similarly, in Egypt, another major organic cotton

producer without large governmental subsidies, organic cotton production costs only 2% more than conventional cotton. On the other hand, regardless of the increasing demands for organically grown products, U.S organic farmers receive no government subsidies. Providing subsidies to organic farmers or reducing subsidies to conventional cotton farmers will not only reduce the costs of growing organic agricultural products, but it will also create incentives to increase domestic organic cotton supply and level the playing field between organic cotton and conventional cotton products in the long run.

Reducing Distribution Costs. Statistics show distribution costs tremendously raise the final prices of finished organic cotton products. An economic analysis on cotton production in Egypt highlights that, on average, a finished organic cotton t-shirt costs an extra 28% over a conventional cotton t-shirt (\$4.02 vs. \$3.24) before it reaches distributors; however, after it is distributed to the retailers, the difference in retail prices could reach as high as 60% (\$23.51 vs. \$14.50) (Elzakker, 1999). While it is difficult to ask retailers to reduce their mark-ups on organic cotton clothing, shortening the supply chain to reduce the number of ‘middlemen’ could be a realistic and practical pricing strategy. Obviously, the best solution to conserving the distribution costs is to “buy locally,” which not only enables the suppliers to deal directly with local producers and reduce the distribution costs, but also guarantees the price premium local farmers receive and strengthens the domestic green economy. However, given the fact that domestic organic cotton often costs as much as three times more than imported organic cotton, most small and intermediate organic cotton suppliers have to choose to purchase from imported growers (L.Grose, personal communication, October 19, 2006). For suppliers

who choose to purchase from foreign organic cotton producers, it has proven successful to adapt the integrated supply chain, in which buyers develop a direct contact and partnership with suppliers or farmers' unions to foster direct dialogue between buyers and local suppliers and growers, rather than going through multiple layers of middlemen (Ferrigno, 2005). Such practice is found successful in the Coop Switzerland, the second largest retailer in Switzerland. Coop Switzerland introduced its organic cotton line NATURALine in 1995, and during the initial launching of its new line, shortened the supply chain, excluded traders, and lowered other related transaction costs. Eventually, in this way, Coop Switzerland was able to sell NATURALine for almost the same price as conventional clothing (Meyers 2001).

Conclusion

Internal Factors Affecting Consumer Purchase Behavior

Figure 5 illustrates the path analysis diagram of the causal relationships between internal factors that significantly affect consumer behavior in relation to the purchase of organic food and organic cotton clothing. Not only do consumers in the Organic Cotton Buyer group show a higher WTP than consumers in other groups, the regression analysis in Table 6 also suggests a positive correlation between WTP and consumers' actual buying behavior in the market place. Thus, the study first finds that consumers' stated WTP is an effective indicator of consumers' preference for organic cotton clothing over conventional cotton clothing.

In the study on specific consumer behavior, the path analysis indicates that consumer behavior of buying organic cotton is significantly associated with their behavior of buying organic food. First, consumer behavior of buying organic food is significantly associated with both consumers' demographic and psychographic background. In addition, both consumer behavior in buying organic food and organic cotton clothing follows the TRA model's assumption. The magnitude of attitude regression coefficients ($B=0.079$ and 0.060 respectively), however, indicates that the effect of environmental attitudes on environmentally-conscious behavior is statistically weaker than of other variables.

This study also finds that behavioral pattern, frequency of organic food purchase has the greatest effect on WTP ($B=0.263$) among all internal variables and suggesting the consumers' behavioristic pattern seems to be the most effective approach segment in

the target market of organic cotton products. This finding agrees with the study of Williams and Hammitt (2000), which finds that consumers who are more willing to support organic products tend to engage in health-promoting and environmentally-friendly behavior, such as joining environmental organizations, recycling household trash, and buying environmentally-friendly detergents.

