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Strategies to Mitigate Losses from Product-Harm Crises in the Agri-Food Industry

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This is to certify that the doctoral study by

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Abstract

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by

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MBA, Eastern New Mexico University, 1978

BA, Linfield College, 1970

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

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August 2017

Abstract

Some agri-food managers of United States-based companies use strategies to mitigate product-harm crises.The loss of brand and corporate sustainability increases for companies not utilizing mitigating strategies to reduce losses from agri-food product-harm crisis.The purpose of this multiple case study was to explore the strategies managers use to mitigate losses from agri-food product-harm crises. Coombs' situational crisis communication theory served as the conceptual framework for this study. A sample of 3 managers from 3 agri-food companies in the southern United States shared their mitigating strategies to reduce losses from a product-harm crisis. Methodological triangulation assisted in reviewing and analyzing information from semistructured interviews, relevant company documents, and journal notes. The use of alphanumeric coding, discovering, and identifying themes, selecting relevant themes, organizing themes in hierarchical order, and linking themes to the phenomenon under study indicated four main themes supporting the benefits of mitigating strategies to reduce losses from an agri-food product-harm crisis. The main themes included the use of pre-crisis mitigating strategies, mid-crisis mitigating strategies, post-crisis mitigating strategies, and high pressure pasteurization (HPP). Findings from this study indicated that agri-food managers use strategies to mitigate product-harm crises, but the added expense of some mitigating strategies often precludes their use. The study findings may contribute to social change by increasing the awareness of agri-food managers, consumers, and company leadership to use mitigating strategies to reduce the number of illnesses and deaths associated with a product harm crisis.

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Dedication

I dedicate this research study to the hundreds of thousands of families around the world, and specifically those in the United States, who have lost loved ones, and to the millions of people who have fallen ill in an agri-food product-harm crisis. I plan to use the information from this research to assist agri-food managers in using product-harm strategies to reduce the number of people injured or killed because of food contamination. To my beloved mother, brother, and sister, now deceased; I humbly dedicate this study and my efforts to develop a global socially responsible life-saving solution to the problem of foodborne illness. To my children, and grandchildren who have always been the most important people in my life, I dedicate this study as encouragement to accept that learning is a life-long endeavor. To all who provided, support, guidance, and leadership during this arduous journey, I say thank you, and God bless each of you.

Acknowledgments

Neither ego nor financial gain prompted application for admittance to the Walden University Doctor of Business Administration (DBA) program. A constant voice compelled and continually focused my time, energy, and enthusiasm to complete this research study and DBA degree. My Father God and His Son Jesus Christ are first to receive acknowledgment for it was their voice compelling me to brave new frontiers. There are people in my life who have added to this research project who also require recognition. Rather than set out the names of the family members and loved ones who supported me in my efforts to complete this research study and subsequent DBA degree, I say thank you, and may God bless you for your support. I believe that every soul that was aware of my work took part in adding to the final paper for which I am eternally grateful.

Transformational educators hold the keys to lives because they are important vehicles that transform and drive the evolution of ideas and perceptions into realities. Dedicated educators added time, effort, encouragement, and great value to this work and guided the research topic. I thank and acknowledge Dr. Patricia Fusch, Dr. Rollis Erickson, Mr. Fred Walker, and Dr. James Fletcher for their guidance and generous support during this journey to complete the DBA. Thank you! Each of you played a role in transforming an idea into a global, socially responsible phenomenon that is timely, vital, and hopefully, valuable to millions of people in the United States and abroad. I am profoundly grateful and hope the results of this study will show the world the excellence that results from hard work, patience, and excellent educators at Walden University.

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Section 1: Foundation of the Study

Foodborne illness, in the United States, is a growing concern for consumers and agri-food businesses (Leighton, 2016). Managers of agri-food organizations need strategies to mitigate the losses resulting from foodborne illness (product-harm crises) because it is not a matter of *if a product-harm crisis occurs, but when one occurs* (Nakuja, Akhand, Hobbs & Kerr, 2015). This study may help determine what mitigating strategies can reduce the adverse financial impact to agri-food businesses, and consumer illness and loss of life caused by an agri-food product-harm crisis. My approach to this study iso identify strategies to reduce losses from product-harm crises.

Background of the Problem

Leighton (2016) noted more than 600 agri-food recalls took place in in the United States in 2014 with no evidence of management strategies to reduce the losses to consumers. In addition, Leighton indicated that despite 7 years after the most devastating agri-food product-harm event in American history ongoing legal issues continue to be relevant business concerns in 2016. The Federal Drug Administration (FDA) criminally charged and successfully sentenced several top executives of the Peanut Company of America in 2016, sending a message to agri-food executives that they are no longer immune to prosecution for a product-harm crisis. The distribution of salmonella-contaminated peanuts in 2009 caused the collapse of the company, loss of hundreds of jobs, and more than one billion dollars in total losses (Leighton, 2016).

Managers of agri-food companies hope a product-harm crisis will not occur, yet data supports a product-harm crisis will occur (Borah & Tellis, 2016; Nakuja, Akhand,

Hobbs & Kerr, 2015). Adoption of new mitigating strategies by United States-based companies could reduce losses from product-harm crises (Leighton, 2016). When managers recognize a product-harm crisis, they should initiate mitigation strategies to lessen the economic impact for the company (Samaraweera, Li, & Qing, 2014).

Problem Statement

Some United States-based agri-food companies experienced a product-harm crisis but lacked strategies to mitigate the adverse financial impact, brand, and corporate sustainability (Cleeren, van Heerde, & DeKimpe, 2013). In June of 2016, the FDA successfully criminally prosecuted executives of the Peanut Company of America for the 2009 product-harm crisis that broke the public trust when salmonella-contaminated peanuts resulted in more than $1 billion in losses (Leighton, 2016). The general business problem is that product-harm crises have an adverse financial impact on agri-food companies. The specific business problem is that some corporate managers of United States-based agri-food companies lack strategies to mitigate a product-harm crisis.

Purpose Statement

The purpose of this qualitative multiple-case study is to explore strategies that some managers of United States-based agri-food companies use to mitigate a product-harm crisis. The specific population for this study was three United States-based companies in the agri-food business that use strategies to mitigate product-harm crises. The implications for positive social change include the potential to reduce product-harm crisis incidents, which could save lives, reduce illness, reduce costs to the consumers as well as build public trust in the U.S. food supply chain.

Nature of the Study

A qualitative case study provides a method for researchers to explore a specific and complex phenomenon in a real-world context (Gelhorn et al., 2016; Yin, 2013). Quantitative research is a process of collecting measurements of numerical data to predict or analyze results, but does not involve the use of textual data to find meaning (Petty, Thompson, & Stew, 2012). A mixed method approach to research incorporates both quantitative and qualitative methods (Agerfalk, 2013; Molina-Azorin, 2016). Neither the quantitative method nor the mixed method meets the needs for this research because the focus of this study is on social and cultural problems and does not include collecting measurements or numerical data to predict or analyze results. A multiple case qualitative research method is suited for this study because the study explores complex issues in a real-world context.

Additionally, I explored phenomenology, narrative inquiry, and ethnography, along with case study designs for this qualitative research. Phenomenology research is a process that provides a description of the phenomenon by documenting the experience lived by the participants in the study (Petty et al., 2012). Phenomenology does not meet the needs for this study because this study explores real-world phenomena and not the experiences lived by the participants in the study. Narrative inquiry is both a view of people's experiences, and a means to inquire about detailed experiences and stories (Huber, Huber, & Steeves, 2013). This study focusses on real-world strategies, not detailed experiences, and stories. Therefore, narrative inquiry does not meet the needs for this study. Ethnography is a method researchers use to write about people; ethnographies

provide details of specific communities, social groups, and cultures (Pluye, Hong, Bush, & Vedel, 2016). This study does not require details of cultures or social groups. Therefore, ethnography does not meet the needs of this study. Consequently, a multiple case study design best meets the needs for this study.

Research Question

What strategies do some United States-based managers of agri-food companies use to mitigate a product-harm crisis?

Interview Questions

1. What factors and conditions led to the development of your company's strategies to protect your business against the likelihood of a product-harm crisis?
2. What product-harm crises have your company experienced and what were the effects on business performance?
3. What strategies has your company implemented to mitigate product-harm crises?
4. Is your company considering modifying, updating, or adding any strategic plans to protect against a product-harm crisis?
5. What measures does your company use to determine suitable strategies to protect your company from a product-harm crisis?
6. Which of the following areas of information would your company and other managers of agri-food companies believe would assist in improving or developing mitigating strategies as protection from a product-harm crisis and

why?

a. Traceability and tracking.
b. Corporate and executive ethics.
c. Crisis communication protocols.
d. Knowledge of systems to eliminate pathogens.
e. Increased verification of third-party certification organizations, and
f. How to use different forms of social media for pre, mid and post-crisis communications.

7. What other information regarding strategies for mitigating a product-harm crisis would you like to share?

Conceptual Framework

Coombs (2007) developed the situational crisis communication theory (SCCT) in 2007. The SCCT is an efficient system of interacting with internal management and the public before, during, and after a product-harm crisis to reduce losses (Coombs, 2007). After review of the Coombs theory, I chose the SCCT for this study because of the direct alignment with the problem that United States-based companies lack strategies to mitigate losses caused by a product-harm crisis, therefore, requiring extensive communication to design and implement mitigating strategies. The design and implementation of specific strategies to reduce corporate losses from a product-harm crisis depend on in-depth communication between executives and managers to assure as many strategies as possible are understood and ready for use (Coombs & Halliday, 2013). Failure to promptly implement a product-harm crisis mitigation strategy increases the

probability of corporate and consumer loss (Zou & Li, 2016). Coombs and Halliday (2013) noted that a product-harm crisis is a sudden and unexpected event that threatens to disrupt an organization's operations and poses both a financial and reputational threat. Communications during a product-harm crisis may prove to be the difference between corporate survival and failure. Moreover, product-harm crises can harm stakeholders physically, emotionally, and financially (Coombs, 2007).

The Coomb's (2007) SCCT is an evidence-based framework established for maximizing corporate reputation by utilizing crisis communication (Coombs & Halladay, 2013). The SCCT offers guidelines to communicate to stakeholders, consumers, and employees about critical factors that influence attributions that may contribute to corporate losses. Understanding the potential stakeholder responses during (a) pre-crisis, (b) mid-crisis, and (c) post-crisis provides managers a framework for necessary communications to mitigate stakeholder loss and to design and implement strategies to mitigate losses (Coombs, 2007). The use of the SCCT provides a framework for developing strategies for communicating with the interested parties and aligns with the needs for this doctoral study, providing a framework of communication guidelines to mitigate stakeholders' losses resulting from a product-harm crisis.

Operational Definitions

Agri-food: Agri-food, sometimes referred to as agro-food, identifies any agricultural product produced for human or animal consumption as a food product (Cleeren et al., 2013).

Agriculture recalls: Agriculture recalls are organizational demands to consumers,

companies along the food supply chain, producers, processors, packagers, distributors, and retailers to return contaminated food products to the seller (Pozo & Schroeder, 2013).

Branding: Successful branding establishes a positive consumer perception of a product or service and the company (Cleeren et al., 2013).

Brand equity: Brand equity is the differential effect of brand knowledge on consumer response to the marketing of the brand (Buil, De Chernatony, & Martínez, 2013).

Food contamination: Food contamination is the entrance of a chemical or foreign microbiological substance that interferes with agricultural products' intended use and may cause illness or death (Kher et al., 2013).

Product-harm crisis: A product-harm crisis is a sudden and unexpected event that threatens to disrupt an organization's operations and poses both a financial and reputational threat (Coombs, 2007).

Third-party certification (TPC): Third-party certifications provided by independent certification organizations verify food products meet or exceed all federal and state requirements for public consumption (Powell et al., 2013).

Traceability: Product traceability is a method for tracking non-compliant products in recalls, thereby protecting the sales of compliant products. Traceability is a requirement for recalls of agri-food contamination (Villas-Boris, 2016).

Word of mouth (WOM): Word-of-mouth is the process of communication between consumers concerning corporate attributes wherein companies hope WOM becomes a positive influence and constant communication of brand acceptability (Sallam, 2014).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are beliefs about the research study and the process of conducting the research (Sparkes, 2015). I will collect data from participants who have experience in strategies to mitigate product-harm crises and assume that all the study participants will answer the interview questions honestly. In addition, an assumption is that the participant comprehends all of the definitions and terms associated with product-harm crises and that all the interviews will occur on the timeline suggested and agreed to by the three companies granting permission for the interviews.

Limitations

Limitations include prescribed thoughts or events that may create bias or affect the research validity (Collins & Cooper, 2014). Researchers accept and understand the limitation they are unable to control a participant's lack of knowledge. The limitations of this study also include the researcher's control of the participant's bias and the quality of the answers from the participants.

Delimitations

Delimitations are boundaries around the participants, topic, and other components set by the researcher to explain the study (Marshall & Rossman, 2014). Delimitations are characteristics of a doctoral study that define boundaries and limit the scope of the study (Silverman, 2013). The delimitations of this study include the study population, which consists of United States-based agri-food companies selling domestic and imported foods. The results of this study may not apply to all states in the United States because

food safety regulations may vary from state-to-state. This study will include the managers of three agri-food companies from the United States who use mitigating strategies to reduce losses from product-harm crises. In addition, the sample size may limit a study (Henry, 2013).

Significance of the Study

This qualitative multiple case study may provide information that could contribute to improving business practices by providing strategies for managers of United States-based companies to mitigate losses from a product-harm crisis. Acceptance of proven and new strategies by United States-based agri-food companies may reduce the probability of a product-harm crisis, potentially saving millions of corporate dollars (Leighton, 2016; Roman & Moore, 2012).

Contribution to Business Practice

The ability to preside over a preplanned strategy for handling an agri-food contamination crisis contributes to the effective practice of business by reducing the risk of corporate and consumer losses from a product-harm crisis (Coombs & Halladay, 2013). Reducing corporate economic loss may result from comprehensive strategic planning that includes the proper certification and verification of agricultural products (Lei, Yang, & Wu, 2015).

Implications for Social Change

The potential social consequences resulting from this research are numerous. Implementing a comprehensive strategy to mitigate losses from a product-harm crisis may increase verification that agriculture products are free from harmful contamination

of pathogens, thereby reducing related illnesses as well as providing increased customer satisfaction and brand loyalty (Liu, Xu, Zhu, & Wu, 2015). The elimination of heavy metals and other contaminants in agricultural products could reduce related illness and deaths, as heavy metals are carcinogenic when ingested (Stohs & Ray, 2016). Reducing consumer illness and saving lives may result from comprehensive strategic planning that includes the proper certification and verification of agricultural products (Whelan & Dawar, 2016). In addition, building public trust is a socially significant outcome of assurance that agriculture products are free from contaminants (Tsarenko & Tojib, 2015). Positive social change should occur when the strategies and techniques that protect the public from severe product-harm crises result in a decrease in foodborne illness and death.

A Review of the Professional and Academic Literature

The literature review consists of peer-reviewed articles primarily published between 2013 and 2017 from a variety of database resources. The most frequently used databases included Google Scholar, SAGE Journals, ProQuest Central, and EBSCO Host. Keyword searches to locate articles, books, and journals included *product-harm crisis*, *corporate social responsibility (CSR)*, *sustainability*, and *agriculture contamination* to provide links for the identification of themes. All data selected for this doctoral study are, at a minimum, 85% peer-reviewed and published within 5 years of the anticipated graduation date. The literature review is 98% peer reviewed and 91% within 5 years of the proposed date of graduation of 2017.

The literature review includes 108 references from peer-reviewed articles dated

2013-2017, while 10 (9% of the total references) are older than 2013. There is 2 book references none are older than 2013.The literature review portion older than 5 years includes three authoritative, U.S. government sources for 110 total sources. Table 1 includes the breakdown of the number of references used in the literature for this research study.

Table 1

Literature Review Sources by Year of Publication

Literature type	Older than 5 years	2013	2014	2015	2016	2017	Total %	Total no.
Peer-reviewed articles	10	26	26	26	20	0	98%	108
Non peer-reviewed articles	0	0	0	0	0	0	0	0
Books	0	0	1	1	0	0	2%	2
Other	0	0	0	0	0	0	0%	0
Total	10	26	27	27	20	0	100%	110

Situational Crisis Communication Theory

The SCCT serves as the conceptual framework because it includes concepts for establishing guidelines about crisis communication. Coombs developed the SCCT in 2007 to support effective communication during all phases of a product-harm crisis (Coombs, 2007). Coombs (2007) noted that a product-harm crisis is a sudden and unexpected event that threatens to disrupt an organization's operations and poses both a financial and reputational threat. The SCCT describes an efficient system of management communicating with the public before, during, and after a product-harm crisis to help

mitigate losses (Coombs, 2007). The design and implementation of specific strategies to mitigate an agri-food product-harm crisis depend on in-depth communication between executives and managers to assure multiple strategies are understood and available to implement (Coombs & Halliday, 2013). Failure to promptly implement a product-harm crisis mitigation strategy increases the probability of corporate and consumer loss (Zou & Li, 2016). In sum, product-harm crises can harm stakeholders physically, emotionally, and financially (Coombs, 2007).

Methods of communication continue to evolve, which include multiple approaches and channels to connect customers, employees, and other organizations. This section includes an analysis of different methods of communications recommended by Zhang, Kotkov, Veijalainen, and Semenov (2016). Zhang, Kotkov, Veijalainen, and Semenov's (2016) who researched the use of Facebook as a communication tool for business and explored the impact on brand image and reputation depending on the level of Facebook participation. Zhang et al. (2016) applied SCCT to Facebook as an interactive social media tool to communicate corporate messages to consumers. Zhang et al. (2016) emphasized that Facebook provides options for decision makers to monitor numerous messages online, to better understand stakeholder concerns, and to respond to concerns quickly. Zhang at al. (2016) went on to discuss how they selected seven airlines for a comparative analysis in their social media research, noting that each airline agreed to have their Facebook and Twitter accounts reviewed. The summary analysis of the collected comments demonstrated a single main theme that social media

has direct application to communicate corporate messages and consumer's sentiment (Zhang et al., 2016).

Leighton (2016) emphasized that a failure to communicate during all phases of a product-harm crisis could result in lost revenue, jobs, brand acceptance, and corporate sustainability. Zou and Li (2016) suggested that failing to implement product-harm crises mitigation strategies promptly also increases the probability of corporate and consumer loss. The SCCT uses a direct, holistic approach to the design and implementation of communications to reduce losses using a dedicated direct response based on many dynamic parts acting independently (Johansen, Johansen, & Weckesser, 2016). Von Morgeson, Mitchell, and Liu (2015) suggested that managers using the SCCT approach can more effectively observe events internally and externally. In addition, Von Morgeson et al. (2015) stated that the events could have a direct and indirect impact on behaviors of the members of the organization, as well as stakeholders and consumers.

Agri-food managers should be prepared to communicate regularly to the media, employees, internal management, and consumers about the physical, emotional, and financial aspects of the crisis (Leighton, 2016). The SCCT is an effective multidisciplinary system of communication for all stakeholders throughout the entire product-harm crisis (Coombs, 2007, 2015; Kim, 2016). The SCCT theory aligns with the problem statement of this study that United States-based companies lack strategies to mitigate losses caused by a product-harm crisis because as per Coombs and Halliday (2013) effective communications are critical to mitigating losses from a product-harm crisis.

To support the rationale for improved and in-depth communication after a product-harm crisis, I explored the findings of Utz, Schultz, and Glocka (2013). Utz et al. (2013) stated that avoidable crises are always a threat to the reputation of the business. They continued to emphasize that the primary goal of crisis communication is to restore the reputation of the organization and the trust of customers or other stakeholders after a product-harm crisis. Coombs and Holladay (2013) suggested there are three categories of crisis, which are preventable/intentional, accidental, and victim types of crises. The attribution of responsibility for the crisis determines the level of assessed guilt of the business. Therefore, the highest reputation damage and the highest level crisis reactions consist of activities such as boycotting the organization or negative word-of-mouth content (Utz, Schultz, & Glocka, 2013). Managers using the SCCT should use different strategies to prevent negative crisis effects, depending on the assessed level of crisis responsibility from the consumer (Utz, Schultz, & Glocka, 2013). In the case of a high-crisis responsibility, in which illness and death occur, more accommodative strategies beginning with an apology and including compensation may be appropriate. In the case of lower crisis responsibility, an apology and acceptance of the crisis responsibility might be sufficient to avoid reputation damage (Utz et al., 2013).

I chose the SCCT for this study because of the direct alignment with the problem statement that some corporate managers of United States-based agri-food companies lack strategies to mitigate a product-harm crisis. Managers using the SCCT observe the situation at hand and develop communication plans specifically for the crisis, making the SCCT is the best fit for this study.

Contrasting theories. Additional theories I considered but did not use for the conceptual framework included the general system theory of Ludwig von Bertalanffy (1950), who developed the general systems theory in the late 1920's and the critical theory developed by Max Horkheimer (1982) in the 1930's. Another theory considered but not used was Porters Theory of value chains developed in by Porter in 1985 (Porter, 1985). Von Bertalanffy viewed organizations as open systems consisting of internal and external systems influenced by different environmental factors (1950). Organizations that use a general system theory for guidance may have difficulty linking specific business problems with strategic development. Multiple independent parts that operate dynamically to form a collective whole may be difficult to isolate to determine exactly how such independent parts are affected (Suter, Goldman, Martimianakis, Chatalalsingh, DeMatteo, & Reeves, 2013). As such, this theory is too broad to be applicable for this studies' product harm crisis problem. The Horkheimer critical theory is an assessment tool to critique social and cultural business decisions by applying knowledge from the social sciences and the humanities (Horkheimer, 1982). Porter (1985) developed the value chain theory to analyze the impact of various circumstances on the perceived value of any organization in a value chain.

General system theory. Von Bertalanffy (1972) understood internal systems as structural in nature when compared to external systems being more functional in nature. This dichotomy is not well suited to understand the current state of product-harm crises which may not fall into this viewpoint. According to Duhe (2015), managers utilizing the general systems theory apply a broad scheme, to analyze systems from a

multidisciplinary approach. Consequently, for this reason, a systems perspective may be appropriate for a general crisis yet not appropriate to specific problems. In addition, managers using the general systems theory rely on prescribed patterns and may be unaware of alternative unobserved factors (Duhé, 2015; Johansen et al., 2016). In sum, it follows that managers relying on systems theory may miss critical data necessary to design and develop strategies to reduce losses from a product-harm crisis because the theory does not utilize current personal circumstances.

Adams, Hester, Bradley, Meyers, and Keating (2014) articulated that the current definition of systems theory lacks in universal acceptance, which is another detriment in incorporating this theory for a study on product harm crisis. Systems practitioners and theoreticians also view the current construct supporting the definition of general systems theory as a set of axioms by which a system must operate (Adams et al., 2014). Given that systems theory has a multidisciplinary theoretical foundation, the current use of the theory is more applicable to a general approach to understanding system behavior and not suited for complex systems in the modern business environment (Adams et al., 2014).

Anderson (2016) provided an understanding of how the general systems theory functions in today's business environment and stated that general systems theory includes the concept that systems do not function in isolation, but rather as a whole with direct interactions and relationship between various components within the system. Anderson went on to say when errors occur in a system an individual should not focus on individual failures, but rather consider how related components within the entire system could have influenced the failure. Consequently, without the ability to explore individual failures

within an agri-food product-harm crisis, there is no ability to determine the origin of a foodborne illness, which is necessary to answer the central research question of this study.

According to Adams, Hester, Bradley, Meyers, and Keating (2014) systems theory is lacking a universally agreed to definition. Given its multidisciplinary theoretical foundation and discipline-agnostic framework, systems theory is posited as a general approach to understanding system behavior, lacking the sophistication necessary to serve as a theory to serve as a theory for many complicated business systems (Adams et al., 2014).

Some researchers use the general systems theory as a model for studying the organizational theory of business, assessing individual and group dynamics, as well as relations between management and employees (Suter, Goldman, Martimianakis, Chatalalsinge, Dematteo, & Reeves (2013). The study of organizational theory using a general systems theory model may provide insight into some aspects of the research question, but it lacks additional methods to explore strategies that mitigate product-harm crises adequately. The concepts of systems theory are too general to determine what strategies some United States-based managers of agri-food companies use to mitigate a product-harm crisis. Adams et al. (2014), Anderson (2016), Suter et al. (2013), and Valintinov (2014) all concur regarding the limitations of the general systems theory. Therefore, I did not include the general systems theory as a a possible conceptual framework for this study.

