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Keywords

risk & crisis, foodborne illness, Salmonella, Excellence theory

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Introduction and Theoretical Framework

The 2008 *Salmonella* outbreak in jalapeno peppers was the largest of its kind in the past 20 years. The *Salmonella* Saintpaul strain sickened more than 1,400 people in 43 states between April 16 and August 11, 2008 (Centers for Disease Control and Prevention, 2008). While the outbreak was originally linked to certain types of raw tomatoes, it was later determined that the outbreak was caused by imported jalapeño and Serrano peppers from Mexico tainted by contaminated irrigation water (CDC, 2008). According to the CDC website, at least 40,000 cases of *Salmonella* are reported annually, but the actual number of cases may be up to 30 times greater than those reported, with an estimated 400 deaths a year caused by *Salmonella*.

Consumers are more concerned about the safety of their food than ever before, especially with the increase in news stories about contamination and foodborne illness outbreaks (Tucker, Whaley, & Sharp, 2006). The 2008 *Salmonella* outbreak heightened consumer fears about fresh produce and caused consumers to avoid tomatoes (Bensen, 2008). These actions led to the loss of millions of dollars in the tomato industry, despite industry-wide efforts to calm consumer fears. However, research on the 2008 outbreak found many consumers were confused about the FDA's messages as the warnings instructed consumers to avoid certain types of tomatoes, but consumers ultimately avoided tomatoes altogether, costing the tomato industry millions (Cuite et al., 2009).

According to Thompson (2008), losses to the tomato industry from the impact of the 2008 *Salmonella* outbreak were estimated at \$100 million. While the CDC maintains that tomatoes may

have been an initial source in the outbreak, evidence of contamination in tomatoes was never found (Thompson, 2008). Reggie Brown, vice president of the Florida Tomato Growers Exchange, said he felt the blame on tomatoes would have been lifted sooner had the FDA utilized tomato growers, shippers, and packers to collect information (Thompson, 2008).

Taylor, Kastner, and Renter (2009) reported that consumer fears and confusion about tainted tomatoes led to the loss of thousands of acres of fruit in Florida just as they were about to be harvested. Many tomato farmers were unable to sell or harvest their tomatoes due to lack of demand. Although California and Georgia farmers suffered from this lack of demand, they had already harvested their tomatoes and did not have thousands of tomatoes still in the field as Florida farmers did (Blake, 2008). In addition to the financial loss, farmers were also concerned that consumers had lost confidence in the tomato industry and tomato farmers alike (Blake, 2008). The length of the outbreak and the lack of being able to pinpoint the source of the outbreak hurt the tomato industry, as consumers stopped purchasing tomatoes during the outbreak and were slow to return to purchasing them after the warning on tomatoes was lifted (Taylor et al., 2009).

Risk and Crisis Communications

The role of crisis communications is to deliver information to various audiences to recover from a crisis, prevent a future crisis, or uphold a certain reputation (Ferrante, 2010). An organization should always be prepared for a crisis, even if they have never had to face one. Tench and Yeomans (2006) identified three crucial steps in crisis preparation: conducting a crisis audit, preparing a crisis management plan or manual, and practicing crisis training.

In doing a crisis audit, an organization should determine its strengths, weaknesses, and vulnerabilities while also identifying key stakeholders, a crisis management team, and potential crisis situations (Heath & Coombs, 2006). According to Tench and Yeomans (2006), a crisis manual or crisis communication plan will include contacts for key stakeholders, media contacts, key audience messages, crisis team members and responsibilities, and brief lists of tasks to be performed in the face of a crisis (Henry, 2000).

Ferrante (2010) listed seven steps for developing an effective and appropriate risk and crisis plan: involve the public; plan and evaluate efforts; listen to public concerns; be honest and open; collaborate with other credible sources; meet media needs; and speak clearly and with compassion. Additionally, an audience must feel that the organization cares, especially if death or destruction is involved. Having a risk and crisis communication plan in place is especially important for all agricultural communications practitioners given the technical nature of the industry, frequent misunderstanding of the industry by the general public, and past instances of agricultural crises (Fry, 2012).

