Consumer Response to Food Safety Events: An Interaction Between Risk Perception and Trust of Information in the Chicken and Beef Markets

Jonathan D. Shepherd and Sayed Saghaian
University of Kentucky
Department of Agricultural Economics
314 Charles E. Barnhart Building
Lexington, KY 40546-0276

E-mail:jdshepherd@uky.edu
Phone: (859) 257-9710 ext. 272
E-mail: ssaghaian@uky.edu
Phone: (859) 257-2356

Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Dallas, TX, February 2-6, 2008

INTRODUCTION

Recent food safety events have captured substantial media attention, increased consumers' awareness of food safety concerns and further complicated marketing aspects of agricultural products today. Economic losses associated with such events are not limited to the immediate time period following an occurrence, but potentially have long-run effects and reach beyond local and domestic markets. Food safety events can open competitive opportunities for individual firms within an affected industry to differentiate their products' attributes, marketing safer production methods in an attempt to capture a larger share of the market (Bruhn and Schutz, 1999). Another challenging consequence of food safety events is the potential loss associated with international markets. Oftentimes, countries will ban or limit imports of certain products from countries facing a food safety occurrence. For example, Japan banned US imports of beef following a *Bovine Spongiform Encephalopathy* (BSE) outbreak, creating a barrier for the US beef industry to overcome in a country with exceptional quality differentiation standards (Saghaian and Reed, 2004). Further, research indicates that consumers consider all food safety concerns (i.e. genetic modification, hormone/antibiotic use, *E. coli/salmonella*) in their decision to purchase agricultural products, highlighting the importance for decision makers to understand how society perceives risks associated with foods (Bruhn and Schutz, 1999).

In the United States this year, there have been *E. coli* outbreaks in the ground beef industry and a *Clostridium botulinum* outbreak that occurred in processed canned meats that alone accounted for over 721,000 pounds (USDA, 2007). Also, there has been

concern over *Avian Influenza* after reported outbreaks in three US states and in Canada in 2004 (CDC, 2006). Food safety events and their impacts have been extensively investigated in the literature. The results of these studies generally show that food safety events affect demand adversely (Henson and Northern, 2000). Many studies also focus on willingness to pay for reduced chances of food safety events, and it also has been shown how society trusts information from governing bodies with regards to said events (Smith, Ravenswaaye and Thompson 1998; Henson, 1996).

The life cycle of a food safety event is a dynamic process where consumers often change consumption patterns during the scare, returning to pre-scare consumption patterns after the event. It is unclear how long the cycle takes or what signals are most effective to persuade consumers back their pre-scare consumption habits. Sociological researchers argue that, generally, a food safety event receives prominent media coverage with consumers initially over-reacting by avoiding the identified food item (Mazzocchi, Stefani, and Henson, 2004). Media coverage of food safety events can also be confusing to consumers as more and more of the information is revealed to the public because of time lapses in coverage or conflicting information within or between different media sources (Caswell, 2006). This is of particular concern to affected firms, as consumers often rely primarily on media coverage for information concerning such events (Wade and Conley, 1999).

BACKGROUND

Economic impacts of food safety events vary greatly from incident to incident. Topps Meat Company suffered the second largest meat recall in US history for *E. coli* contaminated ground beef in 2007. An October 6, 2007 New York Times article reported

that Topps Meat Company had to shut down operations as a result of the recall. The article also mentioned the chief operating officer for the company lamenting that the scale of the recall was too large to recover the business losses. Although businesses closing as a result of a food safety event may not be common, substantial effort is required on the part of the firm to restore consumer confidence. The Mexican fast-food chain, Taco Bell, faced a daunting marketing recovery task in 2006, after an *E. coli* outbreak linked to lettuce (Taco Bell). The company reacted quickly with television commercials and governmental voices to reassure consumers that the situation was being handled and that it was safe to eat again.