In addition to the behavioristic pattern, gender is the only demographic variable that has a significant impact on both consumers' behavior of buying organic food as well as of buying organic cotton. The magnitude of regression coefficients of gender ($B=0.432, 0.208$ and 0.115) suggest that gender plays a very effective determinant of consumer behavior among all internal variables, and female participants are more willing to engage in buying organic products than male. This finding agrees with the majority of previous studies because researchers believe women tend to be more concerned about the health of their children and other family members than men are (Gardyn, 2003; Hill and Lynchehaun, 2002; Laroche, Bergeron, and Barbaro-Forleo, 2001; Roberts, 1996; Tanner and Kast, 2003).

Figure 5. Path Analysis of Casual Relationships between Variables.

Market Segmentation

In this study, the study sample was grouped into three consumer segments based on their purchase behavior of organic food and organic cotton: the Conventional Food Buyer, the Organic Food Buyer, and the Organic Cotton Buyer. In their studies, Hartman (2004) and Lorek and Lucas (2003) cluster the potential market of sustainable fibers into three segments using a similar technique and set of criteria: the Dark Green “Core”, the Light Green “Mid-level”, and the Brown “Periphery.” Correlating their findings with my study, in which consumers in the Organic Cotton Buyer group show superior knowledge and environmental attitudes, and greater willingness to buy organic cotton clothing, Organic Cotton Buyer would represent the Dark Green Core. Similarly, those in the Organic Food Buyer group, who show intermediate levels of knowledge, environmental attitudes, and buying preference for organic food, would represent the Light Green Mid-level. Researchers point out that although most green companies typically identify the

Dark Green Core group as their major target customer group for its tendency to welcome new green products, the Light Green Mid-level actually plays the more critical role in triggering the take-off for the mass market of a new green product. Not only does the Light Green Mid-level often represent the majority of the consumer population, consumers in this segment are also more likely to become the opinion leaders and create the word-of-mouth promotion for new products. In addition, consumers in Light Green Mid-level are very likely to move into the Dark Green Core segment in the near future once they become familiar with new products and their features (Hartman, 2004; Lorek and Lucas, 2003; Rogers, 2003). Results from my survey study provide good news to organic cotton suppliers targeting the San Francisco Bay Area: not only does the San Francisco market include more “Deep Green Core” consumers than the Hartman Group’s national average (22% vs. 13%), but it also consists of a greater proportion of the “Light Green Mid-level” consumers (74% vs. 61%).

The Path from Brown to Light Green

The t-tests from Table 3 suggest that organic food buyers demonstrate stronger positive environmental attitudes and better understanding of the impacts of conventional farming than do conventional food buyers. It seems consumers’ environmental attitudes and their knowledge both play an important determinant in the Brown to Light Green process (Figure 6). First, conventional food buyers will not be ready to switch to organic food and account for their higher monetary costs until they have better developed their environmental attitudes. Researchers believe an individual’s attitude toward supporting environmentally-friendly products, also called green consumerism, is an important

indicator of how confident an individual feels about their power to improve the world through their consumption behavior, and this attitude will determine people's willingness to adjust their current lifestyle and behavior in accordance with their beliefs and values (Brown and Walhers, 1998; and Roberts, 1996). Hence, once conventional food buyers' attitudes toward supporting organic products and participating in green consumption become more advanced, they become more willing to shift their lifestyle to engage in environmentally-conscious behavior, including purchasing organic products on a regular basis. Moreover, survey questions adapted from the New Environmental Paradigm aimed to measure consumers' attitude toward general environmental issues found no association between these attitudes and consumers' behavior in buying organic food. It suggests that respondents' environmental attitudes are selective and subject-related, and individuals' general environmental attitudes cannot be the common reference for all of their environmentally-conscious behavior.

On the other hand, consumers' environmental knowledge also plays an important role in transforming conventional food buyers into organic food buyers. Obviously, consumers will not choose to buy a new product until they have a greater understanding of the issues related relating to the product. Researchers also claim that advanced product knowledge not only correlates with higher probabilities for participating in the market, but it also plays an important key factor in overcoming some of the main obstacles a new product may encounter (Coyle, 2005; Soler and Gil, 2004; Young and others, 2006).