During a crisis, a public relations practitioner's primary responsibility is communications. Although many in agriculture tend to avoid the media (Eyck, 2000), it is important to communicate with both the media and the organization's stakeholders (Coombs, 2007). Ulmer, Sellnow, and Seeger (2007) proposed 10 lessons to communicate during unintentional crises—events that create a great degree of uncertainty amongst stakeholders as well as the public. Foodborne illness outbreaks fall into this category: 1) accept that a crisis is unexpected and can occur rapidly; 2) the response of an organization to a crisis should be unique to the crisis at hand; 3) the threat of a crisis is perceptual; 4) communicate immediately and often throughout the crisis, even if the organization does not have critical information; 5) do not withhold or alter any information to the public in an attempt to be ambiguous; 6) prepare to defend evidence or facts presented during the crisis; 7) operate with

good intentions, otherwise recovery from the crisis is nearly impossible; 8) believe that the crisis responsibility relies with the company; 9) a case should be presented as to who should take the crisis responsibility and why; 10) examine business practices during and after the crisis.

A crisis communication plan enables an organization to be proactive which, in turn, puts the organization in a position to be in control when a crisis strikes, as an organization moves along in a crisis situation, the plan should allow it to adapt to any and all changes while also protecting itself (Leighton & Shelton, 2008).

Excellence Theory

This study was guided by the concepts put forth by two-way symmetrical communications, or the excellence theory (Grunig & Hunt, 1984). According to Grunig, Grunig, and Dozier (2002), public relations is a function of management that describes how organizations and stakeholders interact with one another during the decision making process. Grunig (1992) explained that the effectiveness of an organization is determined in part by the organization's ability to identify key stakeholders, and develop and maintain a mutually beneficial relationship with said stakeholders. Stakeholders can affect the organization's ability to achieve its goals and in turn, an organization can have the same affect on stakeholder goals (Grunig et al., 2002).

Symmetrical communications between an organization and its stakeholders is key when developing organization relationships (Grunig et al., 2002). Symmetrical communication is a two-way process that "practices equal communication between the organization and the audiences" (Baldwin, Perry, & Moffitt, 2004, p. 319) where an organization is willing to alter its practices based upon audience research to benefit both the organization and its audiences.

Purpose and Objectives

The purpose of this study was to examine the risk and crisis communication efforts taken by public relations practitioners in the produce industry during the 2008 *Salmonella* outbreak and determine which efforts were successful and which were not.

The following research objectives were used to guide this case study:

1. Determine public relations practitioners' opinions of the effectiveness of their organization's communication efforts during the 2008 *Salmonella* outbreak.
2. Explore the lessons public relations practitioners' learned as a result of their involvement in the 2008 *Salmonella* outbreak.
3. Describe public relations practitioners' perceptions of mass media coverage during the 2008 *Salmonella* outbreak.
4. Understand risk and crisis communication actions taken by companies impacted by the 2008 *Salmonella* outbreak.

Method

This research employed case study methodology "to gain an in-depth understanding of the situation and meaning for those involved," (Merriam, 1998, p. 19). Yin (2003) explained that qualitative data cannot be described through numerical data, but should be described by events, perceptions, attitudes, and categorical data. Miles and Huberman (1994) found that in defining a case study, a researcher must have clearly defined boundaries that state what will and will not be studied.

The case for this study was the 2008 *Salmonella* outbreak and the public relations practitioners

who were directly involved with communication efforts during the outbreak on behalf of a company or organization in the tomato industry. Practitioners who were not involved in communication efforts related to the tomato industry during the 2008 outbreak or companies not directly impacted by the outbreak were excluded from this study, as were other foodborne illness crises.

The produce industry is relatively small, and in the search for contact information, the researcher found that only a few regional grower organizations publish any contact information. This made it difficult for the researchers to find names and contact information for the tomato growers or their grower organizations. Participants were located through the Google search engine and various databases available through the university library, using these search terms: 2008 *Salmonella* outbreak, tomato growers, tomato associations, produce associations, and tomato group. Potential interview participants were contacted by e-mail or telephone to build rapport, provide study information, and request a telephone interview. Subjects who agreed to participate in an interview were then sent a consent form by e-mail. In all, nine public relations practitioners or company executives that served as the public relations officer during the 2008 outbreak were interviewed for this study. In addition, the researchers asked each participant if they would suggest anyone else to interview for the study. After five interviews, the participants were naming the same people; therefore, the researchers were confident that most of the public relations practitioners in the tomato industry were reached.

