The Role of Media in Shaping the Consumers' Food Risk Perception and Behavior: A Case Study of Spinach Recall

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Abstract: A clear understanding of consumers' perception and attitude toward food risk and their behavior to food recall is important in order to develop an effective crisis management program at the firm level as well as at the government level. This study will develop food risk profiles of US consumers based on their perceived food safety risk and attitude toward food safety. The role of media usage in shaping the risk profile will be examined. The preliminary results suggest that the risk profiles of households were shaped by media usage. While the "accountables" were more likely to search internet or get news from internet, the "conservatives" usually watched news on local TV.

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Introduction

A recent report issued by Centers for Disease Control and Prevention (CDC, 2006) in collaboration with the Food and Drug Administration (FDA) and the United States Department of Agriculture (USDA), shows that progress has been made in reducing foodborne infections. This report provided preliminary surveillance data that highlight important declines in foodborne infections due to common pathogens in 2005 when compared against baseline data for the period 1996 through 1998. The data suggest that the incidence of infections caused by *Campylobacter*, *Listeria, Salmonella,* Shiga toxin-producing *E. coli* O157, *Shigella,* and *Yersinia* has declined. *Campylobacter* and *Listeria* incidence are approaching levels targeted by national health objectives.

However, the recent contamination of spinach from California may have brought questions about the adequacy of the existing food safety guidelines to the minds of many Americans. The *E. coli* O157:H7 outbreak in spinach caused over 200 reported cases of illness and three deaths. This and other outbreaks have not only shaken public trust in food safety regulatory agencies, but also have eroded their confidence in the safety of the food supply chain. On the other hand, in spite of educational efforts about safe handling of food, particularly at the consumer level, the degree of long-standing consumer trust in our food supply may result in reducing self-protective behaviors such that some consumers may not take appropriate measures to help ensure food safety at the individual level. That is, their trust in the system reduces their participation in ensuring the food they consume is safe.

Consumers' response to food recall may persist for a short period of time or may prolong for a considerably long period. A prolonged change in consumer behavior due to food recall may result into substantial economic losses to the companies as well as the society including cost of product liability litigation (Buzby et. al, 2001), the loss of market value of company stock and the loss of export (Wang, et. al, 2002.) A clear understanding of consumers' perception and attitude toward food risk and their behavior to food recall is important in order to develop an effective crisis management program at the firm level as well as at the government level. Although the severity of the problem, media coverage, and post-crisis handling of the recall by the relevant institutions may explain the type and length of the response, a closer look at the consumer behavior suggests that a consumer's response to food recall is a function of a consumer's risk perception. Previous studies have identified the role of consumers' individual characteristics including their education and knowledge regarding food safety, and socio-demographic characteristics including gender, ethnic background, and household income in shaping the food risk profile. This study will examine the role consumers' risk perception, consumers' use of media and socio-demographic factors in shaping their food related behavior.

Data and Methodology

A nationally representative sample in terms of gender, age, and ethnicity of 1,200 adult Americans from all 50 states was interviewed by telephone during November 8-29, 2006. Computer Assisted Telephone Interviews (CATI) were conducted with adults aged 18 or over. Proportional random digit dialing was used to select survey participant households and the CATI system was programmed to provide prompts to select the appropriate proportions of male and female participants.

Working non-business numbers were contacted using a 12 call-back design to contact elusive individuals. The calls were made at different times and days throughout the week. Interviewers left a voice mail message on the second, fifth and ninth attempt, explaining the study and the purpose for calling. The CATI software maintained callback appointments and prompted the interviewers to leave an answering-machine message when necessary. The cooperation rate was 48%, with a resulting sampling error of ± 2.8%. Data were weighted by gender, age, race, ethnicity, and education to approximate U.S. Census figures.

The term "spinach recall" was used in the survey instrument, in referring to the period of time and the events associated with the contamination of fresh spinach with *E. coli* O157:H7 and the subsequent foodborne illness outbreak. This is consistent with the terminology used in much of the media coverage that occurred during the period of interest. Some questions were tailored to respondents depending on whether they had heard about the spinach recall. For example, respondents who had heard about the spinach recall were asked "Did you eat spinach before the recall?" while consumers who were unaware of the recall were simply asked "Do you eat spinach?" All interviews were conducted in English.

In this study the focus is on spinach, which was the subject of the 2006 recall. Responses to some of the questions in the survey were not usable for analysis thus excluding some respondents from the sample during empirical analysis. As a result of excluding these respondents, a total of 782 completed surveys were used for empirical analysis.