Descriptive statistics of survey respondents suggest that the majority of the study sample is only familiar with the negative impact of conventional farming (Mean= 1.341),

and has very limited knowledge about organic certification standards (Mean= 0.400), and organic cotton (Mean= 0.475). It is possible that the questions in these two knowledge categories require consumers to have advanced training or specific knowledge, and thus were unable to test their influences on consumers' behavior of buying organic cotton clothing. As a result, respondents across different segments only show significant differences in their knowledge about conventional farming, and no difference in their knowledge about organic certification standards and organic cotton production and certification.

In addition, throughout this brown to green process, conventional food buyers continuously encounter external barriers that affect their willingness to buy organic food, such as organic food's premium prices, inconvenient store locations, and poor product appearance (Gil, Gracia, and Sanchez, 2000; Krystallis and Chryssohoidis, 2005; Zotos, Ziamou and Tsakiridou, 1999).

Figure 6. Factors Influencing Consumer Purchase Behavior on Organic Food and Organic Cotton Clothing.

The Path from Light Green to Dark Green

Consumers who decide to buy organic food are likely to go through a similar decision-making process regarding the purchase of organic cotton clothing. Nevertheless, knowledge is the only determinant in this Light Green to Dark Green transition. Survey results report that 35% of conventional food buyers and 20% of organic food buyers consider the absence of product information to be the main reason for not buying organic cotton clothing, compared to only 3% in organic cotton buyers.

Those who are less familiar with the issues related to organic cotton might consider organic cotton lacking significant and direct benefits to them. Education that specifically informs consumers about the environmental and social benefits of organic cotton products will help Light Green organic food buyers better understand the values of organic cotton products, and eventually overcome the external factors identified in the study survey, which include poor product variety (identified as the top obstacle by organic food buyers), lacking distribution channels, and high prices (Figure 4). This understanding will prompt them to try organic cotton products and increase their willingness to pay for organic cotton clothing.

Finally, Figure 6 also demonstrates an alternative route, in that conventional food buyers can bypass becoming organic food buyers, and instead become organic cotton buyers. However, the survey shows that only three out of 89 organic cotton buyers state they never purchased organic food, while the rest of organic cotton buyers have purchased organic food on a regular basis. As a result, this study conclude that the majority of the consumers would go through this three-stage process prior to buying organic cotton clothing.

Product Positioning

Although the study survey indicates that organic cotton's superior environmental benefits remain the dominant attribute attracting consumers across all segments, Kevin Myette, the Research and Development Director of Recreational Equipment, Inc. (REI), believes organic cotton clothing's environmental benefits would become an important added-value to customers only if they provide similar performance, quality, and design as

other clothing sold in the stores (K. Myette, personal communication, April 5, 2007).

Previous market research also confirms that a green product's environmentally or socially-friendly attributes can no longer be the only selling proposition attracting today's consumers, who will only choose to buy organic cotton clothing if they first receive the same quality of product attributes that they receive from the similar conventional alternatives (Hartman, 1999; Meyer, 2001; Rogers, 2003). Almost all organic cotton suppliers I have personally communicated with have provided the similar comments about the bottom line of positioning organic cotton clothing—the environmental benefit of organic cotton is just one of the many attributes mainstream consumers consider when making purchasing decisions. Consumers will not buy organic cotton clothing only because it is environmentally friendly. In other words, organic cotton's superior environmental and social benefits would only be an “emotionally feel better” added-value today's consumers (Meyer, 2001).

Shaw and Clarke (1999) suggest that consumers are more likely to buy a green product if it includes the added-values that closely relate to the issues with which they are already familiar. In addition to emphasizing organic cotton's environmental benefits, I find organic cotton suppliers have not yet placed enough emphasis on the potential health and social benefits of organic cotton clothing, such as its naturally hypoallergenic qualities and the implementation of fair labor practices. Furthermore, some organic cotton suppliers also believe that many consumers still consider organic cotton clothing to be “without fashion and color, and boring” (Lorek and Lucas, 2003). Organic suppliers should incorporate more designs, colors, and product variety into organic cotton clothing

in order to eradicate this stereotypical image (Lorek and Lucas, 2003; K. Myette, personal communication, April 5, 2007; R. Pearson, personal communication, April 26, 2007).