This study utilized a semi-standardized interview (Berg, 2009), where the interview questions were composed ahead of time based upon the research objectives of the study. During the interviews, the researcher asked additional, non-scripted questions where probing was needed to better suit the interviewee. The interview guide was categorized by demographic questions, 2008 *Salmonella* outbreak questions, media questions, and risk and crisis communication questions.

Telephone interviews are more practical, allow greater uniformity in interview delivery, and allow researchers to contact individuals in other areas when travel to the interviewee is not possible (Charmaz, 2003). The interviews for this study were conducted by telephone because travel was not funded for this study, nor would time allow for travel to the various locations of interviewees across the United States.

Interviews averaged 30 minutes in length, and all were recorded. The researcher transcribed each interview as soon as possible after the interview, and in keeping with the confidentiality guidelines proposed by Berg (2009); only one researcher transcribed data. The data were then coded using NVivo qualitative data analysis software. Each of the nine participants were assigned a pseudonym to protect anonymity.

To achieve trustworthiness, the researcher triangulated data with findings from a previous study on the *Salmonella* outbreak. The researcher also employed member checks, addressed bias, and kept an audit trail to ensure transferability (Merriam, 1998; Niekerk & Savin-Baden, 2010). The researcher has a background in both agriculture and communications, and tended to sympathize with agricultural producers. While the researcher has no direct ties to the produce industry, the researcher has strong feelings about the agricultural industry and its role in supplying food to the United States and other countries.

Findings

Nine individuals were interviewed for this study. Four worked in public relations or issues management for trade organizations; two were food safety experts at distributions facilities; one was a CEO of a packing, growing and distribution company; one was a public relations practitioner at a non-profit organization; and one was the director of communications for a grocery chain in the

Findings in Relation to Research Objective One

Research Objective One sought to determine public relations practitioners' opinions of the effectiveness of their organization's communication efforts during the 2008 *Salmonella* outbreak. Four main themes emerged from the data in relation to Objective 1: communication goals, effective communication, ineffective communication, and organization success during the 2008 *Salmonella* outbreak.

Many of the subjects reflected their concern for both public health as well as stakeholder well being in their communication goals for their message platforms used while mitigating the 2008 *Salmonella* outbreak. Many of the participants emphasized the need of the organization to get information out quickly to consumers, stakeholders, and industry counterparts, so that all concerned would be able to make educated decisions.

MAUREEN (Director of communications for trade organization): People do have a right to know certain things, and as a public relations person, the best you can do in a crisis is to deliver good, accurate, timely, correct information to the media so they will get their story right.

Brianne touched on relationships with media, but also stated that positive relationships with regulators and the FDA aided in her company's ability to effectively communicate with their audiences.

BRIANNE (Issues management at nonprofit): I think our constant engagement with the media, the constant availability to Congress, working and having good relationships with FDA so we got separated out quickly. So we were part of the wave, but we were able to separate ourselves out. I think those efforts were successful, yes.

Participants were asked what communication efforts were ineffective or were not as successful as the company or organization had hoped. Many of the subjects had similar responses to Brianne's, their organization did the best possible, given the enormity of the crisis.

BRIANNE (Issues management at nonprofit): In a crisis nothing ever goes as planned. There's nothing that I would say didn't work, because of what we were up against, you know, we were up against this huge tide.

Overall, the practitioners interviewed said their company or organization handled the crisis "as well as conditions would permit," said ORSON, given the complexity and nature of the 2008 *Salmonella* outbreak.

Findings in Relation to Research Objective Two

Research Objective Two sought to explore the lessons learned by public relations practitioners as a result of their involvement in the 2008 *Salmonella* outbreak. Two themes emerged: be proactive and be willing to make changes.

An organization must be willing to communicate with its publics. If not, the organization will sustain even more damage.

SHELDON (Director of communications for grocery chain): Don't ever try to hide. No matter

how much you would like to, and how much you would like to say no comment that's the worst possible thing you can do. The best possible thing you can do is to get out and be public with the situation and be open and honest with the communication as quickly as possible with as much accurate information as you can provide.

BILL (Food safety vice president at distribution company): You cannot be intimidated by the media. You have to be on the offensive if there are issues that are pertaining to the products that you are producing. It is your image out there, and you have to do image control.