Survey participants were asked to reveal their food risk perception in relation to fresh spinach recall using a Likert scale of one to four, one representing "strongly agree" and four representing "strongly disagree". Questions relating to five specific risks from E-coli were asked (Table 1). Based on the perceived risk level and reported avoidance of recalled product (Table

2), consumers were categorized into “the accountable”, “the concerned”, “the conservatives” and “the alarmists” (Wansink, 2004). Relationship between consumer risk perception and use of media and other socio-demographic characteristics were examined using regression equations. Media use included national and local TV, radios, news papers and magazines, and internet.

Food related behaviors were analyzed using the reported change in the household behavior with regard to fresh spinach and other food consumption and handling pattern after the recall.

Preliminary Results

The preliminary results show that nearly 18.8 % of the sample has the lowest perception of food risks and 3.4% has the highest perception of food risks. Similarly, 8% of the sample had the highest level of risk aversion, while 74% had the lowest level of risk aversion. Based on the distributions, sample households were segmented into four categories: the accountable (low risk perception, low risk aversion), 65%; the concerned (high risk perception, low risk aversion), 23%; the conservatives (low risk perception, high risk aversion) 4%; and the alarmists (high risk perception and high risk aversion), 7%. The risk profiles of households were shaped by media usage. While the alarmists were more likely to search internet or get news from internet, the conservatives usually read the newspapers or watched national news on TV. The alarmists would take more than four weeks before starting to eat fresh spinach after the recall.

References:

Buzby, J., Frenzen, P., and Rasco, B. (2001) *Product Liability and Microbial Foodborne Illness* Publication of USDA ERS No. 799:1-33

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Table 1: Risk Perception as Reported by the Sample Respondents

Reported Risk Perception	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
As a result of the Spinach Recall, I worried about E. coli contaminated spinach.	28.20	30.51	18.02	23.27
As a result of the Spinach Recall, I worried about other people I care about getting sick.	42.92	27.49	13.75	15.84
If I am exposed to E. coli, it is certain I will get infected.	26.74	35.09	23.04	15.13
If I am sick with E. coli, it is certain that I will die. Would you say you…	7.50	15.65	30.58	46.27
If I eat spinach contaminated with E. coli, it is certain I will get sick.	43.00	30.02	17.98	8.99

Table 2: Reported Risk Avoidance by the Sample Respondents

Reported Risk Aversion	Yes (%)	Probably (%)	Probably Not (%)	No (%)
Will you avoid purchasing specific brands of spinach because of the recall?	11.69	3.61	2.74	81.95
Will you avoid purchasing spinach grown in particular regions of the country because of the recall?	14.22	4.98	3.44	77.37

Table 3: Reported Media Usage

Over the past week, how many days did you	Read a newspaper ?	Watch national news on TV?	Watch local news on TV?	Listen to news radio?	Read a news magazine?	Get news through the internet ?
Days	%	%	%	%	%	%
0	27.55	17.18	15.72	51.37	75.00	58.05
1	12.40	7.71	6.51	6.55	9.94	4.49
2	14.22	9.17	8.62	6.52	7.06	5.32
3	7.05	6.63	7.07	5.57	4.21	3.70
4	5.24	5.47	6.20	2.75	1.14	3.86
5	3.89	7.94	10.06	4.88	0.40	3.80
6	2.03	2.274	3.46	1.64	0.09	1.16
7	27.62	43.64	42.37	20.73	2.15	19.61

Table 4: Risk Profile

PERCEPTION		AVOIDANCE		
		Low	High	Total
	Low	271 (63.17%) The Accountables	14 (3.26%) The Conservatives	285 (66.42%)
	High	112 (26.11%) The Concerned	32 (7.46%) The Alarmists	144 (33.58%)
	Total	383 (89.28%)	46 (10.72%)	429

Table 5: Results from the probit models.

	Accountables		Concerned	
	Coeff.	t-ratio	Coeff.	t-ratio
ONE	-2.146*	-7.441	-1.209*	-3.836
Newspaper	0.049*	2.832	-0.053*	-2.430
National News on TV	-0.004	-0.185	-0.032	-1.093
Local News on TV	-0.048*	-2.117	0.057*	1.906
News Radio	0.024	1.524	0.017	0.867
News Magazines	-0.018	-0.514	0.053	1.344
Internet	0.045*	2.769	0.017	0.840
AGE	0.004	1.010	0.001	0.230
EDU (College=1)	0.641*	5.927	0.026	0.199
EMP (Employed=1)	0.380*	3.423	-0.218*	-1.660
Race (White=1)	0.624*	4.168	-0.213	-1.457
Children (HH with child=1)	0.006	0.053	-0.130	-0.984
INCOM50 (>50 k=1)	0.113	1.115	0.255*	2.005

*Significant at less than 10%