Critical theory. Developed by Max Horkheimer (1982) helped early researchers explain and predict some phenomena observed by researchers. After conducting an analysis of the critical theory, I concluded that the theory has limited use as a conceptual framework for this study. Researchers use critical theory to explore existing knowledge using critical perspectives concerned with empowering human beings to transcend the constraints placed on them by race, class, and gender while focusing on corporate sustainability (Cornelissen, 2014). The concept of empowering humans to transcend constraints appeared to link directly to empowering agri-food managers to overcome their current accepted strategies to mitigate product-harm crises and explore new and different strategies. However, race, class, or gender does not constrain empowering U.S. agri-food managers.

According to Cornelissen (2014) the constraints on managers to develop strategies to mitigate crises occurs because of several reasons, but mainly due to a lack of finances to pay for educational seminars and courses to better understand available strategies. West (2013) viewed critical theory as a normative theory that can be used to bring about change in conditions that affect people's lives in society. West (2013) also noted that critical theory offers an understanding of present social conditions. Practitioners often use critical theory to support the transformation of present society norms to provide more jobs and assist an organization's sustainability (West, 2013). Consequently, I concluded that this theory was not appropriate to be the conceptual framework of this study. Corporate sustainability is relevant to the research topic for this study, but I could not use

the critical theory due to its' narrow scope to explore the central research and assist in the analysis of strategies to mitigate product-harm crises.

Porter's theory of value chains. In addition to the above-referenced theories, I explored the Porter (1985) theory of value chains introduced by Porter in 1985. According to Leighton (2016), the value chain theory has some elements applicable to my research study because a product-harm crisis can occur at any point along the value chain causing significant loss of value to the brand and company involved in a crisis. Failure to promptly implement a product-harm crisis mitigation strategy increases the probability of corporate and consumer financial loss, which will affect the value chain (Zou & Li, 2016). Failure to implement a strategy promptly to mitigate a product-harm crisis is a critical element necessary to answer the central research question of this study.

Porter's theory of value chain addresses some elements that could potentially be useful in exploring what strategies some United States-based agri-food managers use to mitigate product-harm crises, but the theory is limited in methods necessary to analyze the problem when a product-harm crisis occurs and to communicate before, during, and after a product-harm crisis. Therefore, the Porter (1985) theory of value chain does not fit the needs of this study because the theory does not provide methods to determine the origin of a crisis or how to mitigate the crisis. The SCCT is the most suitable conceptual theory to assist in analyzing the problems caused by a product-harm crisis and the possible strategies to mitigate the crisis. According to Coombs and Halliday (2013), extensive communication between managers, employees, stakeholders, and consumers is

critical for the sustainability of a brand and company experiencing a product-harm crisis. Consequently, the SCCT is best suited for the conceptual framework for this study.

Effects of Agri-food Product-Harm Crises

A product-harm crisis is a sudden and unexpected event that threatens to disrupt an organization's operations and poses both a financial and reputational threat (Coombs, 2007). Consequently, this research focuses on strategies some agri-food managers use to mitigate losses from product-harm crises. Establishing a set of mitigating strategies from the literature review and interviews with agri-food managers may allow executives to implement strategies to reduce the losses associated with product-harm crises. It is important for agri-food managers to know a product-harm crisis occurs when consumers react to negative health impacts resulting from the use of a contaminated or defective product (Leighton, 2016; Roman & Moore, 2012; Song, Sheinin, & Yoon, 2016).

The purpose of this study is to explore strategies that some managers of United States-based agri-food companies use to mitigate product-harm crises. Managers in the food industry hope a product-harm crisis will not occur, yet data indicate this is not a matter of whether a product-harm crisis will occur, but rather when (Yeung & Ramasamy, 2012). Failure to implement a product-harm crisis mitigation strategy promptly increases the probability of corporate and consumer loss (Zou & Li, 2016). Rather than having a fatalistic approach about a product-harm occurring, crisis managers should try to determine *the risk of a product-harm crisis occurring rather than accepting one will occur* (Zavyalova et al., 2016). Educating agri-food managers about the likelihood of a product-harm crisis may be a mitigating strategy to reduce losses from a

product-harm crisis.

Agri-food Contamination

Researchers who understand the origin of a product harm crisis are better prepared to develop strategies to mitigate an agri-food product-harm crisis (Kher at al., 2013). Agri-food contamination occurs when a chemical or a foreign microbiological substance enters an agricultural product thus interfering with the product's original composition (Kher et al., 2013). Reducing the number of agri-food product-harm crisis is vital to corporate sustainability (Kher et al., 2013). Managers who are aware that ingestion of contaminated agricultural products may cause illness or death are poised to develop and implement strategies to mitigate losses from a crisis (Kher et al., 2013; Magdoff, 2015; Stallones & Beseler, 2016).

Research data indicates more than 80,000-suspected carcinogenic chemicals exist that cause illness or death that could contaminate agriculture products (Magdoff, 2015). The difficulty with a product-harm crisis resulting from chemical ingestion is that the source of the contaminant may be untraceable because of the inability to track the origin, Moreover, Illness and death may occur as a result of continued ingestion of the chemicals in pesticides and heavy metals left on or in agricultural products because of improper use of the chemicals and improper cleansing of the food products, both of which are avoidable.

Although fresh food is available in grocery stores throughout the United States, microbial contamination entering the food chain continues to increase because foods and bacteria link together at some point along the supply chain (Jacob, 2015). Moreover, in

support of the growing U.S. bacteria food link, Jacob provided evidence identifying E. coli O157: H7 in bags of baby spinach and cookie dough. In addition, botulism appeared in pasteurized carrot juice, and salmonella found in (a) peanut butter, (b) ground pepper, (c) Turkish pine nuts, and (d) pistachios (Jacob, 2015). Jacob's discussion of food contamination demonstrated the growing prevalence of food contaminants such as (a) hepatitis A virus in pomegranate seeds, (b) cyclosporin in bagged salad mix, and (c) Listeria monocytogenes in ice cream; all difficult to trace to the origin of contamination. Consumers should be aware a pathogen initiated product-harm crisis may result in greater numbers of people becoming ill or even dying than a chemical caused product-harm crisis because chemical illness affects individuals consuming the product whereas a pathogen-induced contamination can spread to others (Jacob, 2015; Lu et al., 2015; Soliman, 2016).

Public awareness of specific food crisis events could assist agri-food managers to develop strategies to mitigate future crises (Ashenef, 2014). Simple food products can become the source of a crisis as indicated by the citizens of the United States and the United Kingdom. The people of both countries consume more than 50 billion cups of tea per year yet few maintain awareness of the potential contamination in tea leaves (Ashenef; Barone, Giacominelli-Stuffler, & Storelli, 2016; Soliman, 2016). Tea bushes accumulate trace metals such as (a) cadmium (Cd), lead (Pb), manganese (Mn), and aluminum (Al), all linked to several diseases, including Parkinson's and other autoimmune diseases (Ashenef, 2014). In addition, since 2006 tea production from several countries continues to demonstrate increasing levels of heavy metals (Stohs &

Ray, 2016). Heavy metals pose severe health risks because of their toxicity, non-biodegradability, and the ubiquity of sources of contamination (Ashenef, 2014). The contamination of tea with heavy metals is a public health concern that requires strategic plans to reduce illnesses, deaths, and business economic impact (Soliman, 2016; Stohs & Ray, 2016).

Consumers often are unaware of contaminants in their food supply (del Olmo, Calzada, & Nuñez, 2015). In addition, del Olmo et al. discussed the preservative benzoic acid in ready to drink (RTD) tea continues in use, despite its potentially harmful effects. Benzoic acid, a combination of sodium, potassium, and calcium, is an inexpensive preservative, but also a known human carcinogen that can cause serious health issues (Stohs & Ray, 2016). As an example, mixing sodium, found in table salt, and benzoic acid forms sodium benzoate, proven to cause DNA damage in humans that could result in neurodegenerative diseases (Ashenef, 2016; Stohs & Ray, 2016).

Increased consumer awareness and concern about the threat to public health from trace metals in tea could allow consumers to pressure governments and organizations to make corrective decisions based on social responsibility and consumer well-being rather than financial decisions using risk assessment (Kher et al., 2013; Kuchler, 2016). Corporate risk managers often use economic models, instead of socially responsible methods, to determine the risk and possible solution of a severe product-harm (Olsen, 2014). Instead of financial models, agri-food managers should consider using various forms of media as a method to reduce organizational financial risk by demonstrating (a) expressions of sincere concern for the public well-being, (b) counseling, (c) immediate

medical assistance, and (d) financial compensation (Nkansah, Opoku, & Ackumey, 2016; Olsen; 2014; Olsen & Borit, 2013).

Supply chain contamination. Food supply chains continue to grow in importance as discussed by Garbuglia et al. (2013), who provided evidence of unreported contamination in agri-food supply chains, implying that food supply chains, when left unchecked may harbor deadly pathogens. Dangerous pathogens can be passed along the food supply in several manners causing illness and death, yet insufficient systems are in place to protect against subsequent foodborne illness outbreaks (Collier et al., 2014). As an example, Garbuglia et al. (2013) discovered that hepatitis occurred in the pork production supply chain in the United Kingdom. Moreover, pig livers sold in retail locations in Japan, the United States and the Netherlands, exhibited various rates of hepatitis E virus (HEV). Protection of businesses involved with the food supply chain is essential because the potential for contamination at any point along the supply chain is a threat to consumers and company sustainability when a product-harm crisis occurs (Collier et al., 2014; Garbuglia et al., 2013; Jacob, 2015).

The time required to trace and track a contaminant is critical to saving lives and reducing organizational financial losses (Chaturvedi, Sharma, & Chaturvedi, 2013). Time sensitive tracing and tracking is a potential strategy to defend against time lag in finding the source of the contaminant (Jacob, 2015). Governmental and organizational leaders who understand the potential for widespread food contamination should collaborate on developing solutions (Collier et al.; Zavyalova et al., 2016). Managers who know the geographic location of a product-harm crisis, as well as the time required to trace past

crises, can use the information to develop strategies to reduce origin traceability time and subsequent losses (Chaturvedi et al., 2013; Collier et al., 2014; Zavyalova et al., 2016).

Many researchers have investigated product-harm crises in various countries with the intent to mitigate or avoid the same crisis in the United States (Samaraweera, Li, & Qing, 2014). Choi et al. (2014) stated that investigators found salmonella in Korean chicken breeder farms. The investigation by the researchers discovered the highest prevalence of salmonella was in broiler transportation trucks by testing 195 samples of retail chicken meat that identified 180 contained salmonella (Choi et al., 2014). Agri-food managers who understand the physical pain and suffering caused by salmonella infection should be motivated to explore strategies to reduce or eliminate the problem (Choi et al., 2014; Collier et al., 2014; Kher et. al., 2013; Kuchler, 2016),

There are several studies concerning product-harm crises, and subsequent recalls of the products focused on food safety for the consumer because of the abundance of well-publicized food recalls (Pozo & Schroeder, 2013). The number of contaminated agri-food and other non-agricultural products recalled from the marketplace increased markedly between 2002 and 2012, resulting in classifying the current state of recall as the new normal era (Magno, 2012). Many food companies attribute the increase in food recalls to improper verification of quality assurance and quality control (Yeung & Ramasamy, 2012). In 1997, Hudson Foods recalled 25 million pounds of ground beef after contaminated beef caused several illnesses, predominantly with Burger King customers (Pozo & Schroeder, 2013). From 2007 to 2012, there were a reported 1,165 meat and poultry recalls in the United States. Each of the recalls created a substantial

financial loss for producers, processors, packagers, distributors, and retailers (Pozo & Schroeder, 2013).

Contamination cost and risk. Determining the risks and costs associated with an agri-food product-harm crisis may provide a scope and magnitude of the need for strategic planning to reduce the losses from product-harm crises (Magno, 2015). The WHO (2015) estimates that the annual cost of product-harm crises in the United States for (a) medical treatment, (b) lost productivity, and (c) illness-related mortality is $55.5 billion based on an estimated 48 million Americans sickened by foodborne illness in 2010. Foodborne diseases can cause morbidity (the loss of health and well-being) and mortality (death), both of which create the risk of impeding global socioeconomic development (Pozo & Schroeder, 2013). Foodborne diarrheal disease caused 230,000 deaths worldwide in 2015 (WHO, 2015). In addition, a total of 31 global foodborne disease hazards caused 600 million foodborne illnesses and 420,000 deaths globally in 2010 (WHO, 2015). It is essential for leaders in the agri-food industry understand the problems associated with product harm crises to develop mitigating strategies to reduce or eliminate agri-food product-harm crises (Kohn & Jainzik, 2014; Magdoff, 2015; Pozo & Schroeder, 2013).

Kohn and Jainzik (2014) suggested that increasing global demand for agricultural products could increase the United States' need for additional food security. Adding to the problem, Kohn and Jainzik suggested that agri-food growers in developing countries have food loss attributable to contamination that can reach as much as 70% of production, 500 million tons a year per country. Moreover, because of the measurable

food loss, Kohn and Jainzik noted there could be a significant impact on U.S. food prices and security because of the reduced quantities available for consumption and the seller's desire to reach the market quickly because of fluctuating food prices. With production declining and product-harm crises increasing, the opportunity for global food shortages is increasing (Kohn & Jainzik, 2014). As the world's population continues to increase the demand for food products also increases and the probability of an agri-food product-harm crisis rises (Kohn & Jainzik; Meyer, 2014; Pozo & Schroeder, 2013).

Typically a product-harm crisis occurring in 2009 would have no relevance in 2016. However, the executives of the Peanut Company of America (PCA) were criminally prosecuted and sent to prison in 2016 for failing to provide necessary strategies to protect the consumers from a product-harm crisis that occurred in 2009 (Leighton, 2016). In 2009, a product-harm crisis occurred when the managers of PCA broke the public trust by allowing salmonella-contaminated peanuts to enter the food chain causing many illnesses among children and adults (Leighton, 2016; Roman & Moore, 2012). The financial result of this product-harm crisis was the costliest food recall in history estimated at more than $1 billion to companies and the U.S. government (Leighton, 2016; Pozo & Schroeder, 2013; Roman & Moore, 2012).

Continuing the discussion about the relevance of the PCA product-harm crisis, it is important to note that the FDA led the legal proceedings against the executives of PCA from the 2009 crisis until convictions of some executives in 2016. The associated costs to the organization and the government are still the costliest recall in American history (Leighton, 2016). The FDA-led legal investigation established a direct link between the

managers of the PCA and the nine deaths and over 700 illnesses caused by the salmonella contamination. As a result of the prosecution, several PCA executives received prison sentences for criminal negligence because of the lack of proper certifications and controls to test for contaminants before the crisis event (Leighton, 2016). Adding context, Leighton provided information showing the total peanut butter product recall involved more than 4,000 products from various companies in the United States. Many angry and damaged consumers blamed the Federal Drug Administration (FDA) and the U.S. Department of Agriculture, as well as the organizations selling the contaminated product because the consumers believed PCA lacked strategies to mitigate product-harm crises and did not receive proper inspections for product safety by various government agencies (Leighton, 2016). As a result of the expense of settling the PCA crisis, government and commercial agencies are investigating methods to enhance tracing the origin of foodborne illnesses. The organizations hope to reduce corporate and government financial loss as well as saving lives and jobs (Leighton, 2016; Pozo & Schroeder, 2013; Roman & Moore, 2012).

Guilt by association for organizations whose products are in the same category as one involved in a product-harm crisis is the discussion of the following information. Cleeren, van Heerde, and Dekimpe (2013) suggested that a severe product-harm crisis can cause significant revenue and market share loss, costly recall expense, and possible destruction of the brand and perhaps the company. Moreover, many of the effects of a crisis could spill over to other competitors in the same category. Guilt by association can be as severe a problem for businesses in the same category as the company experiencing

the product-harm crisis (Cleeren et al., 2013; Leighton, 2016; Zavyalova et al., 2016).

Increased need for better U.S. food safety regulations arose from increased foodborne illness outbreaks commencing in 2011 that damaged the consuming public's trust in the U.S. food supply (Bosona & Gebresenbet, 2013; Nakuja et al., 2015). The Bosona and Gebresenbet (2013) data from 2011 indicated that approximately 16.7% of the population in America (47.8 million people) suffered a food related illness. Bosona and Gebresenbet (2013) concluded that agri-food product-harm crises could cause widespread economic and marketing problems for the United States and international communities if left without new innovative strategies to mitigate the losses.

The Bosona and Gebresenbet data from 2011 indicated that approximately 16.7% of the population in America (47.8 million people) suffered a food related illness some of which were caused by imported food products. Bosona and Gebresenbet concluded that product-harm crises caused significant problems for international economics and marketing of international and domestic agri-food products. Many developing countries sustain their economies through global food shipments to the United States and are linked to foodborne illness which, resulted in the loss of revenue and severe financial hardship for the exporting country (Bosona & Gebresenbet, 2013; Cleeren et al., 2013; Nakuja et al., 2015). Agri-food managers who understand that many exporting countries depend on agri-food shipments to the U.S. for their economic survival and the link between those food shipments and foodborne illness is a serious problem for consumers implying those managers with the knowledge should be better prepared to develop strategies to mitigate the problem.

This sub-section continues with information about implied strategies to mitigate spillover risks by managing communications before, during, and after an agri-food product-harm crisis. Zavyalova, Pfarrer, Reger, and Hubbard (2016) discussed managing the corporate message, the effects of the firm's actions, and industry spillovers from adverse media coverage following a product-harm crisis. According to Zavyalova et al., spillover risks can affect the brands of companies in the same product category that are not directly involved in the product-harm crisis. Executives who understand that media exaggeration of a product-harm crisis may occur which increases adverse consumer responses to other brands in the same category may assist researchers in developing strategies to mitigate media exaggeration. Two important aspects of a product-harm crisis are the amount of adverse publicity surrounding the crisis event, and any knowledge the company had about the potential crisis before the actual occurrence of the crisis (Cleeren at al., 2013; Soon & Baines, 2013). Managers of agri-food organizations should develop mitigating strategies to reduce consumer and business losses for the organization responsible for a product-harm crisis as well as to protect organizations involved as vendors not directly responsible for the crisis (Cleeren et al., 2013; Soon & Baines, 2013).

Statistics demonstrate that the probability of an event occurring increases as the number of independent variables increases (Green & Salkind, 2010). The following section provides information about the number of countries exporting agri-food products to the United States. Nakuja et al. (2015) stated that the United States imports food products from more than 150 countries. Although the Food Safety Modernization Act of 2011 provided stronger regulations and gave the FDA more power to protect U.S.

consumers from foodborne illnesses, the FDA has limited resources to inspect the imports from 150 countries (Soon & Baines, 2013). Agri-food managers should be aware that more than 150 countries export food products to the United States and that the risk of a product-harm crisis increase as the number of countries increases (Nakuja et al., 2015; Zavyalova et al., 2016). Agri-food managers who understand it is not a matter of *whether* a product-harm crisis will occur, but rather *when one occurs*, better prepares managers to develop strategies to protect consumers from a product-harm crisis (Nakuja et al., 2015).

Product-Harm Liability and Risk

Product-harm liability has a broad range of outcomes with the harshest result the death of one or more people and subsequent corporate struggle to maintain sustainability (Leighton, 2016). According to Hartmann and Moeller (2014), liability for a product-harm crisis becomes a legal issue when a defective product causes illness or death. Also, consumers voicing their negative attributions about a company involved in a product-harm crisis can play a major role in the outcome of a product-harm crisis especially when consumers hold numerous firms responsible for the crisis (Gonzalez-Padron, 2016; Hartmann & Moeller, 2014). Consequently, because of multiple consumer groups voicing their negative firm attributes, some partners in the food supply chain may be assigned more liability than others (Hartmann & Moeller, 2014). Moreover, Hartman and Moeller suggested that food supply chain liability increases when a crisis results from supplier behavior caused by executive decision makers rather than individual employee errors. Importantly, the responsibility attributes of a product-harm crisis do not vary with the distance from the supplier, company size, or the strategic importance of the supplied

product (Gonzalez-Padron, 2016; Hartmann & Moeller, 2014). Supply chain liability risk often disproportionately extends to local firms in a supply chain because of the consumers' threat of a boycott and their belief in higher responsibility attributes for local suppliers (Fahimnia, Tang, Davarzani, & Sarkis, 2015; Gonzalez-Padron, 2016).

Considering that company size is not a limitation for a product-harm crisis and local firms involved in crisis may carry disproportionate liability from a crisis, the implication is that agri-food managers could develop strategies to mitigate the liability for local firms. Risk reduction strategies before, during, and after a product-harm crisis to reduce liabilities from a product-harm are essential strategies agri-food managers should consider (Hartmann & Moeller, 2014). Understanding the excessive risk of some supply chain partners being more at risk than others, is essential for agri-food managers to develop strategies to reduce total risk and disproportionate risk (Fahimnia et al., 2015; Gonzalez-Padron, 2016; Hartmann & Moeller, 2014).

Spillover liability risk. Agri-food managers of companies in the same category as one undergoing a product-harm crisis face similar liability risk as those directly involved in the crisis. Therefore, managers knowledgeable of the spillover risk to other companies in the same category as one undergoing a product-harm crisis can diagnose risk as a strategy to mitigate losses from a product-harm crisis to protect company sustainability (Roman & Moore, 2012). Liability from an agri-food product-harm crisis is typically a legal issue for supply chains because of spillover (Rouvière & Latouche, 2014). Risk analysis is a process of assessing the types of risks associated with a product or service allowing managers an understanding of what effect might result from a crisis

(Olsen, 2014). Identification of the risk related to a product-harm crisis allows agri-food managers to design and implement strategies to mitigate losses (Kaushik, Kamboj, & Kakkar, 2013; Olsen, 2014).

Identification of probable spillover risks gives risk managers the ability to determine where to deploy capital for protection against the identified risk (Olsen, 2014). In addition, Olsen (2014) noted that iterative spillover risk determines the number of challenging situations inherent in an event crisis. Moreover, Olsen, (2014) also stated that iterative spillover risks are complicated and therefore the strategic solution may not be as obvious as the risk to the primary organization responsible for the product-harm crisis. Although assessing risk is, a forward exploration of possible events, the perception of spillover risks can include fear of loss of (a) money, (b) reputation, and (c) image. Additionally, some spillover risk assessment may have an association with (a) cultural beliefs, (b) expected results that did not materialize, or (c) risk of an unknown looming crisis (Olsen, 2014; Rouvière & Latouche, 2014). Companies operating in the same product category as one undergoing a product-harm crisis could experience loss of (a) revenue, (b) brand attributes, (c) jobs, and (d) sustainability (Kaushik, Kamboj, & Kakkar, 2013; Olsen, 2014; Rouvière & Latouche, 2014).

Explicit and Implied Mitigating Strategies

The following information focuses on explicit and implicit strategies to mitigate agri-food crises. Current literature provides implicit information about mitigating strategies to reduce the losses from a product-harm crisis and few explicit strategies (Leighton, 2016). An exhaustive search of the literature found few exact strategies to

mitigate an agri-food product-harm crisis implying that either agri-food managers do not use many explicit strategies or, explicit strategies are not discussed publicly because of unknown reasons.

Third party certification (TPC). The most critical concern about imported and domestic agri-food safety is a certification that the products meet or exceeds United States government standards for quality (Glasbergen, 2013). According to Glasbergen, (2013) global private certifying partnerships are the standard-setting entities for agri-food certification since the switch from government certification causing a shift of governance style from relational to power-focused certifications. Additionally, global partnerships between agri-food companies and non-government organizations are the influential designers of agri-food standards (Soon & Baines, 2013). Understanding the shift in TPC quality assurance standards from the government to private firms provides managers a better understanding of consumer perception of third party certifications as substandard, which could result in the development of strategies to improve TPCs, thereby reducing product-harm crises and business losses (Lockie, Travero, & Tennent, 2015).

Consumers worldwide depend on various food certifications to provide knowledge and comfort that the food consumed is free of contaminants (Mol & Osterveer, 2015). Moreover, consumers rely on third-party certification organizations to track the origin of their products, as one of the exacting criteria for quality assurance and quality control, but the certifications frequently lack verification of the claims made (Cole & Brown, 2014). Certification of the U.S. food supply is a national public concern because of the inability to trace products to their origin (Amekawa, 2013; Mol &

Oesterveer, 2015).