About half of the interviewees reported that no changes were made to their respective organizations in light of the crisis, but policies and procedures were reviewed to determine the effectiveness of the measures taken by the organization during the 2008 crisis. One change that some of the interviewees also said they intended to make was to improve communication with the FDA. The majority of the subjects stated that this crisis highlighted the need for improved communications with the agency, especially since, as ORSON stated "nothing we said in the public arena was going to be accepted as factual," meaning that the public believed information from the FDA, but not always from the produce associations. However, MAUREEN said the FDA and CDC could work on their communications strategies as well, "I think we felt that we were being framed negatively by the government, by the FDA. The FDA and CDC have some ways to go when it comes to a crisis like this."

Findings in Relation to Research Objective Three

Research Objective Three sought to describe public relations practitioners' perceptions of mass media coverage during the 2008 *Salmonella* outbreak. Two themes emerged: perceptions of media coverage and consumer interpretation of media messages.

The perceptions of practitioners about the national media coverage during the 2008 *Salmonella* outbreak varied greatly. Some participants praised the quality of the media coverage, while others, like Bill, found the coverage to be equivalent to "a feeding frenzy," based upon inaccurate information and facts. The participants who praised the media coverage found the coverage to be fair even though the subject matter was negative by nature.

MAUREEN (Director of communications for trade organization): The media played an integral role in the investigation and in public health; they did their job. I don't think we have any complaints about how the media reported this story because we spoke with them.

On the other hand, some of the interviewees were very angry at the national media coverage of the outbreak and expressed strong opinions about the information they felt was falsely portrayed in the media coverage.

TIM (director of food safety at a re-packing facility): I have to hold back on some profanity here, I think it was just bizarre. It was just awful. Again, anybody who had any produce experience would have known that there was no way that [those] tomatoes had anything to do with the outbreak. It would have just been common sense.

When interview participants were asked how they thought consumers interpreted the messages

put out by the national media, the overwhelming response dealt with consumer confusion.

BRIANNE (Issues management at nonprofit): There was confusion at a lot of different levels from FDA's trace back and the way they communicated with consumers on the outbreak was extremely confusing. FDA had maps, blue and red maps, that showed where outbreaks were, there are numerous varieties of tomatoes so they would list the varieties that weren't involved, could be involved, and the consumer just threw up their hands and said forget it, I won't purchase anything right now.

Findings in Relation to Research Objective Four

Research Objective Four sought to understand the risk and crisis communication actions taken by companies impacted by the 2008 *Salmonella* outbreak. Three themes emerged from the data: communication actions, crisis communication plan, and advice to others.

With the onset of a crisis, organizations are required to immediately jump into a crisis in order to mitigate damages and get their messages out. Many of the practitioners stated that they immediately activated their crisis communication plans and teams. Maintaining communication with all pertinent audiences and stakeholders was top priority for all of the participants and many used a variety of methods to maintain these communications.

Of the nine public relations practitioners interviewed, only two reported not having or using a crisis communication plan. The other seven practitioners all had a plan for their organization that was in place before the crisis and was used to guide each through the 2008 *Salmonella* outbreak.

Participants shared their opinions on important components in their organization's plan. Many of the practitioners indicated that an organization should be proactive in looking for signs of risk, and should be ready to act on those risk factors.

BRIANNE (Issues management at nonprofit): I always hope for the best but we are always prepared for the absolute worst...putting systems in place if the worst happens so you are ready to execute.

SUSANNE (vice president of communications at trade organization): Know where your potential weaknesses are, plan for those weaknesses to mitigate them from happening. Create a crisis team, create a crisis plan. Make a living document, don't sit it on the shelf and say, oh we did that job and move on to 87 different things.

Conclusions

When examining the responses of all of the interviewees, all participants felt their organization handled the 2008 *Salmonella* crisis in the most efficient and effective way to the best of their capabilities. None of the interviewees reported any large-scale mismanagement on the part of their organization. Although all of the organizations and companies represented by practitioners in this study were negatively impacted by the crisis, none of interviewees solely faulted the media for the losses sustained during the 2008 *Salmonella* outbreak. The media coverage was acknowledged as a contributing factor, but not all of the practitioners found the media coverage to have a negative impact on their organization.

Grunig et al. (2002) stated that an organization must be able to engage in two-way sym-

metric communications with stakeholders. An organization that incorporates this communication style and is able to maintain a beneficial relationship with stakeholders is practicing excellent communications (Grunig & Hunt, 1984). Many of the goals discussed by the participants incorporated two-way symmetrical communications in order for the organization to be effective and successful in their efforts. All of the participants in this study did this through communicating with stakeholders, and then adjusting messages based on stakeholder influence (Grunig and Hunt, 1984).