Noting economic theory, food safety events will negatively affect demand for products involved in the immediate time period following the crisis. However, long term effects are not as clear as consumers may turn to other perceived safer products (McCluskey et al, 2005). This may be realized by consumers substituting to other brands within the same industry or substituting completely to a different product all together. Food safety events are more complicated than other risky endeavors as an absolute reduction in risk is not possible because food is essential to life, eradicating the possibility of a complete reduction in food safety risk (Frewer et al, 1998). Another complicating issue is that food choice is a personal decision, often solidified by a person's past, and results in quickly realized benefits of food consumption (Fife-Schaw and Rowe, 1996). This means there is a potential for food scares to have economic impacts from food purchasing decisions of generations to come without effective communication strategies.

In the mid 1990's the EU (European Union) experienced a BSE outbreak that resulted in a decline in the demand for beef as a whole. However, some individuals actually increased their demands (Henson and Northern, 2000). Exceptions like these shed light on the dynamics of food safety events, and imposes the need for governments and producers to understand how society conceptualizes food risk in order to have effective policies (Lobb, Mazzocchi, and Traill, 2006).

METHOD

The data for this research was obtained from a 2,000 random household sample that targeted heads of households in the five counties that contained the five largest cities in Kentucky. The survey was conducted via United States Postal Service and a $2 "token of appreciation" was offered to respondents upon receiving a completed survey in an attempt to ensure an adequate response rate. The survey instrument used was originally developed by Lobb, Mazzocchi, and Traill (2006) with changes made to better fit our area of interest and target population. The survey instrument contained 63 questions most of which were measured on a 7-point Likert scale.

The objective of this paper is to examine the impact of food safety events in the chicken and beef markets in Kentucky. This is achieved using the SPARTA model (Lobb, Mazzochi, and Traill, 2007) based on the Theory of Planned Behavior (TPB) developed by Ajzen (1991). Of particular interest is determining whom consumers trust with regards to information concerning a food safety event, and what other factors (social or demographic) affect consumers' response to such events. These results are compared to the results of a EU study that focused on the perceived risks associated with chicken

consumption to see if the results can be generalized across different countries, regions and consumers.

The SPARTA model represents subjective norms, perceived behavioral control, risk, trust, and "alia" (all other variables) (Lobb, Mazzochi, Traill, 2007). See pictorial representation, Figure 1. TPB is an extension of the Theory of Reasoned Action and links attitude and beliefs to actions through intentions (Ajzen 1991). This approach has been used in several studies, including the meat market in the UK (McEachern and Shroder, 2004), as well as evaluating food choices of adolescents (Dennison and Shepherd, 1995). The first three variables S, P, and A are formulated under Fishbein and Ajzens' (1976) expectancy value formulation. Following Lobb, Mazzocchi, and Traill (2007) the construction of the variables appear below:

$$S \propto \sum_{j=1}^{g} n_j m_j$$

Where n_i and m_i are normative beliefs and motivations to comply, respectively.

$$P \propto \sum_{k=1}^{q} c_k p_k$$

Where c_i are control beliefs and p_i are power of control beliefs.

$$A \propto \sum_{i=1}^{n} b_i e_i$$

Where b_i behavioral beliefs and e_i are outcome evaluations of these beliefs.

The risk component, R, is formed similarly to the variables above using the expectancy-value formulation (Lobb, Mazzocchi, and Traill, 2007):

$$R \propto \sum_{l=1}^{u} r_l k_l$$

where r_i are specific risk factors and k_i are weights given by respondents stating their given knowledge of each risk factor.