Researchers linked failed TPCs to numerous product-harm crises, yet third-party certifications are necessary and valuable for agri-food exporters because the countries importing food require certifications to prove the food meets the standards of their country (Powell, Erdozain, Dodd, Costa, Morley, & Chapman (2013). The use of third-party certifications is not a guarantee to consumers that the imported products exhibit high-quality control (Powell et al., 2013). Several agri-food goods imported into the United States were involved in a product-harm crisis after receiving international certification of quality assurance from a third-party certifying agency (Powell et al., 2013). The ability to trace the origin of a product-harm crisis quickly reduces the chance of additional illness or death and increases consumer trust in the brand and organization (Olsen & Borit, 2013; Powell et al.; Spadoni, Lombardi, Canavari, & Hingley, 2013).

As additional discussion, many TPC organizations have a conflict of interest between their business practice and profitability (Zhang et al., 2015). Some suppliers of agri-food products have little interest in providing the highest standards of inspection because a profit motive for the supplier and the producer to employ a low standard of certification at a lower cost exists (Zhang et al., 2015). A lower standard certification at a lower cost to the producer harms the consumer but creates greater margins for the retailer. Concerned consumers and government agencies should explore possible strategies to mitigate future incidents of lowering TPC standards to pass U.S. inspection guidelines (Vellema & van Wijk, 2015). There is little evidence to support the correlation between audit scores and foodborne illness outbreaks, but there is a long history of safety

failures involving third-party certification audits (Powell, Erdozain, Dodd, Costa, Morley, & Chapman, 2013; Vellema & van Wijk, 2015).

Agri-food managers who understand the link between private TPC executives lowering the standards of a TPC audit by accepting payment from the producer in exchange for increased company revenue is helpful for the development of new strategies to reduce the dependence on TPC organizations (Powell et al., 2013). To decrease the number of TPC companies that provide passing inspections for fees, agri-food managers should demand stronger sanctions against culpable TPCs (Olsen & Borit, 2013; Powell et al.; Spadoni, Lombardi, Canavari, & Hingley, 2013). Further information suggests the lack of adequate supervision of the TPC organizations is a concern for retail merchants selling foreign products in the United States, yet they have little say about how to remedy the problem without government intervention (Vellema & van Wijk, 2015).

Additionally, Powell et al. (2013) noted that third-party agri-food certifications included a higher likelihood to contain contaminants that could cause foodborne illnesses and death than government certifications thereby implying that agri-food managers could develop strategies to protect consumers and their companies from failed third-party certifications. Most TPC organizations do not assume culpability for a product-harm crisis because they do not have a stake in the outcome of the product (Powell et al., 2013). Interestingly, third-party certification companies typically avoid culpability for a product-harm crisis even when the evidence of liability tracks directly back to the TPC (Bai, Zhang & Jiang, 2013; Cole & Brown, 2014; Powell et al., 2013; Zhang et al., 2015). Moreover, many foodborne illnesses occurred after food products passed third-party

certification audits (Powell et al., 2013).

The quantity of food imported from China continues to increase annually because of U.S. consumer demand for fresh food, which should require stronger safety standards (Bai et al., 2013). There are three categories of food safety in China described as (a) government, (b) food producers, and (c) third-party regulatory bodies (Bai et al., 2013). The current form of Chinese third-party food certifications entering the United States accounted for more than 6,000 post certification product-harm crises, causing 1,000 hospitalizations and 6 infant deaths in 2012 (Bai et al., 2013). Collaboration among agri-food managers and federal and state organizations to develop joint strategies to standardize agri-food certification could lead to increased food safety which should result in a reduction of product-harm crises (Bai et al., 2013; Mol & Osterveer, 2015; Powell et al., 2013).

Traceability: A problem and solution. Accurate and rapid agri-food tracing and tracking systems provide consumer confidence that their food supply is not contaminated, yet the United States government lacks strategic plans to provide adequate systems to reduce product-harm crisis (Villas-Boris, 2016). Furthermore, product traceability allows managers to determine the location of contamination, whereas tracking is the means of determining the status of an agri-food product during the transfer along the food supply chain (Villas-Boris, 2016). Both traceability and tracking are essential to a food recall to ascertain the origin of a contamination quickly, thereby reducing the loss of lives and illness and mitigating the economic impact to the business (Jin & Zhou, 2014). Food safety in China, and for the U.S. consumer buying Chinese food products, remains a

significant concern socially, economically, and politically because of a series of Chinese food-safety scandals, which lacked timely traceability (Bai et al., 2013).

The Chinese food regulatory agencies do not have a clear understanding of food traceability, certification, and tracking, yet China is a major exporter of agri-food to the United States (Bai et al., 2013). According to Bai et al. (2013), Jin and Zhou (2014), and Villas-Boris (2016), U.S. consumers' concerns about the lack of quality assurance for food products exported from China to the United States adversely affects consumers' willingness-to-buy Chinese goods. Thus, better tracing and tracking of food products entering the United States from China are of concern to American consumers and strategic plans, which would improve traceability and tracking traceability, could reduce the likelihood of a product-harm crisis (Chen & Huang, 2013).

Additional discussion about traceability provided by Dabbene, Gay, and Tortia (2014) described various food traceability tools and other information necessary for food safety and quality. Dabbene et al. (2014) stated the more information available to agri-food managers about product-harm crises the more likely the managers are to develop strategies to reduce foodborne illness. U.S. managers who create new strategies to verify and standardize third-party agri-food traceability systems could improve food safety for American consumers and save corporations from adverse financial circumstance (Chen & Huang, 2013; Dabbene et al., 2014; Nakuja et al., 2015).

Although global food supply chains remain necessary to convey food products for the United States, they also pose the risk of contamination at various points along the chain (Bosona & Gebresenbet, 2013). Contemporary food supply chains should provide

sufficient information for consumers and concerned agencies to thoroughly identify food attributes such as country of origin, genetic engineering, and a listing of pesticides (Bosona & Gebresenbet, 2013). Agri-food supply-chain managers should focus on the integration of food traceability logistics and the continuity of information flow to consumers and stakeholders as a strategy to improve consumer confidence in the food supply (Bosona & Grebesenbet, 2013, Dabbene et al., 2014). In addition, agri-food managers should allow informed U.S. consumers an opportunity to participate in developing a collaborative food tracking and traceability systems to also add to consumer confidence in the U.S. food supply (Bosona & Grebesenbet, 2013; Dabbene et al., 2014).

A discussion of the variables contributing to the need for improved traceability of agri-food products follows. Rapid traceability of agri-food products could provide increased consumer confidence in the food supply chain, which could further support the growing demand for customized agri-food products (Tsolakis et al., 2014). Consequently, the need for designing and developing efficient agri-food traceability has received increased attention from supply chain organizations (Bosona & Grebesenbet, 2013). Expanding population and demographics are driving increased consumer demand for customized food products along with the rapidly expanding demand for more food, which increases consumer demand for additional food traceability (Chen & Huang, 2013; Kim & Woo, 2016; Tsolakis et al., 2014).

The following discussion provides information about global population growth and the link to the increase U.S. in product-harm crises. The world's population exceeds more than seven billion people and most would benefit from a reliable, standardized agri-

food traceability system that provides protection from chemical and microbiological contamination (Naughton, Nepusz, & Petróczi, 2015). Consumer demand for more fresh food and the need for additional traceability of the food imported into the United States are reasons for agri-food managers to evaluate and design innovative traceability systems (Menozzi, Halawany-Darson, Mora, & Giraud, 2015; Naughton et al., 2015). The increase in demand for food, and additional countries exporting food to the United States could significantly increase the number of product-harm crises in the United States (Naughton et al., 2015; Tsolakis et al., 2014).

International traceability systems. This section provides a framework to assist agri-food managers to develop effective tracing and tracking systems. A rapid response traceability system reduces (a) the time to find the origin of a contamination, (b) the number foodborne illness incidents, and (c) the scope of losses to consumers and stakeholders (Villas-Boris, 2016). Consequently, managers, industry partners, and informed consumer groups should work together to develop faster traceability and tracking systems (Chen, Zhang, & Delaurentis, 2014). The global demand for food is expected to increase 50% by the year 2030. Moreover, the growing demand could affect the quality and quantity of food supplied to the United States simultaneously increasing the need for strategies for better traceability (Chen et al., 2014; Dai et al., 2015; Naughton et al., 2013; Vilas-Boris, 2016).

Consumer willingness to pay (WTP). Corporate managers charged with the duty to provide profitability to their stakeholders must have all available information about their consumers (Laconto, 2012). Consumer willingness-to-pay (WTP) for enhanced food

security is useful information for agri-food managers to use as a core basis for developing strategies that could increase profitability by increasing the cost of foods that have verifiable enhanced safety (Freedman, Kearney & Lederman, 2012). Bai et al. (2013) investigated dairy products in China, after a product-harm crisis, to determine if increased and regulated traceability, monitoring, and certification would increase consumer WTP for increased food safety. Bai et al. stated that the three entities that certify the traceability of milk in China are the government, an industrial association, and a third-party organization. Bai et al. concluded that Chinese consumers have a WTP for increased food safety verified by the government, which should also apply to U.S. consumers.

Cacciolatti, Garcia, and Kalantzakis, (2015) provided additional discussion about consumers WTP for enhanced food safety by suggesting that consumer preference and WTP for food produced in Taiwan must include the country of origin labeling (COOL). According to Cacciolatti et al. (2015), COOL is also a necessary component of identification of food items entering the United States from foreign countries. Moreover, similar findings indicated that products produced in Taiwan had a premium price range of 58.1% to 98.13% over the same products made in other countries (Cacciolatti et al., 2015). U.S. consumers WTP for increased food safety ranked as a choice order depending on whether the certifying entity was (a) government, (b) internal corporate, or (c) a third-party certification organization suggesting that government involvement in food safety is acceptable in the U.S. (Dai et al., 2015).

Consumers are hesitant to pay for increased food safety for products certified by

third parties because the certifiers may not provide the same type and quality of food inspections as performed in the United States (Cacciolatti et al., 2015). U.S. agri-food managers should develop strategies to increase certification standards and include COOL to provide greater consumer confidence in the food supply (Dai et al., 2015). The result of such actions should decrease the time to determine the origin of a food contamination which could reduce the number of illness and deaths as well as reduce the adverse economic impact to businesses (Bai et. al., 2013; Cacciolatti et al., 2015; Dai et al., 2015).

Brand attributes. The following portions of the literature review include information about the attributes associated with a brand before and after a product-harm crisis and lessons that may apply to assist agri-food managers in developing strategies for reducing the loss of brand value, consumer confidence, and company sustainability. Cleeren, van Heerde, and Dekimpe (2013) indicated that branding a product provides consumers perceived quality assurance. In addition, Also, consumer brand attitudes may become cynical after a product-harm crisis bringing about prolonged corporate losses because of severe dissatisfaction with the brand (Cleeren et al., 2013).This information aligns with this research topic because awareness that loss of brand equity can occur because of a product-harm crisis provides agri-food managers the opportunity to develop strategies to mitigate brand equity losses.

Awareness of consumer brand attributes after a product-harm crisis are critical to creating strategies to mitigate adverse attributions (Sweetin, Knowles, Summey, & McQueen, 2013). Attributes are a set of linked, ethical, differentiated promises between

the consumer and the product such that the consumer response to a brand after a product-harm crisis establishes the relationship between corporate social irresponsibility and the desire to punish the brand (Sweetin et al., 2013). Consequently, consumers remained willing to punish a brand under the conditions of social irresponsibility and environmentally unfavorable circumstances (Sweetin et al., 2013). Therefore a practical need exists for corporate brand strategists to recognize consumers' brand attributes *before* and *after* a product-harm crisis and their willingness to punish the brand and the organization (Cleeren et al., 2013; Grappi, Romani, & Bagozzi, 2013; Sweetin et al., 2013).

Continuing the discussion about consumer brand attributes Pozo and Schroeder (2013) indicated that product sales of brands affected by a product recall decreased by 22-23% after a crisis continuing for months, sometimes years, and in some cases destroying the brand and the company responsible for the contamination. Product recalls are difficult to endure, but they also present excellent opportunities to learn because information about different types of recalls may imply strategies for deploying resources and mitigating the effects of a recall (Kitchen, Wowak, & Craighead, 2014). It is critical for agri-food managers to know a product-harm crisis can adversely affect sales and revenue during and after a product-harm crisis causing permanent damage to a brand and destroying the organization's sustainability (Kitchen et al., 2014; Pozo &Schroede, 2013; Sallam, 2014; Sweetin et al., 2013).

Managers of organizations who properly manage and deploy their resources to defend against the damage of a product-harm crisis have a better chance of surviving the

crisis (Kitchen et al., 2014; Pozo & Schroeder, 2013; Sweetin et al., 2013). Even under the best of circumstances, corporate sustainability is always in jeopardy (Kitchen et al., 2014). This information aligns with the research topic of this study because of understanding that product sales decreased 22-23% after a product-harm crisis alarms agri-food managers they should utilize their financial assets efficiently to assure capital is available to maintain corporate sustainability after a crisis.

Word-of-mouth communications (WOM). Positive consumer WOM communication provides credibility for a brand which could guide agri-food managers to develop a strategy to increase positive WOM communications (Sallam, 2014). Moreover, understanding the relationship between the adverse effects of a product-harm crisis on brand credibility and consumer WOM communications about the crisis could provide additional strategies to reduce the losses from a crisis which aligns with the research question of this study. In addition, Sallam (2014) concluded that consumer brand loyalty has several factors including satisfaction, low perceived risk, and trust, with trust being the single most important aspect of maintaining brand loyalty. Sallam (2015) suggested exploring WOM communications as a strategy to reduce losses from a product-harm crisis. Agri-food managers believe that a good brand is potentially the organization's most valuable asset and strong brands usually generate positive consumer WOM communications which, if used strategically, could increase profitability before and after a product-harm crisis (Sallam, 2014; 2015; Swait, Erdem, & Peters, 2014).

WOM communication can affect consumer intent to repurchase a product, after a product-harm crisis, which can directly affect the sustainability of the brand (Ercis, Ünal,

Candan, & Yildırım, 2012). Consumer brand acceptance and repurchase intentions after a product-harm crisis also affects brand variables such as (a) value, (b) equity, (c) trust, and (d) commitment of consumers to a brand (Ercis et al., 2012). Ercis et al. suggested a link exists between the consumer's intent to repurchase a product and brand commitment previous to the crisis and negative WOM communications can damage the link. Moreover, brand commitment is a relationship between the consumer and the brand's (a) price, (b) lack of alternatives, or (c) high brand loyalty (Ercis et al., 2012; Kähr, Nyffenegger, Krohmer, & Hoyer, 2016, Veloutsou, 2015). Managers who understand how WOM communication about a product-harm crisis affects the variables of value, equity, trust, and consumer commitment to a brand, may be better prepared to explore mitigating strategies to reduce the losses from a food contamination event (Veloutsou, 2015). Consumer WOM consumer communications that result in strategies to mitigate losses from a product-harm crisis aligns with the research question for this study.

Understanding that rapid devaluation of a brand may occur after a product-harm crisis is critical information for agri-food managers when developing mitigating strategies to reduce devaluation losses (Yeung & Ramasamy, 2012). Rapid devaluation of the economic value of a brand after a product-harm crisis is either permanent, or transient. Therefore, agri-food managers should be aware that a product-harm crisis could have long-lasting damaging effects for the brand and company with the possible loss of sustainability for one or both (Chen & Nguyen, 2013; Seo, Jang, Miao, Almanza, & Behnke, 2013).

Negative WOM communication about small businesses involved in a product-

harm crisis creates as much vulnerable to lost revenue as big businesses, regardless of the industry sector (Ma et al., 2014; Whelan & Dawar, 2016). Moreover, agri-food managers who develop strategies to mitigate a product-harm crisis should be aware that brand damage, loss of brand, adverse financial impact, and loss of sustainability of the company, are all possible outcomes of a crisis (Yeung & Ramasamy, 2012; Zavyalova et al., 2016). Managers who understand their small business is as vulnerable to a product-harm as a big business will have an advantage over companies that are not aware of the vulnerability because they can develop and implement strategies to reduce losses from the crisis (Ma et al., 2014).

High-pressure pasteurization (HPP). Pathogen contamination of fruits, vegetables, and meats are a significant threat to human life and business sustainability (Karp et al., 2015). Karp et al. (2015) also suggested that fresh fruit and vegetables remain susceptible to contamination at many points along the supply chain, but HPP could provide a distinct point along the chain where pathogens were non-existent. In addition, Karp et al. urged the development of mitigating strategies to address possible contamination sites along agri-food supply chains.

Manitz et al. (2014) noted that HPP could be a strategy to mitigate losses from an agri-food product harm crisis because managers can quickly determine the point of origin of a foodborne illness by tracing back to the date and time of the HPP process. Importantly, HPP eliminates pathogens from particular types of meat and produce, allowing for faster tracing and tracking of a foodborne illness (Gil et al., 2015; Karp et al., 2015; Sckokai et al., 2014). Managers utilizing the HPP process as a strategy to

reduce business losses from a product-harm crisis aligns with the research question of this study. Karp et al. (2015), and Kingsley (2013) continued the discussion about HPP by stating that the process uses high pressure and low temperature in a closed vessel to initially incapacitate and ultimately kill pathogens in certain agri-foods. Using HPP as a tactical strategy to provide enhanced food safety for certain agri-foods, could reduce foodborne illness and loss of lives at a small cost to the retailer, which could be passed on to the consumer (Karp et al., 2015; Manitz et al. 2014).

Manitz et al. (2014) provided additional information about HPP by stating that HPP is a non-thermal food processing technology that inactivates foodborne viruses such as hepatitis A virus, and norovirus and that HPP could provide rapid origin traceability and detection during foodborne disease outbreaks. Consequently, Karp et al. (2015), Kingsley, (2013), and Manitz et al. (2014) suggest using the network-theoretical method which identifies the most likely epicenters of foodborne disease outbreaks by using mathematical models. Combining the network-theoretical method with HPP could allow agri-food managers to develop a hybrid strategy to quickly track the origin of contamination (Karp et al., 2015; Kingsley, 2013; Manitz et al., 2014).

The use of HPP combined with the network-theoretical method could prove valuable as cornerstones of mitigating strategies for a product-harm crisis (Bachev, 2013; Karp et al., 2015; Manitz et al., 2014). Researchers agree that sharing information about methods to rapidly track and trace foodborne illness between government and non-government managers could enhance the development of strategies to mitigate future product-harm crises (Backev, 2013; Manitz et al., 2014; Olsen & Borit, 2013). Reducing

the time to trace the origin of an agri-food product-harm crisis could save millions of dollars for corporations while reducing the loss of lives and illness (Backev, 2013).

Strategic use of media. The information in this section includes a description of methods and possible strategies using the media to reduce losses attributed to a product-harm crisis. Agri-food managers who respond immediately to a product-harm crisis with a strong, caring statement at first observation of a crisis could reduce the adverse effects of the crisis (Magno, 2012). The ability to communicate with (a) stakeholders, (b) the public, and (c) consumers during and after a product-harm crisis influences the public perception of the crisis (Coombs & Halladay, 2013). Use of various forms of media for crisis communication includes a determination of what media is best to send the caring message from a business in response to a product crisis (Coombs & Halladay, 2013; Mango, 2012).

Consumer forgiveness for harm to a brand, caused by a product-harm crisis, could result from meaningful corporate communications that display sincere CSR (Mango, 2012; Tsarenko & Tojib, 2015). The media could have a profound effect on public understanding, perception, and ultimate forgiveness of a product-harm crisis resulting in consumer acceptance of the brand and company (Borah & Tellis, 2016). Importantly, agri-food managers should know that the media frequently amplifies adverse information about a product-harm event, requiring thoughtful communication response from the offending organization to overcome the harmful effects of the amplification of the crisis (Borah & Tellis).

Using the media as a strategy to mitigate the consequences of a corporate product-

harm event could provide positive results from consumers, stakeholders, and the public (Lee, Hutton, & Shu, 2015; Tsarenko & Tojib, 2015). Importantly, a product-harm crisis exposes a business to (a) reputational damage, (b) loss of present and future sales, and (c) legal liability (Lee et al., 2015). Consequently, managers of organizations should communicate a positive message to stakeholders and consumers quickly after first signs of a product-harm crisis to demonstrate a sincere concern for the well-being of all people affected by the crisis (Lee et al., 2015). Use of corporate social media can potentially attenuate a negative consumer price reaction after a product recall announcement thereby reducing the potential adverse economic effects of a product-harm crisis (Borah & Tellis, 2016).

The use of Twitter and Facebook are social media sites that could provide additional attenuation of negative consumer reactions to a product recall provided the frequency of tweets from the managers of the company be positive and frequent (Borah & Tellis, 2016). Social media can assist managers of organizations to quickly reach a broad range of stakeholders with the company's positive message (Borah & Tellis, 2016; Lee et al., 2015; Tsarenko & Tojib, 2015). Consequently, a quick response allows the firm to bypass traditional slower media intermediaries, thereby reducing the time to discuss the problem with consumers which could reduce corporate losses and protect the organization's sustainability.

Continuing the discussion about using the media as a strategy to maintain corporate sustainability Coombs and Halladay (2013) suggested treating shareholders as important as the consumers by immediately contacting all upon first notice of a product-

harm crisis with a caring, concerned, apologetic message. In addition, Coombs and Holladay suggested that stakeholder reactions to post product-harm corporate communications could come from various forms of media, but direct communications from the company executives are the best forms. Coombs and Halladay (2013) monitored publicly available social media sites such as (a) the Livestrong blog and (b) the Huffington Post to gauge the organization's crisis response from various stakeholder reactions to crisis communications for the organization. Monitoring these immediate response media sites affords managers the opportunity to determine whether adjustments in the collective response are necessary and, if so, in what areas (Coombs & Halladay, 2013). Crisis managers need to understand how reactions from various groups to corporate crisis communication affect public perception about the corporate use of the media as a mitigating strategy to reduce losses from a product-harm crisis (Borah & Tellis, 2016; Lee et al., 2015).

In addition, management's use of all forms of media to mitigate a product-harm crisis is a strategy supported by Borah and Tellis (2016), Coombs and Holladay (2013), and Lee et al. (2015). Moreover, Borah and Tellis (2016) suggested that timely corporate response could reduce stakeholder and consumer anger, resulting in a positive effect on consumer repurchase intentions. Agri-food managers should become familiar with the various forms of social media and understand that the use of social media provides multiple sources to communicate with consumers, stakeholders, and the public. Moreover, if used correctly can reduce losses from a product-harm crisis (Borah & Tellis, 2016; Coombs & Holladay, 2013; Lee et al., 2015).

Managing the social perceptions and the consumer acceptance of companies actions after a product-harm crisis could be used to develop strategies to mitigate losses (Zavyalova, Pfarrer, Reger, & Hubbard, 2016). In addition, Zavyalova et al. (2016) suggested that monitoring consumer social media discussions following a product-harm crisis could lead to specifically designed strategies to mitigate the negative perceptions. Moreover, it is important for agri-food managers to know that a business that experiences more than one high-level product-harm crisis can expect high-negative media response to a new crisis (Zavyalova et al., 2016). The number of product-harm crises and subsequent recalls has increased rapidly since 2006, thereby increasing the need to communicate swiftly and responsibly to consumers, stakeholders, and the public using all forms of media(Borah & Tellis, 2016; Lee et al., 2015).

Conventional media often adversely amplifies a product-harm crisis, which typically results in the loss of trust in a brand or company and loss of public confidence in the brand (Borah & Tellis, 2016). A product-harm crisis will occur at some time in an organization's life, and there is a high probability the media will amplify the adverse aspects of the crisis (Borah & Tellis, 2016; Zavyalova et al., 2016). Understanding the need to reduce the number of product-harm crises and minimize the effects of media bias, should help agri-food managers develop strategies to mitigate media amplification (Borah & Tellis,2016; Coombs & Holladay, 2013; Lee et al., 2015; Zavyalova et al., 2016). Insights about adverse media amplification of a product-harm crisis and resulting consumer adverse reactions should assist agri-food managers to develop mitigating strategies to reduce consumer effects from media amplification thereby lowering possible

future losses.

