Serving food safety: consumer perceptions of food safety at restaurants

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Abstract

Purpose – The goals of this study were to study consumer perceptions of food safety at restaurants and to compare these results to those of other food system actors.

Design/methodology/approach – The data for this study were gathered from telephone interviews conducted with 1,014 randomly selected US adults.

Findings – The main findings were that a substantial number of consumers think about food safety in general and particularly when eating at restaurant establishments; and while a majority of consumers stated that restaurants were doing a good job, were capable, and were committed to food safety, in comparison to other actors, restaurants ranked significantly lower than farmers, food processors and manufacturers, and grocery stores and supermarkets.

Research limitations/implications – A limitation of this study was that distinctions were not made between fast food and sit-down restaurants or other types of restaurants, e.g. chains, independent, and ethnic. These results highlight the need for more comprehensive studies on how food safety issues affect consumer perceptions of restaurants and how these perceptions affect consumer behavior.

Practical implications – The findings reinforce the importance of food safety behaviors at restaurants, particularly in the areas of personal hygiene and workplace sanitation, food handling, and food preparation.

Originality/value – This paper helps restaurant managers to better understand consumer perceptions of food safety and highlights the importance of instituting and monitoring food safety practices.

Keywords Restaurants, Food safety, Food poisoning, Individual perception, Consumer behaviour

Paper type Research paper

Introduction

Restaurants have been implicated as one of the most frequent settings for foodborne illness outbreaks. Unlike food prepared at home, one food safety mistake by a foodservice worker can affect many people. While most outbreaks at restaurants are local, there are many examples of regional and national outbreaks. These outbreaks have also been linked to a variety of foodborne pathogens and viruses; one of the most memorable in the US was the Jack in the Box *E. coli* outbreak in 1993. About 700 people reported illness and four children died as a result of eating contaminated meat purchased at 73 Jack in the Box restaurants (Golan *et al.*, 2004). In November 2003, an outbreak at a single restaurant in Pennsylvania, US, resulted in 601 patrons contracting Hepatitis A. Of these cases, 124 were hospitalized and three died (Wheeler *et al.*, 2005). During November 2003, 324 people became ill from *Salmonella enteritidis* after eating at an Asian restaurant/takeaway in Bradford, UK (Clapham *et al.*, 2006). More than 400 suspected cases of food poisoning were traced to two Turkish restaurants in Melbourne, Australia in 2005 resulting in at least seven hospitalizations (Barnes, 2005). In two separate incidents, over 600 patrons reported becoming ill after

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eating at two Lansing, Michigan, US, restaurants in the spring of 2006; at both restaurants, norovirus was confirmed as the source of the illnesses (Marler Clark, 2006).

In the USA, the publicity and outrage surrounding the 1993 Jack in the Box and other outbreaks in the early 1990s resulted in an increase awareness of food safety issues among consumers and an increase in regulatory initiatives to reduce the incidence of foodborne disease, such as hazard analysis and critical control point (HACCP) programs, at the industry and retail levels. New markets for food safety were also created by the increased demand for safer products by large restaurant chains (Golan *et al.*, 2004). Although restaurants in the USA are subject to local inspections by public health departments, studies have consistently shown that a relatively high percentage of restaurants routinely have inadequate food hygiene practices. Food safety is extremely important for restaurants as being associated with foodborne illness can result in negative publicity, loss of consumer trust, and loss of customers, as well as public health compliance and legal costs. Considering the importance of food safety, it is surprising that there is a paucity of studies examining consumer perceptions of food safety at restaurants. This research attempts to fill this void by presenting results from a national survey of US consumer perceptions of food safety at restaurants and comparing these results to those of other actors in the food chain – federal government agencies, food processors and manufacturers, farmers, and grocery stores and supermarkets.