Principal component analysis with varimax rotation was used to account for correlations that may exist between 19 entities respondents rated with regards to their trustworthiness to form the T component of the model (Lobb, Mazzocchi, and Traill, 2007). This reduced the number of variables in this component into 4 categories, Suppliers, Gov't/University, Organizations, and Media; T_1, T_2, T_3, and T_4 respectively. The Suppliers category includes shopkeepers, supermarkets, organic shops, and processors. All of these categories seem to cover the same concept of where a consumer may obtain a food product. The Gov't/University category contains doctor/health authority, university scientist, USDA, state and federal government. These sub-categories are all entities that consumers would most likely consider possessing an authoritative/policy influencing voice. Organizations contain the sub-categories of political groups, environmental and animal welfare organizations as well as television documentary. On first glance, television documentary sub-category seems non applicable. However, there is a common thread among the sub-categories in that they all have a primary focus or cause. Arguably, television documentaries focus on one subject/cause, allowing its inclusion into this category. Lastly, the Media category contains typical forms of communication, newspaper, internet, radio, magazines, and product label (Table 1).

Following Lobb, Mazzocchi, and Trail (2007) the trust component is as follows:

$$T_z = \sum_{w=1}^{s} \alpha_{zs} t_s, z = 1,...,Z$$

where t_s are the specific trust factors, α_{zs} are the loading factors and T is the principal component score where Z is the total number of components measured across.

Following Lobb, Mazzocchi, and Traill (2007), four models were estimated; consumers' intention to purchase chicken and/or beef next week in general (ITP_{11}) and consumers' intention to purchase chicken and/or beef next week given a hypothetical *E. coli/salmonella* outbreak (ITP_{21}). Theses models were also estimated using socio-demographic variables to determine if such variances have an effect on the probability of purchasing decisions (ITP_{12} and ITP_{22} respectively). An ordered probit regression was used to estimate these models because of the ordered structure of the data and appears below (Lobb, Mazzocchi and Traill, 2007):

$$I_b = \beta_0 + \beta_1 S + \beta_2 P + \beta_3 A + \beta_4 R + \sum \lambda_z T_z$$

The inclusion of socio-demographic variables used for models ITP_{12} and ITP_{22} is as follows:

$$I_b = \left(\beta_0 + \sum_{i=1}^{d} \gamma_{0i} D_i\right) + \left(\beta_1 + \sum_{i=1}^{d} \gamma_{1i} D_i\right) S + \left(\beta_2 + \sum_{i=1}^{d} \gamma_{2i} D_i\right) P + \left(\beta_3 + \sum_{i=1}^{d} \gamma_{3i} D_i\right) A + \left(\beta_4 + \sum_{i=1}^{d} \gamma_{4i} D_i\right) R + \sum_{i=1}^{Z} \left(\lambda_Z + \sum_{i=1}^{d} \gamma_{gi} D_i\right) T_Z$$

Where SD is the ith socio-demographic variable

RESULTS

Descriptive Statistics

224 completed surveys were received, resulting in an 11.2% response rate. Female response rate was 58% which is close to the 60% female response rate found by Lobb, Mazzocchi and Traill (2006). The magnitude of this response rate is as expected

because females are still the principle food purchasers in many households (Lobb, Mazzocchi, and Traill, 2006).

The number of people in the household had a minimum of 1 and a maximum of 7 with an average of 2.38. Average age of respondents was 54.45 year with a minimum of 20 and a maximum of 97 (Table 2). 69% of respondents reported some college education. However, Lobb, Mazzocchi, and Traill (2006) found a slightly higher percentage, roughly 72%. This magnitude is also as expected as I hypothesize that individuals with higher education levels are better able to relate to the necessity of such studies.

Preliminary

Respondents were asked to report their level of trust with information on a 7-point Likert scale with regards to different entities that had hypothetically provided information about potential risks associated with *E. coil/salmonella* in food. Political groups received the highest percentage of completely distrust with over 17% of respondents choosing a value of 1 on the scale. Governmental or political groups are often not be trusted by consumers as these groups are seen by society as having a vested interest in protecting firms (Frewer et al, 1996). The second highest value that was associated with completely distrust was animal welfare organizations, with almost 14% of respondents choosing a value of 1 on the scale. This also follows the idea that organizations such as these may be perceived to have an agenda that biases the information they report. Doctors/health authority, university scientists, and the USDA, were the top categories for which consumers chose a level of 7, or complete trust, with 47.8%, 33% and 35.7% of respondents choosing these categories respectively.