Agri-food managers involved in a product-harm crisis should review all available information about the crisis as well as the dynamics of the media responses and customer response, before implementing a mitigating strategy (Ma, Zhang, Wang, & Li, 2014). Few agri-food managers have preplanned strategies to mitigate the effects of a product-harm crisis yet carefully planned marketing strategies previous to a crisis could be a strategy to alleviate the crisis (He & Ran, 2015). Managers that use strategically planned pre-crisis media marketing strategies can create buying patterns which could enhance brand loyalty, thereby decreasing the amount of loss of brand trust during or after a product-harm crisis (Ma, Zhang, Wang, & Li, 2014). Businesses use the media to market positive messages to consumers about their products, previous to a product-harm crisis, can carefully respond to consumers during and after a product-harm crisis to reduce losses from the crisis (He & Ran, 2015; Ma et al. 2014; Olsen, 2014).

Developing strategies that include the use of certain media products to mitigate losses from a product-harm crisis are necessary, but all strategies should directly focus on maintaining corporate sustainability (Laconto, 2012). Managers should understand the possible impact of a product recall and the methods a firm can use to mitigate product harm crises before designing specific strategies to react to the crisis (Zou & Li, 2016). According to Yeung and Ramasamy (2012), the impact of a crisis on brand loyalty and consumer, buying patterns can be either permanent or transient. Agri-Food managers that are aware of the potential for permanent brand damage from a product-harm crisis should develop strategies to reduce the severity of adverse effects to the brand, which will

increase the probability of corporate sustainability (Ho et al., 2016).

Corporate image management. Using the media to enhance the image of business before and after a product-harm crisis is a practice agri-food managers should be aware of and utilize (Ho et al., 2016; Kim & Choi, 2014). The researchers stated that corporate image management is a tactical strategy allowing managers to review and evaluate data through pre, mid, and post phases of a product crisis cycle. Improving corporate image during the three phases of a product-harm crisis could be a strategy to mitigate losses, but maintaining a positive image previous to a crisis is the most important strategy to reduce consumer anger and increase post-crisis buying (Kim, 2013). Kim (2013) continued by suggesting that improving corporate image previous to a crisis is critical for agri-food managers because they need to understand the status of the corporate image before deploying strategies to mend the image after a product-harm crisis.

Agri-food managers should consider rapidly repairing negative image perceptions following a product-harm crisis by committing to stakeholders to share all information about the crisis, to correct the problem that caused the crisis, and to corporate core values (Kim & Choi, 2014). Agri-Food managers may have an awareness of strategies to sustain a brand yet the literature seldom explicitly describes strategies to mitigate a product-harm crisis (Ho et al., 2016; Kim, 2013; Kim & Choi, 2014).

Ho et al. (2016), Kim, (2013), and Kim and Choi (2014) continued the discussion of corporate image management suggesting agri-food managers use a three phase image restoration strategy immediately after a product-harm crisis. The three suggested phases

of image restoration are first, use an initial proactive strategy setting out plans to restore the corporate image in advance of a crisis. The next strategy is preemptive wherein marketing and media communications act simultaneously on image transformation and image restoration. The final strategy is therapeutic which demonstrates to consumers, stakeholders, and the public the last phase of restoration is under control and that all the necessary steps to restore the brand image and mitigate the crisis are in place. Understanding the three distinct stages of a crisis is critical to image protection and restoration and that strategic planning should contain a review of previous proven tactical strategies for image restoration (Ho et al. 2016; Kim, 2013; Kim & Choi, 2014). Understanding the three phases of a product-harm crisis as well as how to use the media to promote image restoration could provide agri-food managers strategies to reduce the losses from a product-harm crisis and restore brand and corporate image.(Ho et al. 2016; Kim, 2013; Kim & Choi, 2014). In addition, businesses with preplanned strategies to defend against a product-harm crisis have a better chance of maintaining corporate sustainability and image than those that have not planned (Veneziani, 2014).

A review of the literature provided information that strategies to mitigate losses from a product-harm crisis must link directly to the problem causing the crisis to reduce losses from the crisis (Leighton, 2016). The mitigating strategies section of this research study provided various discussions about the cause of product-harm crises and some of the results of the manager's corrective strategies that solved the crisis yet there were few explicitly written detailed strategies discussing the strategy used to solve the crisis. Using deductive reasoning from knowledge of the initial problem and the outcome of the crisis,

I was able to deduce several strategies to further investigate as methods to reduce losses from a product-harm crisis. Agri-food managers who communicate internally and externally to assist in designing and implementing mitigating strategies, have a higher probability of developing strategies to mitigate losses, thereby protecting the brand and corporate sustainability (Ho et al. 2016; Kim & Choi, 2014; Leighton, 2016).

Transition

Section 1 of this research study commenced with the foundation and background of the problem for this multiple case study, which affirmed the presence of ongoing agri-food product-harm events in the United States. The next subsection of Section 1 included the problem statement that some United States-based agri-food companies lack comprehensive strategies to mitigate the effects of a product-harm crisis. The purpose of this qualitative multiple-case study is the exploration of mitigating strategies used by corporate managers of some United States-based companies to mitigate a product-harm crisis. The nature of the study included descriptions of the reasons for choosing a qualitative multiple-case study for this research. Additional components of Section 1 included the conceptual framework, operational definitions, assumptions, limitations, and delimitations, the significance of the study, and implications of social change.

Section 1 provides the definitions of key terms in the product-harm discussion. Section 1 also included a review of current literature on contamination, recalls, brand attributes, ethics, traceability, and product-harm mitigating strategies used by U.S-based companies. Moreover, the information presented in the literature review supports the need for agri-food product-harm mitigating strategies.

Section 2 includes the role of the researcher, participants, research method, and research design. Section 2 also includes the population sampling for this qualitative multiple case study and the importance of conducting ethical research. In addition, data collection instruments, data collection techniques, data organization techniques, data analysis, and reliability and validity of the study are in Section 2. Section 3 will include the findings of the study and the value to the professional practice, as well as the effects of this study on social change and recommendations for action and future research

Section 2: The Project

The purpose of this study was to explore the strategies some managers in the United States use to mitigate agri-food product-harm crises. I will explore strategies of United States-based agri-food managers who are familiar with strategies to mitigate losses from an agri-food crisis. Completion of Section 1 literature review provided an opportunity to consider many articles about the serious business problems associated with food contamination and different levels of agri-food product-harm crises. The fact that more than 48 million Americans received hospital care for a foodborne illness in 2012, as suggested by Nakuja, Akhand, Hobbs, & Kerr (2015), provided a comprehension there might be 48 million positive socially responsible outcomes that accompany this research. The literature information from Section 1 provided in-depth information about the magnitude and scope of the problems arising from foodborne illness and the lack of strategies to combat the problem.

The Section 2 research provided the opportunity to interview managers experienced in agri-food product-harm crises. The interviews increased insight into the current state of concern for agri-food product-harm crises and possible business solutions to reduce the losses attributed to foodborne illness recalls. Importantly, the interviews provided additional information about using strategies as a business solution to mitigate losses from an agri-food crisis while simultaneously providing a socially responsible outcome that reduces the loss of life and illness to consumers.

Purpose Statement

The purpose of this qualitative multiple-case study was to explore strategies that

some managers of United States-based agri-food companies use to mitigate a product-harm crisis. The specific population for this study was three United States-based companies in the agri-food business that use strategies to mitigate product-harm crises. The implications for positive social change include the potential to reduce product-harm crisis incidents, which could save lives and reduce costs to consumers as well as build public trust in the U.S. food supply chain.

Role of the Researcher

In a qualitative study, the researcher serves as the primary data collection instrument (Mikene, Gaizauskaite, & Valaviciene, 2013; Yin, 2014). A researcher's review of the literature should provide a thorough understanding of relevant information about the research topic (Yin, 2014). Being informed of the pertinent information about the study allows the researcher to ask the participants in the study probing questions, increasing the researcher's understanding of the need to mitigate personal bias, and enhancing commitment to conducting ethical research. The researcher should collect, analyze, interpret, and present the data in a manner to convey a holistic account of the phenomenon from the participants' perspectives (Morse, Lowery, & Steury, 2014). As the primary researcher for this qualitative multiple case study, I served as the primary data collection instrument.

In this section, I provide information about gaining insight from the experiences and behaviors of the participants by staying involved and focused during the interviews and listening carefully while being aware of personal bias and the lens I used as a view of the world. Tsang and Carey (2015) described the researcher's role as a person who

listens, stays involved, refrains from judgment, and probes participants' responses to interview questions without making the participants feel interrogated. Data was collected ethically, as described in *The Belmont Report,* as well as using techniques to mitigate personal bias that could influence the results of the study as suggested by Yin (2014). In addition, to prepare for the research study, I completed a web-based training program from the National Institutes of Health (NIH) on protecting human research participants and received the certificate of completion on 09/02/15.

The following information discusses the use of a bracketing technique to protect the interview participant's answers to interview questions from the possible bias of the research interviewer. A bracketing technique allows the researcher an understanding of any personal bias about the research topic, helping the researcher to refrain from using leading questions or making statements that might influence the participant (Clark & Braun, 2013). The researcher provides guidelines to assure that the participants understand the purpose, benefit, and potential risk of the research and that they voluntarily consent to participate in the study (U.S. Department of Health and Human Services, 1979). Use of the bracketing technique in concert with *The Belmont Report* as a guide provided participants an understanding of the purpose, benefits, risks, and voluntary nature of the study.

The bracketing technique requires that a researcher prepare a reflexive journal during the completion of the study (Tufford & Newman, 2012). Consequently, I prepared a reflexive journal during the completion of the study to examine assumptions and preconceptions while using a bracketing technique to restrict personal bias from entering

the interview process. A researcher should identify and think about assumptions and preconceptions using a bracketing technique to assist in mitigating bias (Clark & Braun, 2013). Consequently, I reflected on assumptions and preconceptions using the bracketing technique to help in identification and reflection on assumptions and preconceptions to recognize personal bias and as a reminder to consider bias before asking questions or making statements. Bracketing is a scientific technique that allows a researcher to suspend personal presuppositions, biases, assumptions, theories, or previous experiences in clarifying and describing a phenomenon (Tufford & Newman, 2012). The goal of this study was to use extreme caution to assure I was aware of any preconceived ideas, theories, or experiences by bracketing potential bias, thereby providing a suitable environment for collection and evaluation of data without preconceived expectations of the results.

The work and professional experience of the researcher are important factors to consider when planning a research study because of the biases that this knowledge may bring to the results of the study (Clark & Braun, 2013; Tufford & Newman, 2012). Because of the awareness of the potential for personal bias, the goal was to strive to minimize the probability of bias. The first step to eliminating personal bias is to acknowledge where potential bias may exist from past experiences (Tufford & Newman, 2012). I have limited personal knowledge of food-centric companies because of some previous investments as a limited partner in limited liability companies. My personal knowledge of the actions of the companies is limited to reading corporate materials and discussions with certain executives who provided some insight into tangential areas

relating to the agri-food industry. One such company I participated in provided online training for meat cutters to reduce employee turnover in the meat industry. I also have an interest in a tea company in Sri Lanka, as well as an interest in a hotel with a full-service restaurant. None of the investments posed any bias or conflict of interest because the interests reside in limited partnerships with no operational involvement. Past ownership in the Sri Lanka tea company inspired the investigation of traceability and tracking systems from an international perspective. I was mindful of previous experiences that provided knowledge of the agri-food industry to minimize bias that might have affected an interview participant's responses. To assure any personal bias did not influence the research I bracketed my knowledge and was extremely vigilant when interviewing participants not to mention personal knowledge of the food industry. All personal investments in agri-food companies are tangential, with none having experience in product-harm crises. According to Roulston and Shelton (2015), researchers using the bracketing technique, careful note-taking, and an audio recording of participant interviews could help to eliminate interview bias. I used the bracketing technique, careful note taking, and an audio recorder to capture the participant's responses in hopes of eliminating interview bias.

The role of the researcher in semistructured interviews is to ask the questions and then listen carefully before asking additional questions (Tsang & Carey, 2015). Appendix A includes a copy of the protocol I used to guide the interviews in a more uniform manner and cited peer-reviewed sources to confirm the information collected in the interviews aligned with an acceptable reference. I used Appendix A to assist in

addressing and mitigating my lens and worldview by diligently using the interview protocol, using member checking to verify the summary of the interview is accurate, reaching data saturation, and carefully constructing the interview questions. I used the bracketing technique and diligently avoided remarks or discussions about any personal knowledge or involvement in the agri-food business to assure my bias did not influence the participant during the data collection process of the study.

Participants

Qualitative study results rest upon the perspectives and knowledge of the participants and responses (Mikene et al. 2013). The initial preparatory step toward execution of a case study is the selection of the organizations to participate that will align with the research topic (Yin, 2014). A set of eligibility requirements assisted in guiding the selection of possible research participants. I contacted potential participants through phone calls or emails with the caution that phone calls could be more efficient than emails in some populations as suggested by Cridland et al. (2016), Mikene et al. (2013), and Yin (2014).

Eligibility criteria. Each participant must have been employed by the participating company, have been at least 18 years of age at the time of the interview, and have had at least 1-year of managerial experience in the agri-food industry. Participants must also have had knowledge of strategies to mitigate product-harm crises. I called agri-food corporate decision makers to ask if their company would be one of the case studies for this research and if they had personnel with experience using strategies to mitigate a product-harm crisis. All decision makers who confirmed they had employees

knowledgeable in product-harm mitigating strategies received an invitation to participate. Three decision maker stated their willingness to participate in a corporate case study. In addition, the decision makers had personnel with experience in strategies to mitigate product-harm crises and described the reasons they believed the recommended participants met the eligibility requirements. Managers provided the names and contact information for each proposed participant from the organization. I then telephoned each potential interview participant to ask them to verify they had previous experience with strategies to mitigate a product-harm crisis.

Researchers should collect information about the qualifications of each potential participant before an interview, from individuals knowledgeable about the participant's experience (Yin, 2014). In addition, researchers should collect documentation about each candidate's past experiences to assure the participant's qualifications for participation in the study (Yin, 2014). Consequently, I collected a description of the management position within the company, confirmed current employment with the company, years of experience, current age, and that they had at least one-year experience managing in the agri-food business.

Access to possible candidates. I used an agri-food consulting service to provide United States-based agri-food companies that had the interest to participate in this qualitative research study as discussed by Donovan, Paramasivan, de Salis, and Toerien (2014). The service agreed to provide referrals of potential corporate candidates whose companies participated in this research study. The service was familiar with executives of agri-food companies who took part in the study, had experience in a product-harm crisis,

and were willing to provide managers as interview participants. I contacted organizations recommended by the service and requested a meeting with the managers to ask if they had experience using strategies to mitigate product harm crisis. If they confirmed the applicable experience requirement, each participant received an invite to participate in this study. All individuals involved in the study, including the company executive authorizing their participation, received verbal notice and a written copy of the consent form, stating that their identity, as well as the identity of any participants and their respective companies, is strictly confidential.

Establishing a working relationship with participants. I established a working relationship with the participants by providing each potential participant with a copy of the consent form, and sending a letter and calling each potential candidate to invite them to participate. The letters and calls included the identical information listed in the consent form, which describes the procedures, sample questions, voluntary nature of the study, risks, privacy, and contact information for the researcher and Walden IRB personnel responsible for assuring enforcement of the guidelines and protocols of the study. Yin (2014), noted that a working relationship between the participants and the researcher is necessary to support the proper implementation of the case study protocol. Yin also stated that an effective interview could require a visit to each participant to secure their selected interview location, as well as to meet with participants at the site, which may add to a more relaxed cordial interview process.

A visit to meet participants at their selected interview location could build trust between the interviewer and the interviewee, and increase the probability of (a) building

trust, (b) establishing rapport, and (c) assuring the participant's full support (Yin, 2014). Establishing healthy relationships *before* and *during* the interview could build trust between the interviewer and the interviewee to ensure that the participant is at ease, comfortable, and relaxed (Doody & Noonan, 2013). I strived to make all participants comfortable by visiting the participant suggested location for the interview, providing full disclosure of all elements of the interview process, and discussing personal interviewing experience as well as maintaining participant confidentiality. Each participant had knowledge of the company's operations and strategies to mitigate agri-food crises.

Participants alignment with the research topic. I sent an invitation letter to each corporate decision maker selected to participate in the study, along with a request to provide a brief statement about the qualifications of the proposed participant. The letter included details that participants would receive a copy of the summary of the interview to review for accuracy. In addition, each participant received a discussion about member checking and the interview process to assure they understood their role in the interview process and the research topic. Member checking commenced when the participant reviewed the interview summary and ended when the participant acknowledged the summary is correct and acceptable (Richardson et al. (2013). In addition, the invitation letter stated that the interview would take approximately 30-60 minutes and that participation was voluntary.

Research at my place of employment did not occur thereby assuring compliance with Walden University IRB guidelines and the guidelines of *The Belmont Report* (Department of Health and Human Services, 1979). It is not permissible to conduct

research at the researcher's place of employment (Yin, 2014). Using purposive sampling ensured that the participants in this study met the necessary criteria to participate in the study as recommended by Morse et al. (2014). The rationale for using purposive sampling was to include participants who could provide detailed qualitative and contextual data about both efficient and failed strategies to mitigate a product-harm crisis. Gathering information on each participant's prior exposure to product-harm crises before the interview will assure general knowledge of strategies to mitigate a product-harm crisis (Morse et al. 2014). Many scholars agreed that qualitative case study researchers should use inclusive criteria for participant selection to ensure that each participant has experience and knowledge on the topic of the research study (Damianakis & Woodford, 2012; Englander, 2012; Richardson et al.,2013; Robinson, 2014)

To ensure the participants' are knowledgeable about the research question, I used a multiple step procedure by calling agri-food corporate decision makers asking if their company would be one of the case studies for this research study, and had management personnel with experience using strategies to mitigate a product-harm crisis. The three decision makers confirmed they had employees knowledgeable in product-harm mitigating strategies received an invitation to participate. The decision maker stated their willingness to participate in a corporate case study, had management personnel with experience in strategies to mitigate product-harm crises, described the qualifications of the suggested interview participants, and provided the names and contact information for each proposed participant. I telephoned each potential interview participant to verify his or her previous experience using product-harm crisis-mitigating strategies. All interview

participants selected had experience with strategies to mitigate a product-harm crisis.

Research Method and Design

The purpose of this qualitative multiple case study is to explore strategies to mitigate losses from product-harm crises in the agri-food industry. The use of the qualitative method with a multiple-case study design assisted and guided this research. The following subsections provide the rationale for choosing the research method and design for this study.

Research Method

Several factors influencing the selection of the research method were (a) the research question, (b) my philosophical worldview, and (c) the information available concerning strategies to mitigate agri-food product-harm crises. The choice for the research question influences the selection of the research method, but the philosophical worldview of the researcher can influence the chosen research approach because the view provides a perception of the researcher's reality that could inspire and influence the purpose of the research (Petty et al., 2012a). Social constructivism best represents my philosophical worldview. Social constructivism is a search for personal understanding by reflecting on individual experiences and relating the new knowledge to that known as (Fosnot, 2013). I have an interest in understanding the views and experiences of agri-food manager's experiences and knowledge about strategies to mitigate agri-food product-harm crises. In addition, my philosophical worldview as a social constructivist utilized inductive reasoning or interpretivism along with open-ended questions and observations while listening carefully, to understand the participant's viewpoint and to gain an

understanding of the phenomenon as described by Mikėnė, Gaižauskaitė, and Valavičienė (2013); and Yilmaz (2013).

A qualitative method suits a social constructivist philosophical worldview and research objective because qualitative researchers focus on textual information to gain insight and a better understanding of a particular phenomenon, whereas quantitative researchers concentrate on analyzing numerical data (Anyan, 2013). Researchers can generalize findings from a quantitative study and show they relate to the study population. In addition, a quantitative study might include specific numerical data explaining how the frequency and conditions of a phenomenon occur but do not explain why or how the phenomenon occurs (Yilmaz, 2013). Qualitative research interprets human experience and phenomena in their natural settings using textual data rather than numerical data (Yilmaz, 2013).

I used data from the interview responses of the participants to generate information that explains why agri-food managers use certain strategies to mitigate product-harm crises. Qualitative method researchers do not attempt to generalize and predict; they attempt to comprehend what the phenomenon means for interpreting the data (Frels & Onwuegbuzie, 2013; Yilmaz, 2013). A qualitative method was best suited for my study because the focus of the study is the how and why of the phenomenon and not attempting to examine relationships between variables, which is the intent of a quantitative method (Morse, 2015; Yin, 2014). Conversely, quantitative researchers collect and analyze numerical data using samples to test their hypotheses, gain knowledge, and generalize the outcomes (Yin, 2014). In addition, the quantitative method

uses closed-ended questions to collect data to test the relationship between variables of a phenomenon (Yilmaz, 2013). A quantitative method would not have provided the type of data needed to develop a thorough understanding of the phenomenon of strategies agri-food managers use to mitigate product-harm crises. Using the qualitative information provided the opportunity to gather pertinent descriptive information to determine the strategies some agri-food business managers use to mitigate product-harm crises.

Mixed method combines qualitative and quantitative approaches (Yin, 2014). When a qualitative or a quantitative method alone cannot properly address the research question a mixed methods research is most appropriate (Frels & Onwuegbuzie, 2013). Because of the type of data needed to answer the research question and the necessary focus on identifying strategies to mitigate losses from product-harm crises, the quantitative method was not adequate to address the research question in this study. Qualitative method research has a significant benefit over quantitative or mixed methods because of the creation of knowledge extrapolated from the data collected during the interaction process with the participants, using semistructured interview questions (Frels & Onwuegbuzie, 2013). A qualitative case study provides for better interaction between the interviewer and the participant than quantitative or mixed method studies (Talbot, 2015).

Qualitative researchers seek to understand the participant's mindset as suggested by Barnham (2015). Qualitative research suited this study for understanding people's motivations and the context for beliefs and actions as suggested by Yilmaz (2013). In addition, researchers using a qualitative method can analyze how people make sense of

the world (Potter, 2013). Because of the expert's comparative information about qualitative, quantitative, and mixed methods research and the necessity to understand people's mindsets and motivations for using specific strategies to mitigate product-harm crises, the qualitative method was most appropriate for this research study.

Research Design

Yin (2014) stated that the research design is the logical structure for the researcher to connect information to the research question. I chose a multiple case study design for this research because the design provided the flexibility to gather information about strategies to mitigate a product-harm crisis. A review of the literature allowed consideration of case study, phenomenology, narrative, and ethnography design. Per Yin, researchers using a case study design provide the best approach for collecting data to address how and why a series of participants' experiences occurred.

Case study researchers should use a multiple case study design to analyze collected data (Soares, Bastos, Rodrigues, Pereira, & Baptista, 2015). This study includes analysis of multiple complex issues, some having socially responsible components requiring a multiple case study design. The next research design reviewed was phenomenology. Phenomenological research is a process that provides a description of the phenomenon by documenting the experience lived by the participants in the study (Petty et al., 2012b). Per Petty et al. (2012b), phenomenologists aim to understand the unique lived experiences of people by exploring the meaning of a phenomenon. A phenomenological design allows researchers to understand a phenomenon by defining its meaning using the views of persons with experience regarding the phenomenon. A

phenomenological design did not suit the phenomenon of exploring strategies to mitigate agri-food product-harm crises because phenomenology uses interviews as a single source of evidence (Moustakas, 1994). In contrast, a qualitative multiple case study design provides researchers the opportunity to use multiple sources of evidence to gain an in-depth understanding of the phenomenon against its individual context (Yin, 2014). Phenomenology did not align with the research question in this study because this study does not explore or focus on the meaning of a phenomenon.

In addition, I selected narrative inquiry to determine if the design would be suitable for this study. A narrative inquiry is both a view of people's experiences and a method of inquiry using written explanations to describe experiences (Huber, Caine, Huber, & Steeves, 2013). Petty et al. (2012a) stated that narrative research design focuses on the life of the individuals, with an oral history of personal reflections of events from one or more persons. A narrative inquiry did not suit this study because of the focus on the lives of people while using an oral history to elicit information. Another reason narrative inquiry did not suit this study is that a focus on personal lives does not answer the research question concerning managers strategies to mitigate agri-food product-harm crises (Bruce, Beuthin, Sheilds, Molzahn, & Schick-Makaroff, 2016; Petty et al., 2012b).

Ethnography is a method researchers use to write about people; ethnographies provide details of specific communities, social groups, and cultures (Pluye, Hong, Bush, & Vedel, 2016). This study did not require details of cultures or social groups. Therefore, ethnography did not meet the needs of this study. Specifically, a qualitative multiple case study design incorporates the opportunity to use multiple sources of evidence to gain a

comprehensive understanding of the phenomenon against its original context (Yin, 2014). A qualitative multiple case study design was the most appropriate design for exploring and developing mitigating strategies for agri-food product-harm crises because researchers using the design can answer numerous questions from multiple sources. Consequently, I used a qualitative multiple case study design for this research.