There are at least two reasons for comparing consumer food safety perceptions at restaurants to other actors in the food chain. First, food safety problems can occur at any point in the food system. Restaurants are a key end point in the chain from farm to fork as food is prepared and cooked for customers. Buzby *et al.* (2001), for instance, found that restaurants are more likely to be sued as a result of foodborne illness than other actors in the food system – food stores, food distributors, or food manufacturers. In the case of the Jack in the Box outbreak, the *E. coli* contamination likely occurred during the processing stage, but ultimately the restaurant chain was held responsible for not handling and cooking the meat thoroughly. As food safety occurs within a food system, it is important to understand how consumers perceive all actors in the food chain to contextualize perceptions of restaurants. Second, food safety issues may impact where consumers purchase meals. For example, if restaurants are perceived as less safe than grocery stores, consumers may decide to purchase ready to eat foods at grocery stores rather than eat at restaurants.

Background literature

Unlike home cooked meals where consumers are ultimately responsible for food handling and preparation, consumers must place their trust in chefs and foodservice workers to insure that the foods they eat are handled and prepared properly when eating at restaurants. While the 1993 Jack in the Box outbreak ushered in an era of increased food safety measures by suppliers and large restaurant chains in the USA, a substantial number of foodborne outbreaks have been associated with food prepared or served at restaurants since then (Buchholz *et al.*, 2002; Cochran-Yantis *et al.*, 1996; Cotterchio *et al.*, 1998; Green *et al.*, 2005; Lewis and Salsbury, 2001; Medus *et al.*, 2006; Rudder, 2006; Wheeler *et al.*, 2005).

Outbreaks and individual cases of foodborne illness can be costly to the implicated restaurant and/or chain. According to Cochran-Yantis *et al.* (1996), "(a) single outbreak can result in lawsuits and high insurance premiums as well as the loss of an entire

business" (p. 119). For instance, 18 months following the *E. coli* outbreak at Jack in the Box, the company reported losses of approximately $160 million in reduced sales and other costs, including the recall of all hamburger meat from their restaurants and legal costs associated with law suits filed by customers. A 1992 hepatitis A outbreak at Le Petit Gourmet, the largest upscale catering company in Denver, Colorado, US, forced the restaurant to close for two weeks during the busiest period of the year. The outbreak cost the company $60,000 for public relations advice and to discard food, and their net income for the following year was half of the 1992 pre-crisis figure (Morrison *et al.*, 1998). Grover and Dausch (2000) estimate that the average foodborne outbreak costs an operation $100,000 including lost business and wages and medical and lawyer fees. In addition to negative publicity, a restaurant can also expect to suffer a 30 percent reduction in sales following a foodborne outbreak (Grover and Dausch, 2000). In a review of 175 US jury trials involving foodborne pathogens from 1988-1997, Buzby *et al.* (2001) found that 32 percent of the lawsuits targeted restaurants. While only 31 percent of the 175 lawsuits resulted in compensation paid by the implicated firms, the awards varied by the severity of the illness. For instance, the average award in 1998 dollars for illness resulting in premature death was $274,580; $141,199 if the plaintiff was hospitalized, and $110,916 in other cases, although the median awards were lower ($185,828 for premature death, $61,814 for hospitalization, and $11,746 for other cases).

Despite the increased emphasis on food safety by the restaurant industry, a significant percentage of restaurants continue to have inadequate food safety practices. Mathias *et al.* (1994) surveyed 141 representatives responsible for restaurant inspectors in local Canadian jurisdictions. The results indicated that in 24 jurisdictions, at least 41 percent of the inspected restaurants had one or more time and/or temperature violations, while the percentage was between 21 and 40 percent in 48 other jurisdictions. Further, 10 percent of restaurants in Canada were classified as having critical problems with another 21 percent classified as having moderately severe violations. In an Australian study of four restaurants, Morrison *et al.* (1998) observed that each had hygienic practices consistent with an unnecessarily high risk to consumers. In 1997, an investigative reporter at the Orlando Sentinel reviewed Florida state restaurant inspections; it was found that many restaurants routinely ignored rules for safe food preparation and these types of violations were widespread and repeated (Walczak, 2000). This study found that 43 percent, or 2,400, restaurants, received violations for preparation temperature abuse or for inadequate refrigeration equipment. A report by the US Food and Drug Administration's (FDA) Retail Program Steering Committee (2000) claimed that only 60 percent of full-service restaurants and 74 percent of fast-food restaurants were in compliance with the FDA Food Code on five risk factors associated with foodborne illness. The five risk factors were food from unsafe sources, inadequate cooking, improper holding temperatures, contaminated equipment, and poor personal hygiene. In addition, DeWall and Dahl (1996) found problems with the U.S. restaurant inspection systems, and concluded that a large majority of state and local government agencies that conduct inspections of restaurants did not follow the FDA's national standards.