To elicit whom consumers trust as informational sources following a food safety event, respondents were asked to assume they had heard rumors about a food safety event. The survey instrument then had pairs of information sources and respondents were asked whom they trusted more between each respective pair. 75.9% reported they trusted university scientists over media and 74.1% reported they trusted university scientists over producers. 70.5% reported trusting public authorities more than producers. This is of interest to agribusiness firms. Establishing a representative from one of these groups could help restore consumer confidence more quickly when communicating on a food safety event (Table 3). Respondents were asked to indicate what media sources they typically resort to in the face of a food safety event. Television accounted for over 33% of responses, followed by internet at 27% and newspapers at 15%.

Respondents were asked to state their level of agreement with statements that finished "My decision whether or not to buy chicken and/or beef next week is based on the fact:." Almost 52% of respondents chose a level 7 (complete agreement) or a level 6, when prompted with the statement: "chicken and/or beef is a safe food." With the same statement, all responses greater than the level 4 (neither) account for almost 71% of respondents (Table 4). When considering recent foods safety events occurring in these markets, these results go against intuition. However, when considering demand for these products has not suffered a steady decline, the results from here seem supported.

40.6% of respondents reported that it would be extremely unlikely that they would purchase chicken and/or beef next week, if they had read an article in the newspaper that high rates of *E. coli/salmonella* in chicken and/or beef had been found in their area, resulting in several people being hospitalized. These results further solidify

the short-run impacts of food safety events extensive in the literature.

Respondents were prompted with a statement concerning their actions such as proper food storage, handling, preparations, choice of place of purchase, and purchasing higher quality products with regards to reducing the risks associated with food safety events. About 51% of respondents stated their actions such as listed above would reduce food safety risk by a large extent (value of 7) and 34% choose a value of 6, accounting for 85% when summed. If all values over 4 (neither) were summed the total would be 93.8%. This has interest to food firms and the guidelines set forth by the Center for Disease Control and their attempts to provide information to consumers about their part in reducing food safety risks.

Empirical

In the model concerning consumers' intention to purchase chicken and/or beef next week in general (ITP_{11}), perceived behavioral control, trust in suppliers, and trust in media had the largest negative impact on the probability of purchasing next week. Only the perceived behavioral control variable was statistically significant. Trust in Gov't/University was positive and had the largest overall absolute impact on the probability of purchasing. Subjective norms was the only other positive parameter. The second model, consumers' intention to purchase chicken and/or beef next week after a hypothetical *E. coli/salmonella* event (ITP_{12}), resulted in Trust in Gov't/University having the largest absolute impact, but in the opposite direction from the first model and statistically significant. This can be interpreted as distrust in these sources positively influence the probability to purchase or trust in these sources has a negative impact on he probability. I expected this parameter to have a positive sign. It may be the case that consumers do in fact associate this category as not being trustworthy contrary to

preliminary indications. Media changed in absolute magnitude (by 0.05), became positive and statistically significant. This means that trust in media increases the probability of purchasing next week. Attitude remained unchanged in both magnitude and direction. The other parameters only changed slightly in absolute magnitude but most did change from negative to positive (Table 5).

The third model, consumers' intention to purchase chicken and/or beef next week following a hypothetical *E. coli/salmonella* food safety event (ITP_{21}), did not result in any statistically significant parameters. However, the sign and magnitude associated with the subjective norm parameter (-0.02) was the same between this study and what was found by Lobb, Mazzocchi, and Traill (2007). The other parameters consistent between the two studies were attitude and risk perception and had the same direction but of different magnitudes.