Data saturation. This section reviews data saturation. Data saturation is a term used to demonstrate an exhaustive search of all relevant sources of evidence to ensure a sufficient collection of quality information to sustain the study (Fusch & Ness, 2015). The primary data source for case studies are interviews, but researchers are encouraged to use several sources of data, such as observations, document reviews, and physical artifacts to enhance the validity of the research (Yin, 2014). The probability of reaching data saturation increases when utilizing secondary data sources such as document review (Onwuegbuzie & Byers, 2014). To ensure data saturation, I requested internal corporate documents and asked participants open-ended interview questions as well as asked participants to expand on answers to some questions until no new data emerged. To recognize when data saturation occurs, a close review of individual participant responses to interview questions before commencing other participant interviews allows the researcher to ask additional probing questions until no new data surfaces (Yin, 2014).

Specific questions of the participant by the interviewer increases the probability of dependability and reaching data saturation (Benoot, Hannes, & Bilsen, 2016). The sufficiency of the sample size depends on the degree of saturation (Bekhet & Zauszniewski, 2014; Morse et al., 2014). The opportunity to reach data saturation

increases when using a second data sources such as document review (Onwuegbuzie & Byers, 2014). Silverman (2013) stated that researchers could obtain some documents to review from the public domain. The data collection for my study included interviews with knowledgeable individuals on the research topic to get valuable information, and relevant corporate documents and other internal records related to strategies to mitigate product-harm crises. Additionally, I searched the company websites and the internet for public information about the participating organizations business that might contribute relevant information to answer the research question.

Data saturation may occur when analyzing data collected from the interviews, which is the primary strategy for data collection (Onwuegbuzie & Byers, 2014). Richardson et al. (2013) stated that researchers use several strategies to achieve data saturation including conducting additional interviews with more participants until no new data emerges. An additional strategy to increase the probability of data saturation is member checking, which does not require additional participants (Richardson et al., 2013). The process of member checking requires participants receive a summary of their interview and a request to confirm if the synthesis summary is accurate (Richardson et al., 2013). A researcher analyzes additional information collected during any subsequent interviews, synthesizes the data, and again presents the summary to the participants for verification (Morse et al., 2014).

Three case studies with three participants per case study provided sufficient data to reach saturation using an iterative process of continued member checking as per the guidelines of (Morse et al., 2014). Data saturation did occur using the three participant

interviews. Therefore no additional participants were interviewed. Member checking assisted in obtaining data saturation and enhanced the credibility and validity of the data from the interviews. The documents and other relevant information the company provided to document the strategies used to mitigate losses from a product-harm crisis added to reaching data saturation. Using a combination of interviews and company documents, as well as public information about the company, provided adequate information to reach data saturation.

Population and Sampling

During this study, I explored strategies used by some United States-based managers of agri-food companies to mitigate product-harm crises. I selected three interview participants from United States-based agri-food businesses. The selected participants operate in the United States as growers, packagers, distributors, processors, or retailers. Each participant has knowledge of strategies to mitigate product-harm crises. The suggested participants were called to verify their experience with product-harm strategies. Participants met the qualifications for participation and received an invitation to participate in the study.

To assure a proper population and sampling, I used a four-point approach to select the population and sampling method as outlined by Robinson (2014). The four-point approach includes a method for selection of the sample, selection of the sample size, sample sourcing, and definition of the study population (Robinson, 2014). In addition, Robinson suggested that identifying both the population of a study and the sampling method assists in the execution of a research study. Also, the population, appropriate

selection, and adequacy of the sample could enhance the rigor and transparency of the study (Robinson, 2014). To ensure adequate sample size for this multiple case study, three agri-food managers served as interview participants.

The selection criteria for this study provided a population that is diverse geographically, yet homogenous. Homogeneity within the agri-food industry exists because, according to Yeung and Ramasamy (2012), and Zavyalova (2016), companies in the food industry *hope* a product-harm crisis will not occur, yet research indicates a high probability that a product-harm crisis *will* occur. Moreover, regardless of the *size* of the organization or *location*, the strategies necessary to mitigate a product-harm crisis are universal (Zavyalova, 2016). The selected participants were from companies that met the following inclusion criteria: (a) are small or medium size enterprises, (b) operating in the United States, and (c) using strategies to mitigate a product-harm crisis.

I used an agri-food consulting firm to provide United States-based agri-food companies that have the interest to participate in this qualitative research study as discussed by Donovan, Paramasivan, de Salis, and Toerien (2014). The consulting firm executive agreed to provide referrals of companies with potential qualified interview participants that participated in this research study. The executive with the firm is familiar with agri-food executives willing to take part in the study who also have the authority to accept an invitation for the company to participate, have experience in a product-harm crisis, and willing to be a participant or provide other employees of the company as participants. The consulting firm stated that they were confident in their ability to provide several candidates to participate in the interview process. I contacted

organizations recommended by the firm and requested a meeting with potential participants to ask if they had experience using strategies to mitigate product harm crisis. They confirmed applicable experience and each participant received an invite to participate in this study. All individuals involved in the study, including the company executive authorizing their participation, received verbal notice and a written copy of a consent form they signed. The form states that their identity, as well as the identity of any participants and their respective companies, are strictly confidential. The consulting company executive received a consent form informing of the consent statutes for all participants, and their companies have the same protection of confidentiality as the interview participants.

I established a working relationship with the participants by providing each potential participant with a copy of the consent form, sent an email, letter, and called each candidate to invite them to participate. The letters and calls included the identical information listed in the consent form, which describes the procedures, sample questions, voluntary nature of the study, risks, privacy, and contact information for the researcher and Walden IRB personnel responsible for assuring enforcement of the guidelines and protocols of the study. Per Yin (2014), a working relationship between the participants and the researcher is necessary to support the proper implementation of the case study protocol. Yin also stated that an effective interview could require a visit to each privately to secure a participant-selected interview location, as well as to meet with participants at the site, which may add to a more relaxed cordial interview process. Each participant selected their setting for the interviews, and each site was relaxed and comfortable. In

addition, I informed each participant that they could withdraw at any time from the interview process for any reason, and their confidentiality would be secure.

A visit to meet participants at their selected interview location could build trust between the interviewer and the interviewee, and increase the probability of (a) building trust, (b) establishing rapport, and (c) assuring the participant's full support (Yin, 2014). Establishing healthy relationships *before* and *during* the interview could build trust between the interviewer and the interviewee to ensure that the participant is at ease, comfortable, and relaxed (Doody & Noonan, 2013). I strived to make all participants comfortable by visiting the participant suggested location for the interview, provided full disclosure of all elements of the interview process, and discussed personal interviewing experience as well as maintaining participant confidentiality

The selection criteria specified provided a homogenous study population because government laws bind and link all agri-food companies in the U.S. with regulations of quality control and quality assurance to provide agricultural products, and all agri-food companies should use various strategies to mitigate product-harm crises. An additional homogenous congruency between agri-food companies is that managers understand that a single product-harm crisis can involve numerous companies along the supply chain (Ho, Shin, & Pang, 2016; Olsen, 2014; Rouvière & Latouche, 2014; Tsarenko, & Tojib, 2015; Yeung & Ramasamy, 2012). The level of homogeneity of the research study population provides a deeper knowledge base for the study, which enables the researcher to use a smaller sample size than a heterogeneous population would require (Benoot et al., 2016; Robinson, 2014; Roy, Zvonkovic, Goldberg, Sharp, & LaRossa, 2015). The probability

of obtaining meaningful data to address the research question increases when using a homogenous sample (Benoot et al., 2016; Robinson, 2014).

Researchers may find benefit in selecting a subset of a population to study (Matorera, & Fraser, 2016). This study utilized a subset of agri-food companies in the U.S., each with different geographical locations. Qualitative studies lack commonly accepted sample sizes because the adequacy of the sample size depends on the research questions, the purpose of the study, and the quality of the data (Elo et al., 2014). Answering the research question of this study required a review of both purposive and random sampling. Purposive sampling is the process of selecting participants based on the knowledge or expertise they possess (Poulis, Poulis, & Plakoyiannaki, 2013). The purposive sampling process assists in selecting participants on their knowledge Bagheri, Yaghmaei, Ashktorab, & Zayari, 2016; Barasa, Molyneux, English, & Cleary, 2015). Random sampling does not sufficiently qualify the participants for a qualitative research study (Copeland, McNamara, Kelson, & Simpson, 2015; Robinson, 2014; Roy et al., 2015; Tirgari, 2012). Because random sampling did not sufficiently qualify participants for a qualitative study, random sampling did not meet the needs for this study. I used purposive sampling to select appropriate participants with knowledge about agri-food product-harm crises.

The following discussion includes a description of the relationship between data saturation and standardization of the interview questions and the level of participant knowledge about the study topic. Data saturation is a term used to demonstrate an exhaustive search of all relevant sources of evidence to ensure a sufficient collection of

quality information to sustain the study (Fusch & Ness, 2015). The primary data source for case studies are interviews, but researchers are encouraged to use several sources of data, such as observations, document reviews, and physical artifacts to enhance the validity of the research (Yin, 2014). The probability of reaching data saturation increases when utilizing secondary data sources such as document review (Onwuegbuzie & Byers, 2014). To ensure data saturation, I requested internal corporate documents and asked participants open-ended interview questions as well as asking participants to expand on answers to some questions until no new data emerged. To recognize when data saturation occurs, a close review of individual participant responses to interview questions before commencing other participant interviews allows the researcher to ask additional probing questions until no new data surfaces (Yin, 2014). I asked additional probing questions of all participants until no new data emerged.

The purpose of this qualitative multiple-case study is to explore strategies that managers of United States-based agri-food companies use to mitigate a product-harm crisis. Data saturation depends on some factors the researcher does not control, such as the participant's level of knowledge about the research question and whether the population includes standardization (Malterud, Siersma, & Guassora, 2015). If the participants do not answer the research questions fully, the sample size of responses will not be adequate to provide data saturation (Bekhet & Zauszniewski, 2014). Standardization of a sample size requires that all participants answer the same questions, or a selection of questions from a conventional bank of questions, in the same way (Bekhet & Zauszniewski, 2014). Responses should be analyzed in a standard or

consistent manner, allowing the ability to compare the relative performance of each set of replies. Each participant in this study received a standardized set of questions provided in a similar setting.

Sample size must be justifiable based on the degree of data saturation (Shabankareh & Meigounpoory, 2013). Adequacy of the sample size in a qualitative research study depends on the ability to attain data saturation (Bekhet & Zauszniewski, 2014). Reviewing all the criteria for data saturation lead to the conclusion that a purposive sampling strategy was the best option for this study.

Ethical Research

Ethics is an understanding of conflicts from moral imperatives and the method of embracing conflicts (Avasthi, Ghosh, Sarkar, & Grover, 2013). Current principles for human ethical research and social impact assessment provide guidelines to assist the researcher to maintain and honor ethical principles (Vanclay, Baines, & Taylor, 2013). Understanding the current principles for human ethical research increased the sensitivity of my concern for all participants to assure their responses were free of any coercion or bias that might have adversely affected the study or altered the social impact assessment. Research involving human subjects must adhere to basic ethical principles for the protection of the study participants (U.S. Department of Health and Human Services, 1979). Guidelines from professional associations, as well as U.S. government agencies, provide researchers information about the ethical treatment of human participants in a research study. I used *The Belmont Report* as a guide to ensure the ethical treatment and protection of participants in this research study.

The *Belmont Report* (1979) was the primary source to support ethical research for this doctoral study. The *Belmont Report* included ethical standards and guidance regarding the values and behaviors considered the fundamental ethical principles for the protection of human subjects in research. In addition, I followed and adhered to the American Psychological Association Publication Manual (2012) guidelines for protecting the rights and welfare of research participants and their organizations. According to the U.S. Department of Health and Human Services (1979), ethical standards for interviewing participants in a research study include protecting the rights and well-being of participants in the study, showing respect for all people in the study, and ensuring fair procedures in the selection of participants for the study.

Before starting the interviews, I provided participants an invitation to participate (see Appendix F), a confidentiality agreement (see Appendix G), and a letter of cooperation (see Appendix E). The invitation to participate included (a) an overview of the study (b) an explanation of why the study is important, (c) a description of the measures used to ensure confidentiality, and (d) a description of the audience for the completed study. In addition, I attached the Interview Protocol and consent form to each cover letter (see Appendix A). The consent form included a disclosure to all participants of any known risk associated with participation in the study, the participant's right to withdraw from the study, confidentiality details and description of relevant ethical issues. All participants affirmed that they understood the guidelines of the study and agreed to participate.

Each participant received a notice that their participation in this study is

voluntary. I respected any decision the participant choose to be in the study or withdraw. All participants had the opportunity to ask questions before deciding to participate in this study. No participants organization acted differently about an interview participant deciding not to participate because no one opted out of the study. If a participant decided to join the study, they could still have changed their mind later. The participant could have withdrawn from the study at any time by notifying the researcher via telephone or by email and any data collected removed from the researcher's files. Each participant received complete confidentiality of all events and their actions.

All interviews were subject to the guidelines of the American Psychological Association Publication Manual and the U.S. Department of Health and Human Services (1979), guidelines to ensure that neither the questions nor the responses compromise the professional or personal welfare of the participants. Participants did not express concerns about the risk of maintaining their identity. Protecting the identities of the participants and their organizations minimizes risk, as required by the U.S. Department of Health and Human Services, applied to all participants in the study. Each participant was a volunteer, with the right to withdraw from the study at any time and for any reason. Any participant who withdrew from the study had their information destroyed by shredding all documents and burning all other pertinent research materials such as flash drives and recording cassettes. Researchers have a responsibility to ensure the research study adheres to ethical practice standards (Vanclay, Baines, & Taylor, 2013). I have individual access to data, coding, file naming conventions, and other identifying personal information to ensure anonymity and uphold relevant ethical standards.

This study followed all protocols of the U.S. National Commission for the Protection of Human Subjects of Biomedical Research Regulations (U.S. Department of Health and Human Services, 1979). To protect the confidentiality of the information obtained from participants, and all other sources, a fireproof safe secures all signed consent forms, recordings of interviews, transcripts, interview notes, and personal logs. In addition, to safeguard the confidentiality of documents, all information is kept using a password protected flash drive allowing sole access to the digital and printed data. Five years after the completion of the study, I will destroy all data and related materials pertinent to the research study. Information privacy includes the protection of personal data and all other confidential data not available for public view (Borena, Belanger, & Egigu, 2015). All participant and corporate data, to include documents, electronic files, and all other information are kept locked in a personal safe.

The final publication of this research study did not disclose the names of organizations or participants. Each participant and organization in this study have a pseudonym of P1, P2, and P3 and C1, C2, and C3 respectively, to ensure confidentiality and privacy. Yin (2014) suggested that the use of pseudonyms to provide confidentiality for the participants and their companies supporting the use in this study.

After receiving IRB approval for this study, I utilized an agri-food consulting service to provide referrals of companies that participated in the research study. The referred business decision makers were asked to take part in the study and if they had personnel with experience in strategies to mitigate losses from a product-harm crisis. Each participant in the study received an invitation to participate (see Appendix F),

including three corporate decision makers who affirmed their company would take part in the study stating they had personnel knowledgeable about strategies to mitigate a product-harm crisis.

The consent form, sent via email, detailed the process and the purpose of the doctoral study as well as precautions for the participant. I requested all participants' sign and return a copy of the informed consent document after verbally agreeing to participate in the study. The participants were also encouraged to ask questions about the study during this time. A single copy of each participant signed consent form is locked in a safe in a secure location to ensure the confidentiality of all participants.

Researchers should avoid high compensation inducements to participants for their involvement in a research study (Devine et al., 2015). There was no compensation offered to participants in the study. However, as a token of appreciation, all participants received a copy of the final research study.

The consent form also contained information about the purpose of the research, the data storage process, and expectations of the participants. Informed consent is morally and legally necessary to enable a candidate to make a voluntarily choice whether to participate in the study (Jeong et al., 2012). Strict standards of confidentiality assure participants that information provided for the study will not cause injury or harm to themselves or their organizations, which allowed the participants to answer the research questions openly and freely.

The APA Publication Manual (2012) served as a guide for protecting the confidentiality of study participants and their organizations. Because of these standards, I

assured confidentiality by using alphanumeric coding of the names of the participants and the organizations. To enhance the participants' understanding of the research and interview process, each participant received verbal instructions and explanations. The use of verbal explanations about the research topic may enhance a participant's understanding of the process (Kerasidou, 2015)

Data Collection Instruments

According to Leedy and Ormrod (2013), the researcher serves as the primary data collection instrument in a qualitative study. I acted as the primary data collection instrument as suggested by Yin (2014). In addition, the researcher is specifically involved with the collection of data from all sources of evidence in the case study research (Yin, 2014). Data collection instruments for qualitative studies can include focus groups, interviews, videos, existing documents, observations, and artifacts (Boblin, Ireland, Kirkpatrick, & Robertson, 2013; Mertens, 2014; Yin, 2012). As the researcher and primary data collection instrument, I collected data from the semistructured interviews, and existing documents provided by the organization to explore the mitigating strategies supplied by the interview participant.

Researchers use semistructured interviews to interpret information, capture data about the participant's thoughts, and make judgments (Elsawah et al., 2015). The use of semistructured interviews suits the needs of the study when the interview protocol contains open-ended questions without fixed response categories, allowing the researcher to seek a comprehensive understanding of the answers to the questions and providing the researcher the freedom to follow-up with additional inquiry (Fusch & Ness, 2015). To

assure a comprehensive understanding of the participant answers to the interview questions, I used semistructured interviews.

The three types of interviews typically used in qualitative research are structured, unstructured, and semistructured interviews, which include open-ended questions (Rowley, 2012). Structured interviews commonly require shorter responses yet include more questions as compared to unstructured interviews that use fewer questions (Rowley). In addition, structured interviews resemble a conversation whereas a structured interview inquiry collects greater information about the topic of research (Yin, 2014).

Using semistructured interviews to guide the interview, to support the flexibility of participants talking freely, provide insight to their discussion and to clarify responses with follow-up questions to gain in-depth information from the interview is appropriate for a qualitative case study (Yin, 2014). The two types of data incorporated in this multiple case study are semistructured interviews guided by open-ended questions, and relevant company support documents. The interviews lasted approximately 60 minutes and took place at a participant selected convenient location (see Appendix E). Researchers suggest not conducting an interview too long for fear of losing the participant's involvement (Kun et al., 2013). A semistructured interview using 6 to 12 questions extends for approximately 1 hour (Frels & Onwuegbuzie, 2013; Kun et al., 2013),

Each interview question was open-ended to avoid simple yes or no answers to the interview question and to maximize in-depth and comprehensive responses. Interviews obtain additional understanding of the participant knowledge about the research topic

(Kun et al., 2013). Interviews are instrumental for understanding (a) experiences, (b) opinions, (c) attitudes, (d) values, and (e) processes (Cridland et al., 2016). Using different methods at various stages of the research process is a necessary strategy for addressing validity and reliability in case studies (Yin, 2014).

A preliminary interview protocol, with basic questions for each participant, is required for a case study design (Yin, 2014). This study utilized proper case study protocol measures to maintain participant focus on this research topic and to assist in achieving reliability and validity. The questions for this case study appear in the study protocols (see Appendix A), which serve as a guide for both collecting and describing the importance of that information (Silverman, 2013). Jacob and Furgerson (2012) and Yin (2014) recommended the use of protocols as part of the data collection process. Using an interview protocol is important in the execution of case study research to maintain the researchers focus on the topic of the study during the interviews, thereby improving the reliability of the data collection process (Yin, 2014). Consequently, I used the interview protocol as included in Appendix A to mitigate bias and support the use of additional probing questions in areas that require more data to gain better insights into the participant responses.

Standardization of interview questions is a necessary protocol, and semistructured interviews will be part of the interview protocol to standardize the questions (Hood, Hart, Belgrave, Tademy, and Jones (2012). To achieve standardization, I used a semistructured interview with open-ended questions and recorded all interviews on a digital recorder with all recordings placed into a personal locked safe to protect the participant's

confidentiality. The interview data consisted of verbatim responses from the audio recordings, with the participants having the option to have any question repeated as necessary for clarification. I sent an individual summary of the interview to each participant with a request to member check and verify the representations were valid and accurate as suggested by Morse (2015), and Yin (2014).

To further validate information obtained in the interviews each executive decision maker that accepted an invitation to participate in the study and signed the consent to participate (see Appendix E), was asked what employees would participate in the interviews. In addition, the executive decision maker was asked to provide relevant documents such as schedules, charts, graphs, or other internal records related to their use or knowledge of strategies to mitigate product-harm crises. I contacted each participant to assure they were qualified to participate subject to the participation requirements and that participation in the study was voluntary as set out in the interview protocol (Appendix A). Kun et al. (2013), Mikene et al. (2013), and Silverman (2013) suggested that each participant in the study select a convenient time, date, and place for the interview. I allowed participants to select a convenient time, place, and location for their interview. After audio recording the interviews and collecting the authorized relative corporate documents to support the interview questions and answers from the participant I carefully reviewed all collected data. Upon conclusion of the interviews, I transcribed all recordings into a summary then provided each participant a copy to member check for accuracy and to acknowledge that the summary was accurate. The review of the interview summary and documents supporting the strategies used to mitigate product-harm crises

provided two data collection sources for this research. Two sources for data collection enable the use of methodological triangulation to corroborate the findings from the data as well as to enhance the credibility and confirmability of the study (Houghton et al., 2013; Yin, 2014).

According to Houghton et al. (2013), Silverman (2013), Wahyuni (2012), and Yin (2014) triangulation is a data collection instrument researchers use to ensure data corroboration and that the data is complete. I used relevant corporate documents as a second source of data that included charts, graphs, schedules, websites, and other internal corporate documents about strategies to mitigate a product-harm crisis. The authorized company executive approved all documents for release by executing the letter of cooperation (Appendix E). Methodological triangulation uses multiple sources of evidence such as interviews, document review, and observations (Wahyuni, 2012; Yin, 2014). I used methodological triangulation to enhance the confirmability and dependability of data from interviews and relevant company documents. Because a case study research design uses different sources of data, this research study design is suited to use the methodological triangulation technique as suggested by Yin (2014).

Member checking by the participant is a method of verifying and authenticating participant responses (Leonidou, Christodoulides, Kyrgidou, & Palihawadana, 2015). Providing the participants with summaries of their interviews and requesting acknowledgment that the summaries are accurate provides assurance that the collected data is accurate and reliable (Silverman, 2013; Yin, 2014). Appendix B includes the interview questions. I used Dragon Naturally Speaking speech-to-text software V13 to

transcribe the recorded interviews and uploaded the transcriptions and literature reviews into NVivo v11 software to assist in analyzing the data and displaying possible themes from the information.

Data Collection Technique

To address data collection techniques properly, a researcher should assure the collection of data aligns with the research question (Cridland et al., 2016). The research question for this study is; what strategies do some United States-based managers of agri-food companies use to mitigate a product-harm crisis? To ensure participants in the study understood the research topic each participant received a background of the study as suggested by Cridland et al. (2016), Mikene et al. (2013), Silverman (2013), and Yin (2014). I explained the background, purpose, and potential benefits of the study, as well as expectations of the participants. Additionally, all participants were asked to provide corporate documents, as authorized by the company executive decision maker, supporting the organizations product-harm strategies which may include schedules, charts, graphs, or other internal records (see Appendix E).

Each participant received notification, both in writing and verbally, that participation is voluntary and that the interviews will be conducted per their request of convenient date, time, and location (Cridland et al., 2016; Kun et al., 2013; Mikene et al., 2013). Interviews and document review provided two data sources for this research in addition to reflexive journal notes, internal company records and external information such as websites, annual reports and other documents available for public use. Using two or more data collection sources enhanced the ability to perform methodological

triangulation to corroborate the findings from each source, as well as to enhance the credibility of the data and confirmability of the study (Houghton et al., 2013; Petty et al., 2012b; Yin, 2014). Triangulation is a data collection technique that increases the study accuracy, validity, and credibility (Tibben, 2015). I used methodological triangulation as a data collection technique.