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Appendices

Appendix A. Shopping Survey

San Jose State University Graduate Study Survey

Thank you for participating in my graduate research survey. The questionnaire that you are filling out asks you questions about your attitudes, knowledge, behaviors, and demographic characteristics. We are gathering this information so that we can better understand how the general public feels about certain issues and products. Your participation in my study is completely voluntary, and you have the right not to answer any or all of the questions. All of your responses will be kept confidential, and your name will not be associated with any information you provide.

Again, many thanks for helping me out with my graduate research project. If you have any additional questions about the survey, please address to me, Pete Wang. You can reach me at 415-200-9874 or e-mail me at chunpei2001@yahoo.com

SJSU Graduate Study Environmental Attitude and Knowledge Survey

This section of the survey asks for your opinions on a variety of issues. Your honest answers will help us better understand how consumers feel about certain practices and products.

Knowledge

Please answer the following questions regarding organic products:

1. How would you rate your level of knowledge about organic farming practices?
☐ Not at all Knowledgeable   ☐ Somewhat Knowledgeable   ☐ Extremely Knowledgeable   ☐ No Opinion
2. The acronym **NOP** stand for Natural Order of the Plant.
☐ Yes   ☐ No   ☐ Don't Know
3. "Conventional agriculture" (large scale, monoculture farming practices) often severely pollutes the environment.
☐ Yes   ☐ No   ☐ Don't Know
4. According to the standards from the United States Department of Agriculture (USDA), farmers are **not** allowed to use synthetic or non-synthetic pesticides and fertilizers on organic fruits and vegetables during the production.
☐ Yes   ☐ No   ☐ Don't Know
5. In general, making one cotton t-shirt requires a small amount of pesticide that **cannot** be detected by scientific instruments.
☐ Yes   ☐ No   ☐ Don't Know
6. In general, synthetic pesticides are more toxic to humans than non-synthetic pesticides.
☐ Yes   ☐ No   ☐ Don't Know
7. Currently, a finished garment made with organic cotton can be certified as organic by the USDA.

☐Yes ☐No ☐Don't Know

Behaviors

1. Suppose you are about to purchase a cotton t-shirt at one of your favorite retail clothing stores. All things being equal, how willing would you be to pay more for the same t-shirt if it is made with organic cotton?

☐Not at all willing
(Skip to 3.)   ☐Somewhat
Willing   ☐Extremely
Willing   ☐Don't Know/ No
Opinion

2. Continuing on the previous question, suppose the cotton t-shirt you are about to purchase at your favorite store costs \$10. All things being equal, what is the **maximum** price premium you will be willing to pay for the same t-shirt made with organic cotton? (Check ONE of the following)

☐ \$11
☐ \$15
☐ \$20
☐ \$25
☐ \$30 or more
☐ Don't Know / No Opinion

3. In the past 3 months, approximately how often have you purchased organic food or/ and vegetables?

☐ Never
☐ Less than once per month
☐ Between once to 3 times per month
☐ 4 or more times per month
☐ Every time I shop, I buy organic

4. Over the past 6 months, have you purchased clothing made with organic cotton as a gift or for yourself?

☐ YES
☐ NO
☐ Don't Know / No Opinion

- 4 (a). In your opinion, what are the **2 MOST IMPORTANT** reasons for you to purchase organic cotton clothing?