The final model, consumers' intention to purchase chicken and/or beef next week following a hypothetical *E. coli/salmonella* food safety event that also included socio-demographic variables (ITP_{22}), resulted in 7 variables being statistically significant. Risk perception was positive which was not as expected. Risk coupled with the socio-demographic shifter age and coupled with income had a negative sign associated with them. These results are more plausible. It may be the case that increases in age and risk perception would negatively affect the probability of purchasing a product following a food safety event as the elderly are more likely to have worse complications in the face of pathogenic contraction. Income was expected to have a negative effect on the probability of a consumer purchasing a product from an industry that was facing a food safety event, as relatively wealthier people are more able to completely substitute away from the

affected product to minimize risks. The Gov't/University trust component with socio-demographic shifter education had a positive sign. This may be because relatively more educated consumers may be better able to decipher through the media hype following food safety events and turn towards more non-biased sources. Lobb, Mazzocchi, and Traill (2007) found a positive association with this combination, but of larger magnitude, 0.08 compared to 0.02. Finally media with socio-demographic shifter education has a negative sign associated with it. The intuitive explanation for this result is that increases in education arguably make consumers more informed about potential bias in the media; therefore, it would likely decrease the probability to purchase from a food safety event affected market. Media and the shifter income are positive. It seems probable that relatively higher income consumers would be better able to cross-reference media coverage of a food safety event across multiple sources (Table 6).

CONCLUSION/DISCUSSION

Interesting conclusions can be drawn from the preliminary results of this research. It is clear that consumers have established perceptions of the trust associated with potential food safety information sources. Policy and decision makers alike can use these results to better determine what media is used to convey food safety information. Also, it is clear that consumers know that their actions can significantly reduce risks associated with food safety. This is also of importance to firms that may want to increase the education associated with these types of communication. Although interesting conclusions can be drawn, I caution serious application of the empirical results from the models other than the ITP_{22} because there of few significant factors in the other models. Also, directional effects of the parameter estimates were not as expected in some models

as well. From this research it is not clear that consumers' reactions can be generalized across different regions or products. More research is needed in this area over more subjects and products before generalizations can be made.

REFERENCES:

Ajzen, I. (1991). "The Theory of Planned Behavior." *Organizational Behavior and Human Decision Processes.* 50:179-211.

Belson, K. and Fahim, K. (2006). "After Extensive Beef Recall, Topps Goes Out of Business." The New York Times. 6 Oct. 2007. http://www.nytimes.com/2007/10/06/us/06topps.html

Bruhn, C., and Schutz, H. (1999). "Consumer Food Safety Knowledge and Practices." *Journal of Food Safety*. 19: 73-87.

Caswell, J. (2006). "A Food Scare A Day: Why Aren't We Better At Managing Dietary Risk?" *Human and Ecological Risk Assessment*. 12: 9-17.

Center for Disease Control and Prevention. (2006). "Avian Influenza (Bird Flu): Past Avian Influenza Outbreaks." <http://www.cdc.gov/flu/avian/gen-info/pdf/avian_facts.pdf>

Dennison, C., and Shepherd, R. (1995) "Adolescent Food Choice: an application of the Theory of Planned Behavior." *Journal of Human Nutrition and Dietetics*. 8:9-23.

Fife-Schaw, C. and Rowe, G. (1996). "Public Perceptions of Everyday Food Hazards: A Psychometric Study." *Risk Analysis*. 16(4): 487-500.

Fishbein, M., and Ajzen, I. (1976). "Misconceptions about the Fishbein model: Reflections on a study by Songer-Nocks. *Journal of Experimental Social Psychology*. 12:579-584.

Frewer, L., Howard, C., Hedderly,D., and Shepherd, R. (1998) "Methodological Approaches to Assessing Risk Perceptions Associated With Food-Related Hazards." *Risk Analysis*. 18(1): 95-102.

Frewer, L., Howard, C., Hedderly, D., and Shepherd, R. (1996). "What determines Trust in Information About Food-Related Risks? Underlying Psychological Constructs." *Risk Analysis*. 16(4) 473-486.