Qualitative data provides the researcher a record of participants' statements (Yilmaz, 2013). Interviews are the most common method of collecting data in qualitative research (Onwuegbuzie & Byers, 2014). An advantage of using semistructured interviews as a data collection source is the ability to prepare interviews in a targeted manner to address the case study topic directly (Yin, 2014). In addition, Yin (2014) suggested that understanding the participant's explanations of answers to questions require perception by the interviewer and that interviewers have disadvantages if their biases influence the interviewee responses. I kept all personal bias from entering the interview process by striving to understand the participant explanations through careful and objective listening to perceive the interview responses.

Semistructured interviews are advantageous because of the short time required to conduct the interview, allowing the participant to stay fresh, while still providing meaningful information on the research topic (Cridland et al., 2016). The processing of data from a semistructured interview requires less time than the unstructured data collection because the researcher is obliged to analyze all the collected data (Cridland et al.). In addition, scope creep adds extraneous information about topics out of the area of research that could cause an increase in time required to collect the needed data to answer

the research question (Kun et al., 2013; Mikene et al., 2013; Yin, 2014). After a participant agreed to participate in the study, I arranged for a time at the participants choice of place to conduct the interview, as per the suggestions of (Cridland et al., 2016; Kun et al., 2013; Mikene et al., 2013). During the interview, each participant received background information about the purpose of the study, the amount of time requested for the interview, and the methods used to ensure confidentiality of data. Each participant received a participant agreement, which entered into force when the participant signed the participant consent form. The *Belmont Report* (U.S. Department of Health and Human Services, 1979) provides guidelines to assist the researcher to inform all participants about the confidentiality of the study (Cridland et al.; Soares et al., 2015; Yin, 2014). I used *The Belmont Report* as a guide to inform the participants about maintaining their confidentiality. All participants received a copy of the consent form for their records.

Cridland et al. (2012) stated that interviews are instrumental in understanding opinions, attitudes, experiences, processes, and values. According to Gelhorn (2016), qualitative data can originate from interviews, observations, and documents. In addition, qualitative data provides the researcher a record of participants' statements (Yilmaz, 2013). Furthermore, interviews are the most common method of collecting data in qualitative research (Onwuegbuzie & Byers, 2014). I acted as the primary instrument for data collection using semistructured interviews with open-ended questions as a data collection technique using an audio recorder to record the participant responses. Direct involvement by the researcher with the collection of data from interviews and other

sources of evidence is an important function in case study research (Yin, 2014). The researcher functions as an active instrument in the process of information gathering, particularly during qualitative interviews (Mikene et al., 2013).

The collection of data using the face-to-face semistructured verbal interview process provides the researcher with meaning, understanding, and explanations rather than regarding the participants as a vehicle for retrieving facts (Staller, 2010). Open-ended semistructured verbal interview questions allow the researcher to capture data from the participants about how they think, interpret questions, and make judgments (Elsawah et al., 2015). Moreover, the face-to-face semistructured interview process assists the researcher in providing a relaxed environment, fostering the participant's relaxation and trust, leading to more in-depth open dialog, more elaborate responses, and additional insight (Cridland et al., 2016; Nelson, Onwuegbuzie, Wines, & Frels, 2013). Based on the preponderance of support for semistructured, open-ended interview questions for qualitative case studies, I used a semistructured interview process with open-ended interview questions for this study.

Before providing the formal interviews, I conducted an expert review of the interview protocol with an agri-food manager who is a member of the target population as suggested by Silverman (2013). An expert review of the interview protocol is a valuable technique to improve the interview questions by using the expert's feedback (Wahyuni, 2012; Yin, 2014). I was the expert who conducted a mock interview with an agri-food manager familiar with strategies to mitigate product-harm crises. The mock interview format provided an opportunity to fine-tune the interview questions and ensure

the questions were clear and aligned with the research question as recommended by Banks (2013), Birt et al. (2016), Rowley (2012) and Wahyuni (2012).

Each participant should review a summary of his or her transcript for errors or missing data as part of member checking. The use of member checking in multiple case studies provides added assurance about dependability, credibility, and transferability of the research data (Houghton, Casey, Shaw, & Murphy, 2013). In addition, member checking is a process of asking participants if their responses are an accurate representation of what they intended to convey in their statements to the researcher (Morse, 2015). Researchers should understand there is much information to share with the participants, that member checking suits the requirements for a qualitative research project because of requiring less time than a full transcript review, thus allowing more time for participant verification that the interview summary was accurate (Sorsa, Kiikkala, & Åstedt-Kurki, 2015). I used member checking for this study and submitted summaries to all participants.

Participants received an individual email summary of the interview and two days after sending the email each participant received a personal call to review all interview responses. The participants had enough time to allow each to (a) ask questions, (b) receive answers, (c) acknowledge whether they agree with the summary data, and (d) add additional information if they chose. The interview participants received a summary of their interview via secured email to provide member checking. After each member reviewed the transcript summary of their interview and returned a signed acknowledgment that the summary met their approval, member checking was complete.

Each participant received an email confirming that the summary of the interview and member checking was complete.

Conducting member checking after a significant lapse of time may limit a participant's ability to recall their answers and the meaning of their intent during the interview process (Birt et al., 2016). I diligently strived to assure there was a minimum time lapse. The time lapse from interview completion until member checking occurred in three days.

To ensure the validity of the interview responses about strategies to mitigate product-harm crises I obtained permission from the decision maker of the organization to obtain internal documents that support the companies mitigating strategies. The documents consisted of charts, schedules, access to private websites or any other internal documentation the decision maker feels is pertinent to the interview questions. Previous to an interview I reminded the participant that the decision maker granted my request to obtain data in support of the interview responses about strategies to mitigate product-harm crises. The documents were collected immediately following the interview. After collection of the documents, I used NVivo v11 as an assist to organize and code the information and to obtain any relationships between the interviews and the documents to assist in determining themes. Additionally, I input reflective journal notes into NVivo to further enhance the coding and themes that may result from the analysis and maintain an Excel spreadsheet of all codes and themes to review and analyze.

Data Organization Technique

Data organization facilitates the creation of an audit trail, which cross-references

other sources of data (Soares et al., 2015; Yin. 2014). Qualitative data organizing techniques require the use of data storage, data categorization, and cleaning of data (Soares et al., 2015). The purpose of this study was to explore strategies that some managers of United States-based agri-food companies use to mitigate a product-harm crisis.

Written records of researchers are reflective journals comprised of notes of concepts, events, or interactions over a period to gain insights and learning (Davies, Reitmaier, Smith, & Mangan-Danckwart, 2013). I used reflective journaling to provide additional insights to the interview data, which will add to other the collected data. The interviews, reflexive journal notes, and relevant internal and external corporate documents were input into NVivo v11 software to assist in organizing the data into codes and themes. I used an Excel spreadsheet to display the collected data and began pattern checking using transcripts, the output from NVivo 11 software, and other relevant documents to determine the in-depth meaning of the data. In addition, I am maintaining a locked safe to serve as the depository for electronic and hard copy data from this study for 5 years, after which I will destroy textual, electronic, and hard copy data.

Data Analysis

Data analysis involves collecting relevant data to support the conceptual framework of a study then coding, discovering, and identifying themes, selecting relevant themes, organizing themes in hierarchical order, and linking themes into the phenomenon under study (Petty et al., 2012b; Silverman, 2013). Yin (2014) suggested that data analysis allows a researcher to discover meaningful patterns, themes, and descriptions. To

obtain the data for this study, I asked the decision maker of the company to participate in the study personally or provide a designated employee knowledgeable about company strategies to mitigate product-harm crises and to provide internal documents supporting their company's mitigating strategies immediately after the interview. Each participant rendered the relevant documents the executive decision maker deemed appropriate for use in the study. I collected external documents such as corporate website information, annual reports, or shareholder reports to determine their usefulness to answer the central research question of this study. The next section discusses triangulation as a research method to manage bias and analyze the collected data.

Researchers use methodological triangulation to compare multiple data sources to draw conclusions (Cope, 2014). Methodological triangulation is the use of multiple types of data analysis used by researchers to investigate a research question (Bekhet & Zauszniewski, 2012). The methods of triangulation are (a) data triangulation, (b) investigator triangulation, (c) methodological triangulation, and (d) theoretical triangulation (Black, Palombaro, & Dole, 2013). To ensure the trustworthiness of a completed case study, the use of methodological triangulation may provide a better, more complete understanding of the phenomenon (Yin, 2014). I used multiple data sources to analyze themes between public and private organizations. Therefore, the use of methodological triangulation met the need for this study. When researchers use interviews and multiple data collection methods to analyze a company's internal and external documents, methodological triangulation suits the analysis technique (Mata & Portugal, 2015).

For this study, I used a three-step process to analyze data by inputting the data into NVivo software to enhance the data analysis process, reviewing the data for redundancy by manually checking for accuracy, and searching out and identifying themes within the data. NVivo software assists in organizing and analyzing the data as well as for reducing the time for thematic coding and the categorization of data during the analysis stage (Boddy & Boddy, 2016; Petty et al., 2012a). NVivo software assists researchers in analyzing interview transcripts and the facilitating data management (Castleberry, 2014; Cridland et al., 2016).

Qualitative research presupposes the analysis of the participants' comments distinctive to the time, culture, situation, and researcher doing the analysis (Frels & Onwuegbuzie, 2013; Yilmaz, 2013). A thoughtful, careful approach concerning personal comments is necessary to avoid influencing the participant answers to ensure the participant answers are about their time, culture, and situation. I did not discuss any personal knowledge or experience in the agri-food industry. Because NVivo software assists in determining themes from the interview research questions, this study benefited from using NVivo software to assist in recognizing themes. Using NVivo software to search and identify themes within the data collection occurred after inputting the data. The next step was to review the data analysis carefully as well as manually checking the data from NVivo to ensure accuracy, validity, and reliability as suggested by Castleberry (2014). The use of triangulation assists in analyzing the data, thereby strengthening the analysis of the data through clarification and reduction of researcher bias to assure the accuracy of all data (Black et al., 2013). The study used triangulation to match the themes

and interview terms with the provisions of the data analysis.

A researcher uses coding to identify themes from the interview transcriptions and other collected data to reach saturation, which ensures the reliability, validity, and credibility of the study (Yin. 2014). Researchers discover new themes in the literature by using critical repeated analysis of the thematic expressions and coded themes (Young, 2016). I used an Excel spreadsheet to display the collected data and began pattern checking using transcripts, the output from NVivo 11 software, and other relevant documents to determine the in-depth meaning of the data.

The data analysis process involves the interpretation of the data collected through disassembling, segmenting, categorizing, and rearranging the data to find relationships and to draw inferences within and between the data set (Soares et al., 2015). I continually compared and coded all data to assist in the identification of categories and core concepts. The three participants have a code assigned (P1, P2, P3, as well as organization coding of C1, C2, C3. Coding provided the participant and organization confidentiality. According to Yin (2014), the researcher analyzes the data collected against the theoretical propositions that are the basis for the study and the research question. The theoretical proposition of this study is that some agri-food managers lack strategies to mitigate product-harm crises. O'Reilly and Parker (2012), and Yin indicated that to analyze data properly; the researcher must commence the analysis thoroughly by first reviewing the data collected and then generating theory from the data. Consequently, I analyzed all data thoroughly to ensure proper analysis of the central research question. The researcher analyzes and interprets the data collected against the theoretical propositions that are the

basis for the study and the research question (Yin, 2014). According to Finfgeld-Connett (2014), the initial analysis of data is a deductive approach because researchers begin their analysis based on a theory or idea and use the data to support and confirm the theory. I used an initial deductive approach to start the analysis of the central research question of this study.

Uploading data to computer assisted qualitative analysis data software (CAQDAS), like NVivo software, assisted in coding text and reorganizing data into group codes and related categories. Silverman (2013) and Yin (2014) recommended the use of (CAQDAS) to accelerate searching, sorting, coding, and retrieving data. CAQDAS assists in demonstrating the conclusions of the analysis using the frequency of codes or themes and can display evidence that the researcher has considered rival interpretations (Silverman, 2013).

NVivo software also aids the researcher to reduce personal bias and provides increased transparency of personal thoughts about a specific interview, participant, or topic as a form of reflexive journaling (Finfgeld-Connett, 2014). Importantly, Yin (2014) noted that the researcher should study the outputs from computer-assisted tools to understand emerging patterns and themes. Black et al. (2013), and Yin (2014) suggested that data coding consists of assigning codes to represent the core topic of specific data segments. Finfgeld-Connett (2014) indicated that data review during the coding process could result in additional codes other than the ones predetermined during the literature review. Review and comparison of the different codes lead to interpreting and categorizing the data into themes and comparing these themes against the propositions

identified in the literature review. Black et al. (2013) suggested that this approach to data analysis as thematic analysis. A comparison of the key themes identified from the data analysis of the interviews and document reviews to the key themes from the literature review and conceptual framework provided relevance of the study results against the literature review findings.

NVivo v11 software assisted my coding and determining themes from the input of the data from interviews, internal documents, and my reflexive journal. In addition, I searched to find and review external documents such as annual reports, corporate websites, and stockholder reports to collect and input into NVivo v 11, which provided additional codes and themes. After identifying codes and themes, NVivo v11 assisted me to link the themes, interviews, internal and external documents, and reflexive journal notes, to the conceptual framework of this study. The Coombs (2007) SCCT is the conceptual framework for this study because it suggests specific strategies to mitigate corporate losses from a product-harm crisis. The SCCT depends on in-depth communication between executives and managers to assure as many strategies as possible are communicated properly, understood, and ready for use (Coombs & Halliday, 2013). The themes derived from inputting data into NVivo v11 software provided a link between the themes and the use of the SCCT. As noted in the conceptual framework, failure to promptly implement a product-harm crisis mitigation strategy increases the probability of corporate and consumer loss (Zou & Li, 2016). Accurate and precise communications between executives, managers, stakeholders, and consumers before, during, and after a product-harm crisis may reduce the probability of corporate and

consumer loss (Coombs & Halliday, 2013). The data analysis supported the conceptual framework of the SCCT and assisted in providing coded information to suggest and support themes. Themes may demonstrate links between strategies to mitigate product-harm crises and possibly provide value to organizations that use high-level communications between organizations, stakeholders, and consumers (Coombs & Halladay, 2013).

Reliability and Validity

Qualitative researchers address the validity and reliability of a study when planning, evaluating results and assessing the quality of the study (Yin, 2014). A research study has many important elements, but the rigor with which the researcher conducts the study is a priority because this rigor assures the quality of the research findings (Houghton et al., 2013). I provided rigor to conduct this research study. Researchers refer to criteria for determining the rigor and quality of a quantitative research study as validity and reliability. Importantly, the terms used to indicate the rigor of a qualitative research study are credibility, confirmability, transferability, and dependability (Wamba, Akter, Edwards, Chopin, & Gnanzou, 2015).

Reliability

Convergence of multiple sources of information enhances the validity of a study (Yin, 2014). Dependability of the study refers to the consistency of the data achieved by providing transparency during data collection, coding, and analysis, to ensure that readers have traceability to the findings (Wamba et al., 2015). In addition, dependability refers to the ability of other researchers to follow the audit trail of the first researcher (Cope, 2014;

Venkatesh et al., 2013). Moreover, dependability is the congruency of data under comparable conditions (Hussein, 2015). Furthermore, existing literature research questions can demonstrate reliability and consistency across different researchers (Yin, 2014). I maintained qualitative reliability and dependability by using the suggestions of Cope, (2014), Hussein, (2015), Venkatesh et al. (2013), Wamba et al. (2015), and Yin, (2014).

Validity

Validity is a link between honesty, genuineness, and credibility to the research data (Leonidou, Christodoulides, Kyrgidou, & Palihawadana, 2015). Validity provides the justification of the claims, implications, and conclusions found in research (Leighton 2016). I used the information suggested by Leighton (2016) to check and verify that this study meets the requirements of validity and reliability.

Data saturation occurs when the collection of data provides no additional relevant information (Malterud, Siersma, & Guassora, 2015). The probability of reaching data saturation increases by using document review of secondary sources (Onwuegbuzie & Byers, 2014). Researchers can find documents for review in the public domain (Silverman, 2013). Interviews provided much of the data collected for this study as well as public information published on company websites and documents provided by the participating companies. Reaching data saturation increases the dependability and validity of the research study (Frambach, Van der Vleuten, & Durning, 2013). To reach data saturation, I interviewed three participants, ask questions until no new data emerged and provided each participant a summary of their interview to review and member check

to confirm the validity and accuracy of the interview before commencing data analysis.

Credibility. Credibility is the precision and interview participants and peers (Yin, 2014) conducted accuracy of the research findings and the ability to demonstrate the study credibly through verification. Credibility is a process that includes participants scrutinizing the analysis and the findings of the collected information to assess whether the analysis and results are accurate reflections of their lived experiences (Birt, Scott, Cavers, Campbell, & Walter, 2016; Mclaggan, Bezuidenhout, & Botha, 2013). I used several methods to ensure the credibility of this study, including triangulation.

Using a triangulation strategy with multiple sources of data provides credibility to a study (Yin, 2014). Marshall and Rossman (2014) viewed triangulation as a necessary strategy to ensure the data interpretations are credible and recommended that qualitative research studies conduct member checking and use triangulation to enhance the validity of the study. Researchers use triangulation to compare multiple data sources and draw conclusions and triangulation uses different sources of data to support accurate analysis (Cope, 2014; Bekhet & Zauszniewski, 2014). To ensure the trustworthiness of a completed case study, the use of methodological triangulation may provide a better, more complete understanding of the phenomenon (Yin, 2014). Thus, I used methodological triangulation and member checking for this study as suggested by these expert researchers.

Face-to-face interviews and document review are the data collection methods for this study. Document review includes a review of the participant company websites, schedules, charts, and internal records related to the strategies used to mitigate loss from

agri-food product-harm crisis. To ensure member checking was an appropriate strategy for this study I reviewed information on transcript review, which requires the participant to review the verbatim transcription of their interview (Rowley, 2012). Member checking provides a more effective validation than verbatim transcription because member checking ensures that the interpretation of the researcher is correct and accurate, not exact word for word as required of verbatim transcription (Harper & Cole, 2012). I used member checking instead of transcript review to provide credibility to the data collected.

Confirmability. Confirmability is the ability to show the research data represents the participant's responses and not the researcher's biased perspectives (Cope, 2014; Hussein, 2015). The aim of this study is to provide information, without bias, that adequately reflects the participant's views. According to Houghton et al. (2013), methodological triangulation provides confirmation of similarities found in different data collection sources. I used methodological triangulation and NVivo 11 software to assist in confirmation of the quality, transferability, and replicability of all data. Researchers closely link confirmability to dependability in referring to the neutrality and accuracy of the data (Houghton et al., 2013). Maintaining an audit trail in both data collection and analysis demonstrates accurate confirmability and comprehensive records of the approaches employed (Wamba et al., 2015). I kept a full and complete audit trail of data gathering, analysis procedures, member checking results, and outcomes to ensure confirmability.

Transferability. The quality and rigor of qualitative research rely on dependability, credibility, transferability, and confirmability (Black et al., 2013; Soares et

al., 2015). Transferability requires researchers to provide vivid explanations of all the research processes from data collection, the context of the study, and finalization of the report (Soares et al., 2015). I provided thorough explanations of the research processes, the context of the study, and a final report to meet the requirements of transferability. In qualitative research, transferability is essential if the study results are to have meaning for individuals and readers not participating in the study (Cope, 2014). Using transferability as a method to determine the exchange of a researcher's findings links their completed study to other similar contexts or situations while still preserving the meanings and inferences of their independent study (Black et al., 2013; Elo, Kaariainen, Kanste, Polkki, Utriainen, & Kyngas, 2014). Hussein (2015) stated that transferability is an indication that the findings can apply to other settings or groups. The findings of this research provided data about transferability, which aligns with the suggestions of Anyan (2013), Black et al. (2013), Cope (2014), Elo et al. (2014), Hussein (2015), and Soares et al. (2015).

Researchers use semistructured interviews to interpret information, capture data about the participant's thoughts, and make judgments (Elsawah et al., 2015). The use of semistructured interviews suits the needs of the study when the interview protocol contains open-ended questions without fixed response categories, allowing the researcher to seek a comprehensive understanding of the answers to the questions and providing the researcher the freedom to follow-up with additional inquiry (Fusch & Ness, 2015). The interview protocol for this study uses open-ended questions without fixed responses. The interview protocol for this study is in Appendix A.

Using software for qualitative data analysis enhances the portability of the qualitative data (Hays, Wood, Dahl, & Kirk-Jenkins, 2016). The transferability of this study's results and findings to reduce consumer and corporate loss has application to numerous product-harm events in the agri-food industry. To help ensure the transferability of potential future research, I kept notes, recorded all interviews, and used NVivo 11 software to support the analysis of the data and assist in describing the context of the research study.

Transition and Summary

The purpose of this study is to explore the mitigating strategies that some managers of United States-based agri-food companies use to reduce losses from product-harm crises. In Section 2, I outlined the research methodology, sampling, data collection, organization, and analysis. A subsequent discussion ensued regarding reliability and validity procedures with emphasis on dependability, credibility, transferability, confirmability, and data saturation for this study. Section 3 will contain the findings of the completed research and the importance of the results to the agri-food industry and consumers. The study identifies strategies to mitigate agri-food product-harm crises. In sum, the study included discussion of the findings in the context of implications for social change, recommendations for action, further study suggestions, reflections on the research study, and personal conclusions of the study.

Section 3: Application to Professional Practice and Implications for Change

In Section 3, I present the findings of this research study, including an overview of the findings, implications for social change, applications to professional practice, recommendations for action, and recommendations for further research. Section 3 concludes with personal reflections and the study conclusions.

Introduction

The purpose of this qualitative multiple case study is to explore the strategies managers of some United States-based agri-food companies use to mitigate losses from product-harm crises. Anyan (2013), and Bai, Zhang, and Jiang (2013) are scholars who explored product-harm crises in a quantitative research study. The focus of this research is to explore strategies agri-food managers use to mitigate product-harm crises using qualitative multiple case study design. According to Yin (2014), a qualitative method case study design allows in-depth explanations and the use of multiple sources of information.

The following is a summary of the findings from the research. The data collection instruments I used in this study included semistructured face-to-face interviews using open-ended questions. In addition to the interviews, I collected relevant business documents, charts, and other records that provided additional sources of data, as did public information and notes from my reflexive journal.

I used triangulation to arrive at conclusions regarding data from interviews, documents, and reflexive journal notes. In addition, NVivo v11 software assisted in reviewing and confirming the accuracy of the data. Four main themes resulted from

analysis of the data. The conceptual framework for this study is based on the Coomb's (2007) situational crisis communications theory (SCCT). The conceptual framework provided a guide and understanding that it is critical for agri-food managers, stakeholders, consumers, and employees to use various communications during the pre-, mid-, and post-crisis phases of product-harm crises to enhance the understanding of product-harm crises. All of the interview participants agreed that extensive communications are critical to mitigating losses from a product-harm crisis. The findings from the research were sufficient for me to answer the research question: What strategies do some United States-based agri-food managers use to mitigate a product-harm crisis?

The following section provides the results of the findings, which will provide the emergent themes and sub-themes revealed from analysis of participant interviews and document analysis as well as from notes from my reflexive journal. All of the findings have additional support with specific quotes from the participants as well as related literature information. The findings from the interviews provided explicit information about strategies to mitigate product-harm crises.

Presentation of the Findings

The overarching research question for this qualitative multiple case study was: What strategies do some United States-based managers of agri-food companies use to mitigate a product-harm crisis? Data collection instruments for qualitative studies can include focus groups, interviews, videos, existing documents, observations, and artifacts (Boblin, Ireland, Kirkpatrick, & Robertson, 2013; Mertens, 2014; Yin, 2012). As a result of the research findings, I identified four main themes and related sub-themes. In this

subsection, I discuss the relationship between the findings and each theme. In addition, I discuss the findings confirming and disconfirming aspects and how the findings extend the research subject knowledge, tie the findings to the conceptual framework, and utilize peer reviewed literature to tie the findings to effective business practices.

The SCCT developed by Coombs' (2007) is the basis for the conceptual framework of the study. All four main themes align with the Coombs' (2007) SCCT conceptual framework because communicating during all phases of a product-harm crisis is critical to mitigating the effects of a crisis as suggested by Coombs' (2015). My analysis of the data guided the determination of what strategies some agri-food managers use to mitigate a product-harm crisis and what strategies were applicable for which phase of a product-harm crisis. The Coombs' (2007) SCCT is an evidence-based framework communication methodology to assist managers in maximizing corporate reputation through pre-, mid-, and post-crisis phases of a product-harm crisis. Analysis of the data for this study consisted of assessing information from literature, interviews, relevant company documents provided by the company, as well as pertinent journal notes. In addition, I incorporated some data from public records for this research.