Ferrante (2010) found that an effective crisis communication message must be clear and concise, especially if the audience is expected to take certain actions. Many consumers became frustrated with the mixed messages they received, and stopped purchasing and eating tomatoes, or ignored the messages all together (Cuite et al., 2009). Based upon the findings and the literature, many participants believed some of the messages communicated by the FDA during the 2008 *Salmonella* outbreak lacked of clarity, which may have contributed to some of the losses suffered by the tomato industry. However, most of the participants felt their communication efforts with their stakeholders were effective.

Ulmer et al., (2007) defined a foodborne illness outbreak as an unforeseeable, unavoidable crisis that creates high levels of uncertainty. Due to the nature of the *Salmonella* outbreak, all but one of the participants said they abided by most of the lessons outlined by Ulmer et al., (2007) (communicate immediately and often, do not withhold information, prepare to defend facts, operate with good intentions, examine business practices during and after the crisis) to reduce uncertainty in a foodborne illness outbreak.

Additionally, all of the practitioners said their organizations communicated as effectively as possible given the nature of a crisis, which is supported by the findings of Grunig et al., (2002). Although the outcomes of the 2008 *Salmonella* outbreak were unfavorable for the tomato industry, these outcomes were unpredictable and were not the result of failed communication efforts on the part of the tomato industry. Many of the participants said they used their existing media contacts and answered any questions from reporters.

Ulmer et al., (2007) found that organizations can only be successful in a foodborne illness outbreak if it examines its practices and communication efforts after the crisis. The majority of the practitioners reported going over their practices and procedures after the 2008 *Salmonella* outbreak, which was important in determining effective and ineffective communication efforts.

The perceptions of the participants about the mass media coverage were mixed. Some said the media coverage was extremely negative while others found the media coverage was fair to the tomato industry even though the message was negative, as evidenced by MAUREEN:

“The media played an integral role in the investigation and in public health, they did their job. I don’t think we have any complaints about how the media reported this story because we spoke with them.”

The researcher observed that those practitioners who said the national media coverage was fair and accurate had positive interactions and communications with the media, whereas those practitioners who had limited or no contact with the media generally had negative perceptions of the media coverage. All of the participants concluded that consumer interpretation of the mass media messages was that of mass confusion. Consumers were confused about which tomatoes were safe to eat, and which were not, and when faced with this confusion, consumers either stopped consuming tomatoes or completely disregarded the messages (Cuite et al., 2009). Due to those actions taken by consumers, the tomato industry suffered losses both in and out of the field.

Tench and Yeomans (2006) described crisis management as the preparation of an organization before a crisis, the management of the crisis, and the re-establishment of the organization after the crisis. The subjects outlined the communication actions taken by their organizations that were developed to meet their organization’s needs and communicate effectively. Almost all of the subjects referenced the following communication actions, which fit with Tench and Yeomans’ (2006) recommendations:

- Information gathering
- Notification of stakeholders
- Activation of crisis communication plan and or crisis communication team
- Dissemination of messages
- Maintenance of communications with stakeholders, especially the media

Recommendations

For practitioners

Each of the participants were asked what advice they would give to other public relations practitioners who might face a similar crisis based upon experience with the 2008 outbreak. The findings to this response, as well as those of research objective two, allowed the researcher to develop an easy-to-use list of do’s and don’ts pertaining to communication during a foodborne illness outbreaks and possibly other food related crises (see Table 1). This list can easily be utilized by practitioners when developing a risk and crisis communications plan.

Table 1

Do’s and Don’t’s of crisis communications during a foodborne illness outbreak

Do	Don’t
Have a crisis communication plan	Think it can’t happen
Monitor for potential risks	Ignore the warning signs
Practice two-way communications	Be ambiguous
Provide timely and accurate information	Lie or be dishonest
Collaborate with industry counterparts	Chastise government agencies
Develop and maintain governmental relationships	Ignore key audiences or stakeholders
Conduct a crisis audit/mock drill	Hide from the media
Reach out and utilize the media	Stay silent
Keep up with important contacts	Downplay public health

Some of the proposed guidelines are applicable to crisis situations in any industry, but due to the unique nature of a foodborne illness outbreak, the researcher believes these guidelines as a whole are especially pertinent to the food industry. Many of the participants mentioned the unusual nature of the 2008 *Salmonella* outbreak, in part because of the length of the outbreak, but also because tomatoes were never cleared as a possible source of contamination. These findings make it imperative for those in the food industry seek out media outlets to provide consumers with their messages. Although it is the tendency of those in the food and agriculture industry to shy away from media sources, getting out their messages and information will aid in reducing the damages suffered by an industry during a foodborne illness outbreak.