Henson, S. (1996). Consumer Willingness to Pay for Reductions in the Risk of Food Poisoning in the UK,*Journal of Agricultural Economics* 47(3) 403-420

Henson, S. and Northern, J. (2000). "Consumer Assessment of the Safety of Beef at the Point of Purchase: A Pan-European Study." *Journal of Agricultural Economics*, 51(1), 90-105.

Lobb, A., Mazzocchi, M., and Traill, W. (2007). "Modelling risk perception and trust in food safety information within the theory of planned behaviour." *Food and Quality Preference*. 18: 384-395.

Lobb, A., Mazzocchi, M., and Traill, W. (2006). " 'Food Risk Communication and consumers' Trust in the Food Supply Chain:' Report on socio-economic determinants of trust in the food chain." *European Commission: The Fifth Framework Programme 1998-2002*. TRUST QLK1-CT-2002-02343.

Mazzocchi, M., Stefani, G., and Henson, S. (2004). "Consumer Welfare and the loss induced by withheld information: the case of BSE in Italy." *Journal of Agricultural Economics.* 55(1):575-592.

McCluskey, J., Grimsrud, K., Ouchi, H. and Wahl, T., (2005). "Bovine Spongiform Encephalopathy in Japan: Consumers' Food Safety Perceptions and Willingness to Pay For Tested Beef." *The Australian Journal of Agricultural and Resource Economics*. 49: 197-209.

McEachern, M., and Shroder, M. (2004) "Integrating the voice of the consumer within the value chain: a focus on value-based labeling communications on the fresh meat sector." *Journal of Consumer Marketing*. 21:7 497-509.

Saghaian, S. and Reed, M. (2004). "Demand for Quality-differentiated Beef in Japan." *German Journal of Agricultural Economics.* 53(8): 344-351.

Taco Bell Website. <www.tacobell.com>

United States Department of Agriculture: Food Safety and Inspection Service. (2007). 2006RecallCaseArchive.http://www.fsis.usda.gov/fsis_recalls/Recall_Case_Archive_2006/index.asp>

Wade, M. and Conley, D. (1999). "Consumer Responses to Food Safety Information from Print Media." Paper presented at the World Food and Agriculture Congress: International Food and Agribusiness Management Association, Florence, Italy, June 13-16, 1999.

Table 1. Trust Component Factor Loadings for Respondents' Trust of Food Safety Information from 19 Different Sources

	Suppliers(T_1)	**Gov't/Univ** (T_2)	**Organizations** (T_3)	**Media** (T_4)
Shopkeepers	**0.76**	0.09	0.06	0.10
Supermarkets	**0.70**	0.23	0.10	0.06
Organic Shop	**0.74**	0.08	0.19	0.08
Farmers	**0.75**	0.11	0.16	0.09
Processors	**0.61**	0.07	0.27	0.24
Doctors/ health authority	0.18	**0.53**	-0.34	0.29
University scientists	0.22	**0.62**	0.14	0.24
USDA	0.08	**0.80**	0.18	0.05
State Government	0.17	**0.78**	0.27	0.10
Political groups	0.17	0.27	**0.63**	0.22
Environmental organizations	0.22	0.15	**0.72**	0.31
Animal welfare organizations	0.22	0.06	**0.80**	0.12
Federal Government	0.08	**0.65**	0.38	0.07
Television documentary	-0.03	0.27	**0.62**	0.21
Newspapers	0.13	0.38	0.06	**0.61**
Internet	0.12	0.19	0.20	**0.54**
Radio	0.23	0.22	0.22	**0.73**
Magazines	0.06	-0.13	0.06	**0.68**
Product label	0.04	0.12	0.20	**0.54**

*Values in bold are greater than or equal to .40 through Varimax Rotation.