☐ Environmental benefits
☐ Lower pesticide residue (product safety)
☐ Safer working conditions
☐ Good product quality
☐ Right price

- 4 (b). Based on your experience and understanding, what reasons explain why you do not buy organic cotton clothing? (Check all that apply)
- ☐ Do not know or ever hear anything about organic cotton
  - ☐ Cannot find stores selling organic cotton products
  - ☐ It is usually too expensive
  - ☐ Clothing made with organic cotton does not come in enough styles or types of products
  - ☐ Do not see any direct benefits of buying it
  - ☐ It has bad product quality

Attitudes

Which of the following responses best describes your attitudes about the following statements:

1. If things continue on their present course, we will soon experience a major ecological disaster.

☐ Strongly Disagree
 ☐ Disagree
 ☐ Neutral
 ☐ Agree
 ☐ Strongly Agree
 ☐ No Opinion

2. I am willing to cut my current living standard to protect the environment.

☐ Strongly Disagree
 ☐ Disagree
 ☐ Neutral
 ☐ Agree
 ☐ Strongly Agree
 ☐ No Opinion

3. Current claims that environmental problems are changing the earth's climate are exaggerated.

☐ Strongly Disagree
 ☐ Disagree
 ☐ Neutral
 ☐ Agree
 ☐ Strongly Agree
 ☐ No Opinion

4. The consumer has the power to force products that pollute the environment off the market.

☐ Strongly Disagree
 ☐ Disagree
 ☐ Neutral
 ☐ Agree
 ☐ Strongly Agree
 ☐ No Opinion

5. All things considered, organic foods are no different than conventional

☐ Strongly
Disagree

☐ Disagree

☐ Neutral

☐ Agree

☐ Strongly
Agree

☐ No

Opinion

foods.

6. People should buy environmentally- friendly products, even though they are sometimes more expensive.

☐ Strongly
Disagree

☐ Disagree

☐ Neutral

☐ Agree

☐ Strongly
Agree

☐ No

Opinion

Demographics

1. Your Gender

☐ Male ☐ Female

2. Your Age _____

3. Highest Education Level Completed

☐ Less than high school ☐ High school

☐ Associate/ Junior

College

☐ Bachelor ☐ Graduate and above

4. Your **MONTHLY** Personal Income

☐ \$0-2000 ☐ \$2,001-3,000

☐ \$3,001-4,000

☐ \$4,001-5,000

☐ \$5,000 and above

5. What is your ethnicity? **(Check all that apply)**

☐ White

☐ Black or African American

☐ Spanish/Hispanic/Latino

☐ Asian or Pacific Islander

☐ American Indian or Alaskan Native

☐ Other

Location _____
Date _____

Appendix B. Survey Coding

Knowledge

1. How would you rate your level of knowledge about organic farming practices?

☐ Not at all Knowledgeable (0)	☐ Somewhat Knowledgeable (1)	☐ Extremely Knowledgeable (2)
2. The acronym **NOP** stand for Natural Order of the Plant.

☐ Yes (0)	☐ No (1)
3. "Conventional agriculture" (large scale, monoculture farming practices) often severely pollutes the environment.

☐ Yes (1)	☐ No (0)
4. According to the standards from the United States Department of Agriculture (USDA), farmers are **not** allowed to use synthetic or non-synthetic pesticides and fertilizers on organic fruits and vegetables during the production.

☐ Yes (0)	☐ No (1)
5. In general, making one cotton t-shirt requires a small amount of pesticide that **cannot** be detected by scientific instruments.

☐ Yes (0)	☐ No (1)
6. In general, synthetic pesticides are more toxic to humans than non-synthetic pesticides.

☐ Yes (1)	☐ No (0)
7. Currently, a finished garment made with organic cotton can be certified as organic by the USDA.

☐ Yes (0)	☐ No (1)

Behaviors

1. Suppose you are about to purchase a cotton t-shirt at one of your favorite retail clothing stores. All things being equal, how willing would you be to pay more for the same t-shirt if it is made with organic cotton?