Perhaps the most important recommendation that could easily be implemented into any risk and crisis communications plan is for practitioners to develop contacts with the media. Practitioners who had positive impressions of the media during the 2008 crisis tended to have an established relationship with reporters.

In addition to developing contacts with the media, the researchers recommend creating better lines of communication with governmental agencies. Although this study did not probe into industry relations with the FDA and CDC, the researcher could not ignore the resentment and anger many of the interview subjects portrayed in their interviews toward the FDA especially, regarding the 2008 *Salmonella* outbreak. ORSON expressed his feelings concerning the FDA.

ORSON: You have the public stakeholders, which is our customers and our customer's customers. Then you have the governmental stakeholders. Well the public stakeholders and the and the media that provides information to them, or the mediums, only listen to the government, and the government was providing inaccurate, untimely, information. So we had to focus our efforts on the governmental agencies because nothing we said in the public arena was going to be accepted as factual.

This research study found that practitioners were also frustrated with the confusion surrounding the messages put out by the FDA. Irlbeck (2009) found that the FDA lost some credibility due to its communication efforts and the length of time it took them find the true source of the contamination during the 2008 outbreak. A study conducted by the Rutgers Food Policy Institute found that consumers were confused by the FDA's messages, and the confusion led to additional losses in the tomato industry (Cuite et al., 2009).

The food and agriculture industries tend to shy away from the media, and often the media look outside of the industry for interviews and information (Eyck, 2000). If practitioners are able to improve communication efforts with governmental agencies, it could aid both parties in disseminating united messages to consumers and could also aid investigative efforts in future possible crises. In doing this, produce industry officials would hopefully be able to prevent some of the unnecessary losses sustained by the tomato industry during the 2008 *Salmonella* crisis.

Based upon previous literature and the findings from this study, the researcher suggests using the guidelines presented in this case study to guide practitioners in planning for a future crisis. Given the information garnered from the literature review and the suggestions of the participants, the researcher suggests following these steps in developing a plan:

1. Identify a crisis communication team and duties of each member of the team should the orga-

- nization become involved in a crisis (Ulmer et al., 2007).
2. List all stakeholders and audiences that the organization communicates with
 3. Gather contact information for stakeholders, board of directors, media sources, and any other contacts that may be a valuable resource during a crisis (Ferrante, 2010).
 4. Develop key messages to disseminate to stakeholders and goals of the communication efforts to be used. Also determine how these messages will be dispersed.
 5. Identify trustworthy media sources to be contacted at the beginning of a crisis to tell the organization's side (Coombs, 2007).
 6. Conduct a crisis audit or mock drill at least once a year to test all of the materials and methods and to check for possible updates.
 7. Be on the offensive, be monitoring for a crisis and be ready to respond at the beginning of a crisis with timely and accurate information to all stakeholders, including the media.

Based upon the findings of this study, these steps, and the provided guidelines are important to communicate effectively with all stakeholders and may aid an organization in mitigating the damages suffered during a crisis, such as profit losses.

For Future Research

This case study researched the risk and crisis communications taken by public relations practitioners during the 2008 *Salmonella* crisis. To gain a more thorough understanding of the depth of the damages sustained by the tomato industry during the 2008 *Salmonella* outbreak, a study is needed to determine the long term impacts the 2008 outbreak had on the tomato industry. A study of this nature would possibly provide information that would aid in the creation of a model for practitioners to use during a food related crisis that took into account long-term effects on an industry.

To further understand the risk and crisis communications utilized during a crisis, further research needs to be conducted pertaining to other food related crises in order to generalize these findings beyond this study. Additional research would be especially pertinent to this issue when examining more recent cases of foodborne illness outbreaks, such as the 2010 *Salmonella* outbreak in eggs or the 2009 peanut butter recall, also due to *Salmonella*.

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