In a 1997 and 1998 study of restaurant inspections in Los Angeles County, California, USA, Buchholz *et al.* (2002) found that the number of restaurant-related foodborne incidents were positively related to restaurant size, the number of foodborne incidents in the previous year, and observation of food safety code violations during the sanitation inspector's visit. In a review of 23 restaurant-associated *Salmonella* outbreaks in Minnesota, USA, between 1995 and 2003, Medus *et al.* (2006) claimed that

12 percent of foodservice workers tested positive for *Salmonella* leading them to conclude that infected workers were an important source of transmission. Allwood *et al.* (2004) found that only 52 percent of the persons in charge of retail food establishments could describe hand washing procedures as outlined in the Minnesota Food Code, and only 48 percent of foodservice workers could demonstrate code-compliant hand washing. In the UK, a study by the Food Standards Agency observed that 55 percent of catering workers did not appear to wash their hands before preparing food, and about 33 percent did not have a basic hygiene certificate (Rudder, 2006).

Food safety in the foodservice industry is particularly important considering that US expenditures on food away from the home have increased from 26 percent in 1960 to an estimated 50 percent in the mid-1990s (Carlson *et al.*, 2002). In 1998, an estimated 46 percent of Americans patronized a restaurant on a typical day (Buchholz *et al.*, 2002). While this percentage dropped to about 44 percent in 2006, the restaurant industry still accounts for a 47.5 percent share of the food dollar (National Restaurant Association, 2006). In addition, Carlson *et al.* (2002) calculated that restaurants accounted for 14 percent of all US food consumption in grams in 1994.

Considering the importance of food safety at restaurants, it is surprising that only a few studies have asked consumers about their perceptions on this issue. Williamson *et al.* (1992) found that 33 percent of respondents indicated that food safety problems were most likely the result of unsafe practices at restaurants. Of respondents in a US national telephone survey who reported that they or someone in their household had contracted a foodborne illness in the past month, 65 percent of them believed restaurants were the cause of their illness (Fein *et al.*, 1995). Green *et al.* (2005), in a 2002 telephone survey of 16,435 randomly selected US adults, reported that respondents who were younger than 33 years old, had some college education, reported having diarrhea but no vomiting, reported not missing work, and had eaten out in the previous week were significantly more likely to believe that their illness was due to an outside meal than those older than 33 years of age, who had no college education, reported vomiting, missed work, and had not eaten out in the previous week. They also found that only eight percent of ill respondents who believed that they contracted their illness from a meal outside of the home notified the suspected foodservice facility or health department.

Methods

The data for this study were gathered from telephone interviews conducted with 1,014 US adults aged 18 and older in the 48 contiguous states and the District of Columbia using random digit dialing procedures. The survey was conducted between October 31, 2005 and February 9, 2006. The survey was part of a broader project on perceptions of food safety, food safety actors, and trade-offs among food safety and other food attributes. This paper focuses on questions related to food safety at restaurants and perceptions of other food safety actors – federal agencies, food manufactures and processors, farmers, average Americans, and consumers themselves. For results based on these samples, one can say with 95 percent confidence that the maximum error attributable to sampling and other random effects is ± 3 percentage points. Results were weighted to reflect the socio-demographic characteristics (age, sex, race, and education) and geographic regions (Northeast, Midwest, South, and the West) of the US population using 2000 census data.