☐ Not at all willing (Skip to 3.)	☐ Somewhat Willing (1)	☐ Extremely Willing (2)

2. Continuing on the previous question, suppose the cotton t-shirt you are about to purchase at your favorite store costs \$10. All things being equal, what is the **maximum** price premium you will be willing to pay for the same t-shirt made with organic cotton? (Check **ONE** of the following)
- ☐ \$11 (1)
  - ☐ \$15 (2)
  - ☐ \$20 (3)
  - ☐ \$25 (4)
  - ☐ \$30 or more (5)
  - ☐ Don't Know / No Opinion (0)
3. In the past 3 months, approximately how often have you purchased organic food or/ and vegetables?
- ☐ Never (0)
  - ☐ Less than once per month (1)
  - ☐ Between once to 3 times per month (2)
  - ☐ 4 or more times per month (3)
  - ☐ Every time I shop, I buy organic (4)
4. Over the past 6 months, have you purchased clothing made with organic cotton as a gift or for yourself?
- ☐ YES (1)
  - ☐ NO (0)
- 4 (a). In your opinion, what are the **2 MOST IMPORTANT** reasons for you to purchase organic cotton clothing?
- ☐ Environmental benefits (1)
  - ☐ Lower pesticide residue (product safety) (2)
  - ☐ Safer working conditions (3)
  - ☐ Good product quality (4)
  - ☐ Right price (5)
- 4 (b). Based on your experience and understanding, what reasons explain why you do not buy organic cotton clothing? (Check all that apply)
- ☐ Do not know or ever hear anything about organic cotton (1)
  - ☐ Cannot find stores selling organic cotton products (2)
  - ☐ It is usually too expensive (3)
  - ☐ Clothing made with organic cotton does not come in enough styles or types of products (4)
  - ☐ Do not see any direct benefits of buying it (5)
  - ☐ It has bad product quality (6)

Attitudes

Which of the following responses best describes your attitudes about the following statements:

7. If things continue on their present course, we will soon experience a major ecological disaster.

☐ Strongly Disagree	☐ Disagree	☐ Neutral	☐ Agree	☐ Strongly Agree
(-2)	(-1)	(0)	(1)	(2)

8. I am willing to cut my current living standard to protect the environment.

☐ Strongly Disagree	☐ Disagree	☐ Neutral	☐ Agree	☐ Strongly Agree
(-2)	(-1)	(0)	(1)	(2)

9. Current claims that environmental problems are changing the earth's climate are exaggerated.

☐ Strongly Disagree	☐ Disagree	☐ Neutral	☐ Agree	☐ Strongly Agree
(2)	(1)	(0)	(1)	(2)

10. The consumer has the power to force products that pollute the environment off the market.

☐ Strongly Disagree	☐ Disagree	☐ Neutral	☐ Agree	☐ Strongly Agree
(-2)	(-1)	(0)	(1)	(2)

11. All things considered, organic foods are no different than conventional foods.

☐ Strongly Disagree	☐ Disagree	☐ Neutral	☐ Agree	☐ Strongly Agree
(2)	(1)	(0)	(1)	(2)

12. People should buy environmentally- friendly products, even though they are sometimes more expensive.

☐ Strongly Disagree	☐ Disagree	☐ Neutral	☐ Agree	☐ Strongly Agree
(-2)	(-1)	(0)	(1)	(2)

Demographics

1. Your Gender

☐ Male (1) ☐ Female (2)

2. Your Age

(0-17=1; 18-29=2; 30-39=3; 40-49=4; 50-59=5; 60-69=6; 70 and above=7)

3. Highest Education Level Completed

- ☐ Less than high school (1)   ☐ High school (2)   ☐ Associate/ Junior College (3)
☐ Bachelor (4)   ☐ Graduate and above (5)

4. Your **MONTHLY** Personal Income

- ☐ \$0-2000 (1)   ☐ \$2,001-3,000 (2)   ☐ \$3,001-4,000 (3)
☐ \$4,001-5,000 (4)   ☐ \$5,000 and above (5)

5. What is your ethnicity? **(Check all that apply)**

- ☐ White (1)
☐ Black or African American (2)
☐ Spanish/Hispanic/Latino (3)
☐ Asian or Pacific Islander (4)
☐ American Indian or Alaskan Native (5)
☐ Other (6)