Table 2. Descriptive Statistics

	Mean	Median	Std Dev	Minimum	Maximum
Number of People in Household	2.38	2	1.29	1	7
Age of Respondents	54.45	55	14.36	20	97
Average Weekly Chicken and/or Beef Purchases (lbs)	5.32	3	6.53	0	40
Average Weekly Expenditure on Chicken and/or Beef ($)	15.45	10	16.75	0	125

Table 3. Whom Respondents Trusted More Between the Respective Pairs Concerning Food Safety Rumors

Family More than University Scientist	33.03%
Family more than Public Authorities	38.84%
Family more than Media	52.68%
Family more than Producers	54.91%
University Scientist more than Public Authorities	60.71%
University Scientist more than media	75.89%
University Scientist more than Producers	74.11%
Public Authorities more than Media	66.96%
Public Authorities more than Producers	70.54%
Media more than Producers	52.23%

Table 4. Percentages of Respondents' Level of Agreement with Given Statements

	Completely Disagree			Neither			Completely Agree	Don't Know
	1	2	3	4	5	6	7	0
Chicken and/or beef tastes good	1.79	0.45	0.45	3.57	8.93	18.75	65.63	0.45
Chicken and/or beef is good value for money	1.34	0.89	2.68	11.16	17.86	25.00	40.63	0.45
Chicken and or beef is not easy to prepare	43.75	22.77	11.16	10.71	2.23	5.80	3.13	0.45
Chicken and /or beef is a safe food	1.79	4.02	5.36	12.50	19.20	25.89	25.89	5.36
Everyone in the family likes chicken and/or beef	1.79	0.89	2.23	1.79	5.80	17.41	69.20	0.89
Chicken and/or beef works well with lots of other ingredients	0.89	0.00	1.34	1.79	4.91	22.77	67.86	0.45
chicken and/or beef is low in fat	2.68	4.91	7.59	19.64	24.55	16.52	22.32	1.79
Chicken and/or beef is low in cholesterol	3.57	7.59	10.71	21.43	21.88	11.61	12.50	10.71
Chicken and/or beef lacks flavor	55.36	22.32	10.71	4.91	0.89	3.57	1.34	0.89
Chicken and/or beef helps the local farmers and economy	4.46	5.36	2.23	19.64	8.93	14.29	33.48	11.61
I do not like the idea of chickens and/or cows being killed for food	60.71	11.16	4.02	12.50	3.57	3.13	2.68	2.23
Chicken and/or beef is not produced taking animal welfare into account	24.11	7.59	5.36	20.98	7.14	8.04	8.04	18.75

Table 5. Parameter Estimates of ITP_{11} and ITP_{21}

Parameter	ITP_{11} Estimate	ITP_{21} Estimate
S	0.006	-0.008
P	-0.012*	0.010
A	-0.001	-0.001
R	-0.002	0.000
Trust in Suppliers (T1)	-0.012	0.010
Trust in Gov't/University (T2)	0.014	-0.040***
Trust in Organizations (T3)	-0.003	-0.007
Trust in Media (T4)	-0.020	0.025**

(*)-10% Significance level (**)-5% Significance level (***)-1% Significance level

Table 6. Parameter Estimates ITP_{22} Reporting only Statistically Significance At 10% Level or Greater of Demographic Shifters

Parameter	Socio-Demographic Factor	Estimate
S		0.0275
P		0.0157
A		0.0003
R		0.0184*
R	Age [-]	-0.0002*
R	Income [-]	-0.0018**
Suppliers(T1)		-0.0691
Suppliers(T1)	Age [+]	0.0014*
Gov't/University (T2)		-0.0507
Gov't/University (T2)	Education [+]	0.0190*
Organizations (T3)		-0.1030
Media(T4)	Education [-]	-0.0010**
Media(T4)	Income [+]	0.0230***

(*)-10% Significance level (**)-5% Significance level (***)-1% Significance level [ ]-indicated influence of shifter

Figure 1. Pictorial Representation of SPARTA Model