Results

About 18 percent of respondents stated that they eat at a restaurant frequently (every or several times/days a week) with 5 percent claiming to eat at a restaurant everyday. Just over two-fifths (43 percent) of respondents stated that they eat at a restaurant occasionally (about once or twice a week). The remaining 39 percent indicated that they eat at a restaurant rarely (less than once a week or never), with less than 5 percent stating that they never eat at a restaurant. Overall, respondents indicated that they were concerned about the foods they eat: one-third were very concerned, 30 percent were fairly concerned, 3 percent were not too concerned, and 34 percent were not at all concerned. Just less than half of those who eat at restaurants (48 percent) responded that they thought about the safety of the foods they were buying the last time they ate at a restaurant.

To examine perceptions of the food system, respondents were asked to rate a set of actors on their performance, capability, and commitment to food safety (see Table I). The majority of respondents rated the performance of restaurants as good (68 percent). In comparison with other actors, however, the performance of restaurants ranked lower than federal government agencies (e.g. US Department of Agriculture and US Food and Drug Administration), food processors and manufacturers, farmers, and grocery stores and supermarkets. Analysis of variance and Scheffe tests were used to evaluate whether the mean scores of restaurants were significantly different than other actors. The results indicated that restaurants were rated significantly lower than each of the other groups ($p < 0.001$), although mean differences were not significant between the very good and good categories, with the exception of groceries stores and supermarkets. To evaluate whether performance affected the frequency of eating at restaurants, these two variables were cross-tabulated with one another. The results indicated that the performance of restaurants did not significantly affect the frequency of eating at restaurants ($p = 0.217$).

An overwhelming majority of respondents believed that restaurants are capable of insuring that the foods they eat are safe. Analysis of variance results revealed that respondents viewed the capability of restaurants significantly different than other actors in the food chain ($p < 0.001$). Restaurants were perceived as less capable of insuring food safety than food processors and manufacturers, farmers, and grocery stores and supermarkets, but a little more capable than federal government agencies. Similar to performance, capability was not significantly related to frequency of eating at restaurants ($p = 0.210$). An overwhelming majority of respondents also indicated that restaurants were committed to food safety. In comparison to other actors, analysis of variance results showed that restaurants were ranked as less committed than food processors and manufacturers, farmers, and grocery stores and supermarkets ($p < 0.001$), but more committed than federal government agencies ($p < 0.001$). In contrast to performance and capability, commitment was significantly related to frequency of eating at restaurants ($p = 0.008$). Respondents who perceived restaurants to be "not at all" committed to food safety were less likely to eat at restaurants occasionally, and somewhat more likely to eat at restaurants often and rarely.

When it comes to resources, defined as staff, expertise, money and information, 68 percent of respondents stated that restaurants have enough resources to insure that the foods they eat are safe, and 23 percent indicated that restaurants need at least some additional resources as illustrated in Table II. In comparison to other actors, analysis of variance results (not shown) suggested that respondents believed that restaurants need

	Federal government agencies (%)	Food processors and manufacturers (%)	Farmers (%)	Grocery stores and supermarkets (%)	Restaurants (%)
Performance [a]					
Very good	9.7	8.6	17.3	14.0	5.0
Good	69.8	70.5	75.7	69.7	67.5
Neither good nor poor	4.9	3.5	1.6	4.3	6.6
Poor	13.7	15.7	4.9	10.5	18.2
Very poor	2.0	1.7	0.5	1.5	2.6
Mean	2.28	2.31	1.96	2.16	2.46
n	992	998	974	995	969
Capability [b]					
Very capable	24.6	36.7	38.3	32.7	34.7
Somewhat capable	65.0	55.5	55.7	61.1	51.9
Neither capable nor incapable	0.6	0.8	0.9	1.0	2.4
Somewhat incapable	7.8	6.0	4.1	4.1	8.3
Very incapable	2.1	1.0	1.0	1.1	2.6
Mean	1.98	1.79	1.74	1.80	1.92
n	999	997	994	1,006	992
Commitment [c]					
Very committed	25.9	22.9	37.6	32.2	24.1
Somewhat committed	53.2	64.3	56.4	58.7	59.9
A little committed	17.3	9.0	4.2	6.9	11.8
Not at committed	3.5	3.8	1.8	2.3	4.2
Mean	1.98	1.94	1.70	1.79	1.96
n	999	1,004	999	1,003	989