The data collection process I used for this study consisted of three interviews with agri-food managers in the U.S., as well as collecting relevant company documents supporting the company strategies to mitigate product-harm crises. The three agri-food participants represented various segments of the agricultural industry that included (a) growing, (b) packaging, (c) distribution, and (d) selling. Each interview participant provided relevant documents to support their company's strategies to reduce losses from

product-harm crises. Collecting multiple sources of data enabled the use of triangulation, which corroborated the findings. Triangulation enhances the breadth of the research and aids in understanding the findings by diminishing the shortcomings of a single method for data collection (Cronin, 2014). I used triangulation from the interviews, relevant company documents, and reflexive journal notes to enhance the breadth of the research and increase the validity of the data for this study.

I used purposive sampling to create comfortable relationship with potential interview participants because I called each participant to ask permission to interview at their businesses or a convenient place of their choice. Establishing healthy relationships *before* and *during* the interview could build trust between the interviewer and the interviewee to ensure that the participant is at ease, comfortable, and relaxed (Doody & Noonan, 2013). All the interviews occurred over a 2-day period. Each interview lasted approximately 1 hour, and all the participants opted for an audio-recorded interview. After transcribing the interviews using Dragon Speech to Text software and summarizing all responses using Microsoft Word software, I provided each participant with a summary of their interview. All the participants provided member checking by reviewing a summary of their interview, providing feedback about the authenticity and comments about their interview summary, which enhanced the validity of the results. Upon conclusion of member checking, participants acknowledged the correctness of the summary with their signature. Member checking concluded after members had acknowledged their summary was correct.

Three agri-food companies operating in the United States agreed to participate in the research study with each providing one interview participant. The interview participants were three Chief Executive Officers (CEOs). The first CEO identified, as participant P1 from company C1, grows, packages, ships, and sells tea products. The second CEO, identified as participant P2 from company C2, manages a domestic agri-food packaging and processing company, which eliminates pathogens from vegetable and meat products. The third CEO, identified as participant P3 from company C3, manages the domestic and international production of organic packaged foods sold online and through retail outlets. All of the participants possessed adequate knowledge about strategies to mitigate losses from agri-food product-harm crises. The three participants P1, P2, and P3, had 18, 25, and 20 years of experience respectively in the agri-food business.

Each participant voluntarily participated in the study and answered open-ended questions in a semi-structured interview setting, which was secure, quiet, and private. The participants suggested the time and place for the interviews to provide for their convenience. Additionally, participants answered interview questions (see Appendix B) based on their experiences and perceptions of strategies to mitigate a product-harm crisis. The design of the questions was such that the participants could address the central research question and add additional comments to enhance their answers or make new comments related to strategies their company uses, has used, or may use in the future. I completed all three interviews within 2 days. Within 2 days after their interview, each participant received a summary of their interview to perform member checking.

In addition to the interviews, I obtained internal documents related to strategies and protocols to mitigate product-harm crises from each of the participants. Participant P1 provided internal documents that described quality control (QC) and quality assurance (QA) methods and procedures to mitigate the probability of a foodborne illness crisis. Company C1 grows, packages, and ships products from a foreign country into the United States, which requires high standards of QA and QC to meet U.S. government standards. In addition, participant P1 provided copies of procedures to ensure QA and QC compliance, tracking procedures, invoices, shipping orders, bills of lading, and acceptance of products in the United States by customs and subsequent distribution centers.

Participant P2 demonstrated their web portal for receipt of inbound and outbound processed products, which was available to me to access at my leisure. In addition, the portal provided product information about the quantity of products inbound and outbound, the location of pick up, the company shipping the product in, the cost to provide HPP, and the weight of inbound and outbound processed products. Also, participant P2 provided copies of the terms and conditions of service, limited guarantees, charts comparing shipping rates for freight providers, and a copy of the customer agreement. The client's agreement contained payment terms, warranties, various price point breaks for volume discounts, and general information about timing to process and shipping. In addition, I obtained several online press releases about C2 and the HPP process.

Participant P3, from company C3, provided company documents about the strategies used to mitigate a previous product-harm crisis as well as current and possible future strategies to mitigate product-harm crises. Participant P3 provided (a) locations for domestic and international facilities, (b) protocols for employees to mitigate a product-harm crisis, and (c) information about strategies used during a past product-harm crisis. Additional documents were (d) documents outlining specific mitigating strategies used during pre-, mid-, and post-crisis environments and e) access to several online websites to review sales and marketing data.

NVivo v11 software was the analytical tool used to assist in highlighting the most frequently used words from the literature review (see Figure 1). The words *product-harm, food,* t*raceability*, *crisis,* and *risk,* as well as the term *foodborne illness,* were most frequent in the literature data. After my analysis of the literature data some common words appeared, such as *pre-, mid-, and post-crisis phases*, *traceability, brand,* and *contamination.* In addition some terms were revealed such as *supply chain, high pressure pasteurization (HPP), third-party certifications (TPC), word-of-mouth (WOM) consumer communications, willingness-to-pay (WTP),* and *social media* that supported the main and sub-theme mitigating strategies. A subsequent review of both the literature and interview data showed some word and phrase congruency. The congruency between the literature, interviews, and relevant data supporting the use of strategies included information about pre-, mid-, and post-crisis mitigating strategies, as well as several sub-themes, which alignmed with the conceptual framework and the research question.

I used NVivo v11 software to assist in analyzing the data from the interview transcripts and other supporting documents to determine the most frequent words (see Figure 2). My analysis of the corporate documents provided by the interview participants identified some of the same words as found in the literature search. I reviewed the corporate documents and found many similar words that appeared in both the literature and the interviews. Some of the similar words were *word of mouth, third party certification, willingness to pay, certification, pre-, mid-, and post-crisis, product-harm,* and *traceability.* Figures 1 and 2 are word clouds produced by inputting data into NVivo v11 software to display 50 words frequently used in the literature review and interview responses.

Figure 1. Fifty frequently used words throughout the literature sources. Produced with NVivo v11.

Figure 2. Fifty frequently used words from the participant's interview responses. Produced with NVivo v11.

My analysis of the data from the interviews, documents, and journal notes began as the first step of formal analysis by using a deductive approach of coding the information into multiple main themes. Using a broad-brush technique of coding, initially grouped the themes into three main categories. The three initial main themes of strategies is the use of (a) pre-crisis strategies to mitigate a product-harm crisis, (b) mid-crisis strategies to mitigate a product-harm crisis, and (c) post-crisis strategies to mitigate product-harm crises. I added the fourth main theme of using high pressure pasteurization (HPP) as a mitigating strategy to reduce losses from product-harm crises because analysis of interview data, as well as company documents, revealed HPP is a strategy to eliminate pathogens in meats and vegetables, which has the overarching benefits of numerous sub-themes.

Identification of Themes. Main theme one explored pre-crisis mitigating strategies, which has several sub-themes. The sub-themes are (a) supply chain

contamination, (b) traceability, and (c) third party certifications (TPC). Additional sub-themes are (d) word-of-mouth communications (WOM), (e) willingness-to-pay (WTP), and (f) strategic use of social media as well as other types of media. The second main theme of the use of mid-crisis mitigating strategies has sub-themes of (a) spillover liability, (b) WOM communications, (c) strategic use of social media as well as other sources of media, and (d) corporate image management. The third main theme of post-crisis mitigating strategies has sub-themes of (a) sustaining brand attributes, (b) corporate sustainability, (c) WOM communications, (d) using social as well as other media, and (e) corporate image management. The fourth main theme is the use of high-pressure pasteurization (HPP) as a mitigating strategy to reduce losses from product-harm crises.

Analysis and findings of themes. Some of the sub-theme strategies overlap and apply to one or more of the three product-harm phases of pre-, mid-, and post-crisis. Theme two, the use of mid-crisis strategies, has sub-themes of spillover liability, WOM, use of media, and corporate image management. The rationale for selecting the theme two sub-themes is a result of the analysis of interviews, relevant company documents, and journal notes. Identification of probable spillover risks, sub-theme one, gives risk managers the ability to determine where to deploy capital for protection against the identified risk (Olsen, 2014). WOM and using social media and other forms of media as mitigating strategies are overlapping from theme one. Improving corporate image during the three phases of a product-harm crisis reduces consumer anger and increases post-crisis buying (Kim, 2013). Managers that use strategies to maintain corporate image

through all phases of a product-harm crisis can increase consumer buying after the crisis, which protects the corporate image (Kim, 2013; Leighton, 2016).

The use of post-crisis strategies is the third main theme, which has sub-themes of sustaining brand attributes, corporate sustainability, WOM, use of social media and other forms of media, and corporate image management. The rationale for selection of the sub-themes for theme three is that the analysis of the data from the interviews, relevant company documents, and journal notes indicated that different strategies are used and applicable to more than one phase of a crisis. A comprehensive review of all three phases of a product-harm crisis revealed that using the Coombs' (2007) SCCT in the conceptual framework for all phases of a product-harm crisis is critical to lowering the potential adverse effects of a crisis. Additional rationale for selecting the above sub-themes resulted from research found in the literature. Cleeren et al.(2013) suggested that the process by which brand equity and attributes adjust following a product-harm crisis is a function of the severity of a product-harm crisis and the strategies used to mitigate the crisis.

Consumer WOM communications, corporate image management, and using social media as subthemes overlap from mid-crisis into post-crisis strategies. Also, WOM overlaps into pre-, mid-, and post-crisis strategies. Pozo and Schroeder (2013) indicated that lower product sales of brands affected by a product-harm crisis might last for months, sometimes years, depending on the strategies used to mitigate the crisis, and in some cases, the brand and the company lose their sustainability after the crisis, resulting in closing the company. All of the participants provided information congruent with the

selection of the main and sub-themes and were aware of the potential effects of product-harm crises.

Collier et al. (2014) suggested that dangerous pathogens can be passed along the food supply chain in several manners causing illness and death, but sufficient strategies could protect against subsequent foodborne illness outbreaks. The rationale for selecting the sub-themes for themes one through three is because of alignment of each main theme with the conceptual framework for this study and the understanding that pathogens can be passed along in several manners. Coombs (2007), Coombs (2015), and Coombs and Halliday (2013) posited that the most important consideration for agri-food managers once a product-harm crisis occurs is brand and corporate sustainability, which may require numerous mitigating strategies.

The fourth main theme is the use of high-pressure pasteurization (HPP) as a mitigating strategy to reduce losses from product-harm crises, which acts as an overarching strategy to protect and sustain the brand and company through all phases of a product-harm crisis. The rationale for choosing HPP is because it is a mitigating strategy that eliminates pathogens just before being shipped to the consumer. Without concern of contamination after the HPP process, the probability of a product-harm crisis is minimal. Karp et al. (2015) stated that fresh fruit and vegetables remain susceptible to contamination at many points along the supply chain. HPP inactivates or kills all pathogens thereby providing a distinct time and place when the meats and vegetables are safe for consumption. Eliminating all pathogens just before consumption also reduces the need for some pre-, mid-, and post-crisis sub-theme strategies. However, based on the

research from this study, it is still a prudent business practice to be prepared for a product-harm crisis by having numerous strategies to mitigate losses from a product-harm crisis as suggested and commented on by P2 who stated " … although we are a tolling company for the HPP process, believing the products using HPP are protected from a product-harm crisis, it is still recommended to have mitigating strategies for all phases of a crisis."

Validation of the four main themes and sub-themes occurred after analysis of interview information and documents excerpts, as well as peer-reviewed literature excerpts. Each of the participants provided internal documents supporting the strategies used to mitigate a product-harm crisis but also stated that some strategies might be implied and undocumented. Participant P1 stated that "...we have many of our mitigating strategies in document form, but some strategies are implied. Our biggest implied strategy is that any person associated with the company supply chain has the expressed right to advise management of a condition or concern he or she feels would damage our products." All participants mentioned that each crisis could be different than anticipated. Participants P1, P2, and P3 suggested that the nature of an individual crisis would dictate the type and depth of communication between stakeholders, consumers, and employees and that frequent communication to consumers in all phases is critical to survival when a product-harm crisis occurs. Using the emergent themes as a lens revealed that the selected strategies would likely improve the time required to determine the origin of a crisis, reduce corporate financial losses, lower the number of illnesses associated with a crisis, and possibly save lives.

The following information describes the ways the findings confirm, and in some cases disconfirm, some of the information I obtained from peer-reviewed studies, as well as extending the knowledge of strategies used to mitigate the losses from agri-food product-harm crises.The first main emergent theme explores pre-crisis strategies to mitigate product-harm crisis before a crisis occurs using sub-theme strategies. Several product-harm sub-themes overlap between the three phases of a product-harm crisis because some assist in mitigating the crisis through multiple phases.

Emergent Theme 1: The Use of Pre-Crisis Mitigating Strategies for the Agri-Food Business.

My analysis of the data revealed several references to sub-themes that enhanced the main theme of pre-crisis mitigating strategies. I discovered the sub-themes of (a) supply chain contamination, (b) traceability, (c) third-party certification (TPC), (d) word-of-mouth communication (WOM), (e) willingness-to-pay (WTP), and (f) using social media and other forms of media. Each of the sub-themes is relevant to the strategies used during the pre-crisis phase of a product-harm crisis.

Supply chain contamination is a concern to agri-food managers, as shown by numerous interview references describing the continual vigilance to check the entire supply chain for possible contamination as a strategy to protect the company from a crisis. Traceability is a dominant concern of all agri-food managers when viewed in the context that when contamination occurs, the best strategy to mitigate losses is to trace the origin of the contamination rapidly. Rapid traceability minimizes consumer exposure, reducing illnesses, saving lives, and lowering the associated economic costs to recall a

contaminated product. Word-of -mouth (WOM) consumer communications, consumer willingness-to-pay (WTP) for increased food safety, and using social media and other media as strategies to mitigate a product-harm crisis were supported by numerous interview references as displayed below.

In support of main theme one, the use of pre-crisis strategies to mitigate losses from a product-harm crisis, participant P1 stated the following:

> Our company is constantly reviewing various articles and journals to find new innovative strategies that will enhance our ability to fight-off a product-harm crisis. We believe that it is important to have strategies for pre-, mid-, and post-crisis crises and believe pre-crisis preparation for a crisis is vital to assure mid-crisis and post-crisis strategies will likely mitigate losses.

Sub-theme (a) supply chain contamination was a result of analysis of the interview remarks of all three participants and supported by corporate documents. Collier et al. (2014) suggested that dangerous pathogens can be passed along the food supply chain in several manners causing illness and death. Managers who are aware that ingestion of contaminated agricultural products originating from any point along the food supply chain may cause illness or death are poised to develop and implement strategies to mitigate losses from an agri-food crisis (Kher et al., 2013; Magdoff, 2015; Stallones & Beseler, 2016). Participant P1 commented that "…any organization in the agri-food business that does not focus on their entire supply chain concerning possible contamination is destined for a crisis.". The rationale for choosing sub-theme (a) results from the interview participant's responses to the interview questions, as well as relevant

company documents to support the sub-theme. Managers who continually monitor their supply chain as a strategy to quickly determine a contamination lower the risks associated with the crisis (Stallones & Beseler, 2016).

Sub-theme (b) traceability and all other sub-themes have support from interviews and relevant company documents, as well as journal notes, and peer reviewed articles. Chaturvedi et al. (2013) Collier et al. (2014), and Zavyalova et al. (2016) suggested that managers who know the geographic location of a product-harm crisis can trace the origin rapidly, which should result in reduced financial losses, as well as minimizing illnesses and deaths. Participant P2 commented that "...using the HPP process allows rapid traceability because HPP eliminates pathogens present previous to the process."

Sub-theme (c) third-party certification (TPC) had support as a strategy to mitigate losses from a product-harm crisis from all the participants. Participant P1 commented that "… our company's greatest fear is obtaining products that had a TPC stamp of approval yet the products fail U.S. standards, which result in a product-harm crisis." According to Cole and Brown (2014), consumers rely on third-party certification organizations to trace the origin of their products as one of the exacting criteria for quality assurance and quality control, but the TPC's for imported goods frequently lack verification of the claims. Agri-food managers with the knowledge that some TPC's do not meet U.S. guidelines will likely reduce future product-harm crisis because using the knowledge as a strategy to investigate TPC's in-depth will sort out the ineffective certifiers. Glasbergen (2013) suggested that the most critical concern about agri-food safety is a certification that the products meet or exceed United States government standards for quality. Each of

the participants expressed concern that some third-party certifications have a lower standard than FDA requirements.

Sub-theme (d) is word-of-mouth communications. All of the participants acknowledged they utilize WOM communications with consumers because it allows access to consumer thoughts during all phases of a potential crisis, which could be a strategy to mitigate any unknown negative consumer attributes toward the brand and company. Participant P3 commented that "…. what hurts a business involved in any phase of a product-harm crisis is what they do not know." Word-of-mouth (WOM) communication is the process of communication between consumers concerning corporate attributes wherein companies hope WOM becomes a positive influence and constant communication of brand acceptability (Sallam, 2014). Sallam (2014) suggested exploring WOM communications as a strategy to reduce losses from a product-harm crisis.

Sub-theme (e) consumer willingness-to-pay (WTP) for enhanced food security is useful information for agri-food managers to use as a basis for determining new strategies to mitigate a product-harm crisis, even though the strategy adds expense. Agri-food managers that know the consumer's WTP for increased food safety could allow the purchase of a higher cost strategy to increase profitability (Freedman, Kearney & Lederman, 2012). Each of the participants expressed knowledge of WTP as a strategy to mitigate losses from a product-harm crisis. Participant P3 stated the following:

One of the reasons our company has not used certain strategies is because of the

> additional cost. The CEO of any business must balance cost against profitability. Knowing that consumers have a willingness-to-pay for increased food safety provides a safety net for agri-food businesses to utilize strategies that might cost more than the current strategies, which should result in greater food safety for the consumer.

All participants support sub-theme (f), the use of social media and other media as pre-crisis strategies to mitigate product-harm crisis because of many remarks each made about the necessity of such media to stay current in today's business environment. Twitter and Facebook are social media sites that could provide additional attenuation of negative consumer reactions to a product recall provided the tweets from the managers of the company be positive and frequent (Borah & Tellis, 2016). Participant P3 commented stated the following:

> We use Facebook and Twitter, as well as Instagram social media sites as a strategy to communicate with our stakeholders, consumers, and employees. Consumer sentiment can change quickly. The ability to track and understand any change in positive sentiment about our products is essential to understand so that new communications between the consumer and us can start immediately."

Participant P2 stated the following:

> There might be new strategies forthcoming, that we are not aware, to mitigate the losses from a product-harm crisis similar to when information suggesting the use of Facebook, Twitter, and other medias for communication strategies with the consumers. We [company C2] continually monitor numerous sources to harvest

> nuances to our current strategies. The problem I see is not what strategies are available, but what nuances of current strategies are used.. Our company uses Facebook and Twitter as a strategy to communicate with consumers and stakeholders.

It is important for agri-food managers to know when a product-harm crisis occurs before consumers react to negative health impacts resulting from the use of a contaminated or defective product (Leighton, 2016; Roman & Moore, 2012; Song, Sheinin, & Yoon, 2016). The negative health aspects of consumer illness or death determine the contamination is a product-harm crisis (Leighton, 2016). Moreover, Leighton (2016) suggested that using strategies to mitigate a product-harm crisis before a product-harm crisis could provide rapid response to reduce potential losses from a crisis and is vital to protect brand and organization sustainability.

Agri-food managers charged with protecting the company and consumers from a product-harm crisis are responsible for assuring the products delivered to the consumers are free from contamination (Magdoff, 2015). Failure to provide sufficient mitigating strategies to protect the company and consumers could result in a crisis causing the loss of corporate sustainability, as well as consumer illness and loss of life (Leighton, 2016). Table 2 displays the pre-crisis strategy, the number of sources (interviewees), and the number of times the sources referenced a strategy. Participant P1, P2, and P3 provided statements that corroborate the interview and document responses.

Table 2

Frequency of Responses for Sub-Themes of Emergent Theme 1 Found Through Interviews

Theme: Pre-crisis strategies	No. of sources	No. of references
Supply chain contamination	3	10
Traceability	3	15
WOM communications	3	11
WTP	3	10
Use of social and other media	3	13

Review of data from participant interviews provided confirmation and affirmation of the use of pre-crisis mitigating strategies some managers use in the agri-food business. Participant P1 commented as follows:

> Although we rely on and use pre-crisis strategies concerning contamination of products throughout our supply chain, traceability is the cornerstone of our strategies. Our knowledge of word-of-mouth communications, willingness to pay for increased food safety, and how to use social media as a mitigating strategy is extremely vital.

All of the participants suggested that the five pre-crisis sub-theme strategies to mitigate losses from a product-harm crisis are useful as mitigating strategies in the pre-crisis phase. Participant P2 commented as follows:

> Our company prides itself on keeping up with the state of the art strategies to protect our customers and consumers from a product-harm crisis. We are always concerned with contamination at any point along the supply chain and equally concerned with methods to trace the origin of contamination rapidly. WOM, WTP, and social media are just as important for mitigating a product-harm crisis

any strategy because they must all work in tandem for maximum protection. Participant P3 and company C3 survived a product-harm crisis that was close to causing the loss of brand and company sustainability. Participant P3 stated:

> We managed to squeak through a devastating product-harm crisis, which almost resulted in the closure of the company because of financial expenses. The amount of time and money spent to sustain the company was unbelievably difficult. We believe mitigating pre-crisis strategies are necessary, but only if mid and post-crisis strategies are aligned to protect the company. Supply chain contamination is a constant concern as well as having the ability to trace the origin of contamination. In addition, we are very strict on accepting third party certifications of our products because many of them come from foreign sources. Since surviving our product-harm crisis, we added a full-time food safety person to review current and possible additional strategies to mitigate product-harm crises. We are familiar with social media and use that media as one of our mitigating strategies. We have seen some data about willingness-to-pay for added food safety and believe such data is helpful as a strategy to encourage our retail and online partners that the customer is willing to pay a bit more for increased food safety.

Data from the company documents provided corroboration of the interview responses because of the similar distribution of responses between the interviews and document data. Table 3 includes the sub-themes found during document review, the number of document sources, and the number of times the sub-themes appeared in the

documents. In addition, several of the documents included information on quality control (QC), quality assurance (QA), guarantees, and commitment to constant vigilance to find new strategies to reduce the probability of a product-harm crisis.

Table 3

Frequency of Responses of Sub-Themes of Emergent Theme 1 Found Through Document Review

Theme: Pre-Crisis Strategies	No. of Sources	No. of References
Supply chain contamination	6	10
Traceability	5	15
WOM communications	3	10
WTP	3	10
Use of social and other media	3	13

My analysis of the document review responses compares favorably with the interview results and the participant documents and interviews illustrated some agri-food managers use strategies to mitigate product-harm losses. Emergent theme two follows describing mid-crisis strategies.

Emergent Theme 2: The Use of Mid-Crisis Mitigating Strategies for the Agri-Food Business.

My analysis of the data analysis revealed several references to the main and sub-themes for emergent theme two. The sub-themes WOM consumer communications and using social media as a strategy to mitigate product-harm crises overlapped from phase 1 into phase 2. In addition my further analysis of the interviews and company documents provided the second emergent theme and revealed four mitigating strategies as sub-

themes. The sub-theme mitigating strategies are (a) spillover liability, (b) WOM communications between organizations and consumers, (c) the use of social and other media, and (d) company image management. Sub-theme (a) spillover liability for companies in the same category as one involved in a product-harm crisis, but not directly involved in the crisis was a dominant concern for all interview participants. Participant P1 is a grower, packager, and shipper of agri-food products from U.S. and international locations. Participant P1 expressed concerns about spillover liability and corporate image management and stated the following:

> Our company is involved in private label packaging from a foreign location with warehousing, distribution, marketing, sales, and administration in the United States. It is imperative that every shipment of our products be checked and rechecked to meet all U.S. federal and state regulations regarding food safety. Because of the potential liability associated with a product-harm crisis from agri-food shipped into the U.S., we are very cognizant of the potential our products could be linked to a similar product involved in a product-harm crisis and cause us considerable financial and brand damage. The concern of being linked to a product-harm crisis in the same category as the primary offender is always a problem and more so, because the news media becomes aware of the crisis while in the mid-crisis phase and begins commenting on the product and the crisis.