Notes: Percentages exclude "do not know" responses and refusals; [a] "How would you rate the performance of . . . in making sure the foods you eat are safe? ", where 1 = very good and 5 = very poor; [b] "How capable do you think . . . are in making sure the foods you eat are safe?", where 1 = very capable and 5 = very incapable; [c] "How committed do you think . . . are in making sure the foods you eat are safe?", where 1 = very committed and 4 = not at all committed

Table I.
Performance, capability, and commitment of food system actors with regards to food safety

more resources than food processors and grocery stores and markets, but fewer resources than federal government agencies and farmers to insure food safety.

Implications

Food safety outbreaks and individual cases of foodborne illness at restaurants can be extremely costly as they may result in the loss of customers, negative publicity, as well as additional costs associated with public health compliance, legal and medical bills, and public relations. The goals of this study were to investigate consumer perceptions

of food safety at restaurants and compare these results to other actors in the food chain. The main findings were that a substantial number of consumers think about food safety in general and more specifically when eating at restaurant establishments; and while a majority stated that restaurants were doing a good job, were capable, and were committed to food safety, in comparison to other actors in the food chain, restaurants ranked significantly lower than farmers, food processors and manufacturers, and grocery stores and supermarkets.

Consumer perceptions of food safety are particularly important for restaurant managers and owners as these perceptions may result in the loss of clientele if consumers choose to eat at "safer" restaurants. Surprisingly, performance and capability of restaurants with regards to food safety were not significantly related to frequency of eating at restaurants. However, this should not necessarily be interpreted that food safety is not important to consumers, as indicated by the significance of commitment to food safety. Henson *et al.* (2006), for example, found that cleanliness was the most often cited attribute used by consumers to determine food safety at restaurants; other attributes used by consumers to evaluate food safety at restaurants included overall quality of the restaurant, level of patronage, and external information, which includes restaurant reviews, views of friends and/or family, and inspection notices in their window. As our study did not include specific items related food safety, it is possible that respondents in this study may have had different interpretations of the words "performance" and "capability."

The literature review and findings reinforce the importance of establishing and enforcing food safety protocols at restaurants, particularly in the areas of worker personal hygiene, workplace sanitation, food handling, and food preparation. While it is not known how important food safety concerns are relative to other restaurant attributes such as food type, food quality, atmosphere, location, and price, it is likely that food safety concerns are important to some consumers. From a marketing perspective, it may be beneficial for restaurants to publicize their food safety records and strategies such as employee training or HACCP programs. For example, Snyder (2005) lays out a HACCP program for retail production operations. Jin and Leslie (2005) promote the adoption of hygiene grading systems at restaurants. They believe that hygiene grading cards provide economic incentives for restaurants to improve hygienic practices and public health outcomes. In addition, our results highlight the need for restaurant managers to take food safety seriously, and to take precautions against conditions that might result in foodborne illness, including both monitoring

Table II.
Responses to the question "how many resources that is staff, expertise, money and information do ... need to insure that the foods you eat are safe?", where 1 = a lot more and 4 = have enough

	Federal government agencies (%)	Food processors and manufacturers (%)	Farmers (%)	Grocery stores and supermarkets (%)	Restaurants (%)
A lot more	17.4	10.2	13.5	8.1	11.6
Some	19.8	9.0	18.8	10.6	12.6
A few more	5.9	3.6	3.8	6.1	5.1
Have enough	57.0	77.3	63.9	75.3	70.7
Mean	3.02	3.48	3.18	3.48	3.35
n	913	983	976	993	976

Note: Percentages exclude "do not know" responses and refusals

and sending home sick workers. A limitation of this study was that distinctions were not made between fast food and sit-down restaurants or other types of restaurants, e.g. chains, independent, and ethnic. These results highlight the need for more comprehensive studies on how food safety issues affect consumer perceptions of restaurants and how these perceptions affect consumer behaviors.

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