The use of consumer WOM communications is described above as a sub-theme for emergent theme one, which is also useful as a mid-crisis mitigating strategy. My additional review of WOM demonstrated references from each participant for all three

phases of a product-harm crisis. In addition, the use of social media as a strategy to mitigate a product-harm crisis had numerous references as a strategy for all phases of a crisis.

Using media to enhance the image of business before, during, and after a product-harm crisis is a practice agri-food managers should be aware of and utilize (Ho et al., 2016; Kim & Choi, 2014). In addition, agri-food managers that understand the three phases of a product-harm crisis as well as, how to use the media to promote image restoration, should provide agri-food managers strategies to reduce the losses from a product-harm crisis and restore brand and corporate image (Ho et al., 2016; Kim, 2013; Kim & Choi, 2014).

Participant P3 stated the following:

> When we first learned of our product-harm crisis, we thought going quiet, and stealth was the best solution. While our legal team advised us to use stealth as a strategy, we believed our stakeholders and consumers should know how hard we were working to remedy the crisis. Because of our core beliefs that the consumer is first to protect, protection of the corporate image is necessary for corporate and brand sustainability, but image protection occurs if we protect the consumer properly. Of course, we are always concerned about the potential of spillover liability from another company in our space [packaged foods], but WOM communications with consumers is an area we utilize through Facebook and Twitter social media as a strategy to communicate to our consumers, stakeholders, and employees, should about numerous issues.

Additionally, my review and analysis of the document data corroborated the interview findings showing similar numerical results. All participants agreed that the use of mid-crisis mitigating strategies during a product-harm crisis is essential for the brand and corporate sustainability. Each of the participants mentioned the importance of transparency of all corporate actions during each phase of a product-harm crisis. Table 4 includes a summary of the use of mid-crisis mitigating strategies for the agri-food business mentioned in the interviews and the document reviews

Table 4

Frequency of Responses of Sub-Themes of Emergent Theme 2 Found Through Interview Review

Theme: Mid-Crisis Strategies	No. of Sources	No. of References
Sub-themes:		
Spillover liability	3	12
WOM communications	3	11
Use of social and other media	3	13
Corporate image management	3	22

The results of my data analysis confirmed the main theme that managers use mid-crisis strategies. The numerical responses of my findings displayed in Table 4 demonstrates that all of the sub-themes are similar in the number of responses from the interview participants. Iterative spillover risks are complicated, and therefore the strategic solution may not be as obvious as the risk to the primary organization responsible for the product-harm crisis (Olsen, 2014). Using the media to enhance the image of business before, during, and after a product-harm crisis is a practice agri-food managers should be

aware of and utilize (Ho et al., 2016; Kim & Choi, 2014).

Participant P1 stated the following:

> We believe that other businesses in the same space [similar products] may not focus as intently as we do to protect their corporate image and the consumer from a product-harm crisis. From our perspective spillover liability can be just as severe a problem as if we had the crisis. Therefore, strategies to protect against spillover liability as a mid-crisis focus carries over to protecting our corporate image as well. Our company strongly supports interactions with our consumers and customers by using Facebook and Twitter as a communication tool. Obviously, we are always educating ourselves about how best to use WOM and social media to protect our brand and corporate image and maintain sustainability for both.

Table 5 shows the results obtained from the document review that support the theme of mid-crisis strategies. The table is similar to all previous tables providing the main theme, sub-themes, the number of sources, and the number of responses. The data I included in Table 5 corroborates the findings from Table 4.

Table 5

Frequency of Responses of Sub-Themes of Emergent Theme 2 Found Through Document Review.

Theme: Mid-Crisis Strategies	No. of Sources	No. of References
Sub-Themes:		
Spillover liability	3	8
WOM communications	3	10
Use of social and other media	3	13
Corporate image management	3	20

My document findings align and corroborate the findings from the interviews and literature. The number of responses in the document review Table 5 is similar to the number of responses from the interview results. All participants referenced spillover liability, WOM communications, use of social media, and corporate image management as necessary strategies during the mid-crisis phase of mitigating a product-harm crisis. In addition, my research using the documents and interviews provided imilar numbers of responses, which guided the selection of each sub-theme.

Emergent Theme 3: The Use of Post-Crisis Mitigating Strategies for the Agri-Food Business.

Tables 6 and 7 are the results of responses from interviews and documents provided by participants who discussed their priorities for post-crisis product-harm strategies to mitigate product-harm crises. The results of my analysis of interviews and documents revealed that five sub-themes were essential during the post-crisis phase of a product-harm crisis. Corporate and brand sustainability emerged as two additions to the

list of sub-themes. Corporate image management, WOM, and the use of social media overlapped from pre- and mid-crisis sub-themes. The overlapping of several sub-themes indicates that using some sub-themes during all phases of a product-harm crisis may be appropriate for agri-food managers to understand and incorporate into their company if not currently practiced.

Branding. Cleeren, van Heerde, and Dekimpe (2013) indicated that branding a product provides consumers perceived quality assurance and the process by which brand equity adjusts following a product-harm crisis is a function of the severity of a product-harm crisis. Also, consumer brand attitudes may become cynical after a product-harm crisis bringing about prolonged corporate losses because of severe dissatisfaction with the brand (Cleeren et al., 2013). Participant P1 added information about their company's post-crisis strategies by stating the following:

> Our brand and brand attributes are the foundation of our company. If customers lose confidence in our brand and associate negative attributes with the brand, we have the risk of loss of sustainability and possible loss of corporate sustainability.

Attributes are a set of linked, ethical, differentiated promises between the consumer and the product such that the consumer response to a brand after a product-harm crisis establishes the relationship between corporate social irresponsibility and the desire to punish the brand (Sweetin et al., 2013). Participant P2 provided comments about the post-crisis strategies they use by stating the following:

> HPP is a brand we use as a tolling service to many domestic and international customers. Our brand is tied directly to our corporate image and name. If we lose

> brand credibility, we will lose corporate credibility. Our corporate image provides a link to the consumer products free of harmful pathogens that could cause a product-harm crisis. Our primary focus is protecting the consumer, which also protects our image and ultimately the brand and corporate sustainability.

Importantly, the relationship between brand equity and the cumulative effects on a brand after a product-harm crisis are critical factors that affect sustainability and could reduce consumer willingness to buy a product after the crisis (Cleeren et al., 2013; He & Ran, 2015; Tan, Devinaga, & Hishamuddin, 2013). Participant P3 provided insight into their companies use of post-crisis strategies to mitigate losses from a product-harm crisis by stating the following:

> Because our company almost lost brand, and corporate sustainability resulting from a product-harm crisis, we know that corporate image directly ties to sustaining a positive brand image, which leads to a positive corporate image and ultimate brand and corporate sustainability.

Social media. All of the participants reiterated that WOM and the use of social media are important strategies they use to communicate with the consumer, employees, and stakeholders, but both strategies are evolving and are expected to have greater functionality over time. Participant P3 stated the following:

> Social media and other forms of media are always moving targets that change with time and the situation. Using social media is an area we must continue to utilize with greater clarity of purpose to protect our company and consumer from experiencing a product-harm crisis. When a crisis occurs, we must be prepared to

mitigate losses by communicating openly and honestly with consumers, stakeholders, and employees. WOM communications between consumers is an area we feel is useful and plan to continue expanding as a post-crisis strategy. We currently use Facebook and Twitter as our vehicle to communicate with the consumer allowing us involvement with consumer WOM communications.

Once a crisis has moved to the post-crisis phase, both the literature and interview data indicate it is essential to be even more involved with the consumer in as many ways as possible. Tables 6 and 7 are summaries of my findings concerning interview and document information associated with post-crisis mitigating strategies.

Table 6

Frequency of Responses of Sub-Themes of Emergent Theme 3 Found Through Interview Review

Theme: Post-Crisis Strategies	No. of Sources	No. of References
Sub-themes:		
Sustaining brand attributes	3	30
Corporate sustainability	3	30
WOM consumer communications	3	15
Use of social and other media	3	20
Corporate image management	3	22

My analysis of the literature response data indicated a strong concern and use of strategies sustaining brand attributes, corporate sustainability, and corporate image. The number of responses attributed to WOM and use of social media is consistent with previous participant comments. WOM and social media are integral for protection against a crisis. Previous researchers have deliberated and discussed the need for strategies to

mitigate degradation of a brand. A practical need exists for corporate brand strategists to recognize consumers' brand attributes *before* and *after* a product-harm crisis and their willingness to punish the brand and the organization (Cleeren et al., 2013; Grappi, Romani, & Bagozzi, 2013; Sweetin et al., 2013). Participant P1 expressed his thoughts about post-crisis strategies to mitigate product-harm crises by stating the following:

> Because we are involved in producing products in another country, we must always be vigilant of our U.S. corporate image. We use several strategies in tandem to assure that if a product-harm crisis occurs, we have pre-planned to mitigate possible losses. Our corporate image promotes our brand and corporate sustainability, and the reverse is true. The link between image, brand, and corporate sustainability all must work in unison to provide maximum protection against a crisis. If one link fails, the entire organization could be doomed. We believe total transparency of our actions is critical to survival regardless of a crisis. We are using social media like Facebook and Twitter as well as some international newsletters to maintain the customer, corporation, and consumer communications open. By using social media, we are tapping into the consumer WOM communications and plan to expand the use as a strategy for all phases of a product-harm cycle.

Table 7 provides information on the relevant documents provided by the participating companies. The table displays information about the sub-themes, the number of sources, and the number of responses to each sub-theme.

Table 7

Frequency of Responses of Sub-Themes of Emergent Theme 3 Found Through Document Review

Theme: Post-Crisis Strategies	No. of Sources	No. of References
Sub-themes:		
Sustaining brand attributes	3	30
Corporate sustainability	3	30
WOM consumer communications	3	6
Use of social and other media	3	6
Corporate image management	3	22

My analysis of the participating organizations relevant company documents revealed findings in support of the interviews. Sustaining brand attributes and corporate sustainability received the most responses, followed by the corporate image. In addition, my review of interview data suggests that WOM consumer communications, the use of social media, and other forms of media, which overlap from emergent themes one and two are necessary strategies during all phases of a product-harm crisis. The participant's responses aligned suggesting that protecting the brand, maintaining corporate sustainability, and managing the corporate image were critical strategies during post-crisis. Leighton (2016) emphasized that a failure to communicate during all phases of a product-harm crisis could result in lost revenue, jobs, brand acceptance, and corporate sustainability. Zhang et al. (2016) emphasized that Facebook communications could be an option for decision makers to monitor numerous messages online, better understand stakeholder concerns, and respond to concerns quickly. The strategies listed above align with the central research question and the conceptual framework. Each of the main

strategies in this research study supports the Coombs' (2007) SCCT because communication in all phases of a product-harm crisis is necessary to mitigate losses and assure proper implementation of the sub-theme strategies.

My analysis of the interview and document responses as well as a review of the literature suggests that agri-food managers use strategies to mitigate potential losses during the post-crisis phase of a crisis. Participant P1 stated the following:

> Without a comprehensive set of strategies to mitigate possible losses from a product-harm crisis and continual monitoring of each strategy, our company, and probably all companies in the agri-food business, increase the risk of losing brand and corporate sustainability because of a severe product-harm crisis.

Emergent Theme 4: The Use of HPP as a Mitigating Strategy to Reduce Losses from Product-Harm Crises

The HPP process provides confidence that no pathogens exist in the products after processing, which allows rapid tracing of a possible subsequent crisis. The marginal cost to provide HPP to the consumer may be of little concern based on data collected about consumer willingness-to-pay (WTP) for increased food safety. The results of my research indicates HPP provides a date showing the elimination of all pathogens, which should allow rapid tracing of the origin for any subsequent crisis. Reducing the time to determine the origin of a foodborne illness reduces the number of people exposed to the foodborne outbreak. Moreover, rapid origin traceability lowers corporate expenses and consumer illnesses while potentially saving many lives (Leighton, 2016). My research indicates the use of HPP as a strategy to mitigate losses from product-harm crises aligns

with the central research question: What strategies do agri-food managers use to mitigate agri-food product-harm crises? In addition, each strategy aligns with the Coombs' (2007) SCCT, which is the conceptual theory for this research study. Communications among all employees, executives, stakeholders, and consumers is necessary to minimize losses from a product-harm crisis.

Table 8 is the number of sources and responses from those sources for main theme four. Main theme four is the use of high-pressure pasteurization (HPP) as a mitigating strategy for the agri-food business. Karp et al. (2015), and Kingsley (2013) commented that the HPP process uses high pressure and low temperature in a closed vessel to incapacitate initially and ultimately kill pathogens in certain agri-foods. HPP eliminates pathogens from particular types of meat and produce, allowing for faster tracing and tracking of a foodborne illness (Gil et al., 2015; Karp et al., 2015; Sckokai et al., 2014).

Table 8

Frequency of Responses of Sub-Themes of Emergent Theme 3 Found Through Interview Review.

Theme: HPP	No. of Sources	No. of References
Sub-theme:		
High-pressure pasteurization	3	40

My research findings in Table 8 illustrates there were a significant number of references discussing HPP as a mitigating strategy. All participants were knowledgeable of the HPP process and supported the strategy as a main theme. I included the HPP

process as a main theme because one of the participants provided extensive information about their work with HPP. The combination of literature and analysis of the interviews, as well as relevant corporate documents provided by P2, provided sufficient information to support HPP as a main theme. Based on analysis of the interview and document data HPP was selected as an overarching strategy to mitigate losses from a product-harm crisis. The HPP process reduces the probability of a product-harm crisis occurring, and if one occurs, post-HPP rapid determination of the origin of contamination should save the organization significant monetary losses. Participant P2 stated the following:

> We are extremely vigilant to check all our systems daily to assure there is no cross contamination to other products during our process. To my knowledge, there has not been any pathogen contamination traced back to products using the HPP process. Also, if there were a pathogen-induced contamination, the HPP process allows agri-food managers to quickly trace the origin of the pathogen because no pathogens were alive after the process.

Manitz et al. (2014) noted that HPP could be a strategy to mitigate losses from an agri-food product harm crisis because managers can quickly determine the point of origin of a foodborne illness after the HPP process by tracing back to the date and time of processing. Using HPP as a tactical strategy to provide enhanced food safety for certain agri-foods could reduce foodborne illness and loss of lives at a small cost to the retailer, which could be passed on to the consumer (Karp et al., 2015; Manitz et al., 2014).

As previously noted, some agri-food managers are reluctant to use certain mitigating strategies because of increased cost and the fear an increase will cause

consumers to choose other brands. Evidence from the interviews and the literature suggests a consumer willingness-to-pay (WTP) for increased food safety. The WTP could be used to increase market share for a retail seller of HPP processed products because it represents an increase in food safety and allows the cost of HPP be passed on to the willing consumer. Using HPP as a tactical strategy to provide enhanced food safety for certain agri-foods could reduce foodborne illness and loss of lives at a small cost to the retailer, which could be passed on to the consumer (Karp et al., 2015; Manitz et al., 2014). Participant P1 stated the following:

> Our product does not have the necessary physical properties to use HPP because it is dry and HPP requires a significant moisture content in the product to be effective. However, we investigated HPP as a strategy to mitigate losses from a product-harm crisis and determined the increased cost could be passed on to the consumer if proper marketing techniques were employed.

The strategies listed as main themes and sub-themes from my research findings demonstrate a variety of methods to mitigate product-harm crises. All of the participants expressed that their first concern is the well-being of the consumer, and that when a product harm occurs, their company has strategies to mitigate the crisis quickly and properly. Reducing the time to trace the origin of an agri-food product-harm crisis could save millions of dollars for corporations while reducing illness and the loss of lives (Backev, 2013). Participant P2 added to the understanding and acceptance of HPP as a main theme strategy to mitigate product-harm crises by stating the following:

> We continually refresh our managers and employees about strategies we use to

provide a contamination free environment. Also, we are always looking at new strategies to fortify our desire to be contaminant free. HPP does provide an overarching strategy to mitigate product-harm crises because the process eliminates active pathogens, consequently reducing the need for some of the pre-, mid-, and post-crisis strategies used by agri-food managers. God, forbid we do have a crisis; we want and need to trace the contamination origin quickly. HPP provides the opportunity to trace a contamination quickly, which should reduce company expenses to recall and clear the crisis. Reducing the number of consumers exposed to a contamination should lower the number of illnesses and save lives.

Participant P3 stated the following:

We have not used HPP for our products, but have investigated the process and are considering the use for some of our products. Honestly, the increased cost is a concern about using HPP because we are not sure if the cost merits a loss of profits. If the consumer perceives the expense of the HPP process as an added benefit for increasing consumer food safety, we might be able to pass the cost on and enable us to use HPP. Based on our research and discussions with others [agri-food managers] we feel HPP would be an excellent strategy for some of our products, to protect the consumer and us from a product-harm crisis.

Table 9

Frequency of Responses of Sub-Themes of Emergent Theme 3 Found Through Document Review.

Theme: HPP	No. of Sources	No. of References
Sub-theme:		
High-pressure pasteurization	10	60

Table 9 is ten sources of information discussing various aspects of HPP as a strategy to mitigate a product-harm crisis. After review of the interview data and comparison to the relevant company documents, it became evident that HPP is a valid strategy to protect specific meats and vegetables from contamination thereby reducing the probability of a product-harm crisis and subsequent financial losses. However, although the participants acknowledged the validity and desire to use HPP, two of the three participants do not use HPP. This information provides interesting possible answers to the question of why. From a qualitative view, using the participant answers, one of the participants' products did not have the moisture content allowing the use of HPP. The second participant expressed an interest in using HPP because of awareness of HPP as a mitigating strategy to reduce losses from a product-harm crisis but was concerned about losing customers because of increased costs. This interview information allows me to deduce that informing agri-food managers of consumers' willingness-to-pay (WTP) for increased food safety might have a positive impact on increasing food safety. Increasing food safety aligns with the central research question, and communicating the advantage

of HPP as a strategy to reduce losses from product-harm crises is evidence that the use of the Coombs' (2007) SCCT as the conceptual framework for this study is valid.

The interview findings revealed advantages and disadvantages of some mitigating strategies. My designs of the interview questions allowed the participants to question and suggest disadvantages of any strategies they deemed unacceptable. Two of the participants suggested that HPP was an advantage if affordable, but a disadvantage to companies whose products had marginal profit. The concerns were that the increased cost of extra protection by using HPP would not allow them to maintain acceptable levels of profit and market share. Although all of the participants were aware of the consumer willingness-to-pay (WTP) for increased food safety, two of the participants expressed reluctance to base a decision to use HPP on the WTP information they have. This study should provide agri-food managers data about consumer WTP as a strategy to increase food safety, which could increase the use of HPP, add to consumer protection against a product-harm crisis, reduce the organization expense of a prolonged recall, and save lives.

Summary

Zavyalova et al. (2016) declared that all food contamination crisis events should receive equal attention to minimize the effects of the contamination, regardless of the location or severity. The information obtained from participant interviews corroborates the literature findings suggested by Zavyalova. Participant P1 stated the following:

> There will be new strategies to mitigate losses from agri-food product-harm crisis as the agri-food market changes, but the core strategies agri-food managers use to

mitigate a crisis seem to be well known. The genuine usefulness of using strategies is a result of the choice of strategy and how used.

The intent of this study is to provide a qualitative case study to demonstrate the strategies some agri-food managers use to mitigate agri-food crises. My analysis of the interview data yielded four main themes that emerged from the interview data. My further analysis of the document data corroborated and confirmed the results from the interview data. In addition, the my research findings confirmed and aligned with knowledge found in the literature and also demonstrated that validation of the findings occurred through multiple sources of data.

The results of my research study supports the claim by Backey (2013), Manitz et al. (2014), and Olsen and Borit (2013) that sharing information about methods to trace foodborne illness between government and non-government managers rapidly could enhance food safety in the United States. My study findings also confirm the findings of Ho et al. (2016), Kim (2013), and Kim and Choi (2014) who stated that agri-food managers may have an awareness of strategies to sustain a brand, yet the literature seldom explicitly describes strategies to mitigate a product-harm crisis. Additionally, my interview findings provided explicit discussion about what strategies agri-food managers use to mitigate product-harm crises, whereas my findings from the literature provided mostly implied information about strategies.

I analyzed the research findings from the perspective of the Coombs' (2007) SCCT, which is included in the conceptual framework. My findings from the study confirmed that the ability to communicate during the pre-, mid-, and post-crisis phases of

a product-harm crisis, combined with the use of multiple strategies, validated the choice of the Coombs' (2007) SCCT is the theory used in the conceptual theory for this study. Managers using the SCCT should use multiple strategies to prevent negative crisis effects, depending on the assessed level of crisis responsibility for the consumer (Utz, Schultz, & Glocka, 2013). In addition, my research findings provided evidence that answers the research question: What strategies do some United States-based managers of agri-food companies use to mitigate a product-harm crisis?

The themes I outlined in this study provide strategies managers use to mitigate losses from a product-harm crisis and demonstrate the use of specific strategies during the three phases of a product-harm crisis. The knowledge gained through this study should allow agri-food managers a better understanding of the different strategies available as well as when to use specific strategies. Reducing the possible financial losses from a product-harm crisis could be the difference between company sustainability and closure.

Applications to Professional Practice

The purpose of this qualitative multiple case study is to explore effective mitigating strategies that some United States-based agri-food managers use to mitigate losses from product-harm crises. Utilizing the analysis of the semistructured interview responses and a review of relevant company documents, I found that all of the participants use strategies to mitigate losses from the product-harm crises. Each participant stated that additional information from the final study would be beneficial to assure they are knowledgeable about possible nuances to their existing strategies.

Moreover, each participant discussed that implementing new mitigating strategies is often based on the cost to acquire and implement a new strategy. The three participants expressed knowledge of all the main themes; one had a full understanding of the overarching benefits of HPP as a mitigating strategy. Since some agri-food managers suggested cost to acquire and implement new strategies is a concern this study should provide practical strategies to use willingness-to-pay (WTP) for increased food safety. The data from this study supports the consumer willingness-to-pay (WTP) for greater food safety, which implies the ability to pass on the higher cost to the consumer and protect the seller from reduced profitability and loss of market share.

The sub-theme strategies to mitigate product-harm crises appear under the main themes of pre-, mid-, and post-crisis strategies to mitigate product-harm crises because of the universal understanding of agri-food managers that there are three phases to a product-harm crisis as suggested by Coombs' (2015). My analysis of the interview data combined with literature research suggests that some of the pre-crisis strategies are interchangeable with the mid and post-crisis strategies and that most mid- and post-crisis strategies are interchangeable. In addition, my research data suggests the use of a particular strategy depends on the type and severity of the product-harm crisis. Participant P1 stated the following:

> Regardless of how we prepare for a product-harm crisis, the pre-crisis strategies are like preventative maintenance for a car. The strategies that fit our needs during mid- and post-crisis are determined by the type and severity of the crisis. In fact, most of our mid- and post-crisis strategies can fit into either category as needed.

Three of the main themes that emerged from the participant interviews came from interview comments concerning pre-, mid-, and post-crisis strategies to mitigate losses from a product-harm crisis. The selection of the three phases of a crisis is a natural grouping because each phase of a crisis requires deliberate and specific strategies (Leighton, 2016). The use of pre-crisis strategies is a preparatory method that commences with the acknowledgment that a crisis can and will occur. Agri-food managers who understand it is not a matter of *whether* a product-harm crisis will occur, but rather *when one occurs*, are better prepared to develop strategies to protect consumers from a product-harm crisis (Nakuja et al., 2015).

The findings from my research suggests understanding and preparing for the risks associated with a product-harm crisis is critical for mitigating a product-harm crisis. Product-harm liability has a broad range of outcomes with the harshest result the death of one or more people and subsequent corporate struggle to maintain sustainability (Leighton, 2016). Awareness of supply chain risks associated with a product-harm crisis is a practical application for agri-food managers as a strategy to mitigate possible losses. Hartman and Moeller (2014) suggested that food supply chain liability increases when a crisis results from supplier behavior caused by executive decision makers rather than individual employee errors. My research of the interview and literature data suggests that a rapid tracing and tracking method in place previous to a crisis provides agri-food managers comfort that they can determine the origin of a crisis and reduce possible future losses when a product-harm crisis occurs. Both traceability and tracking are essential to a food recall to ascertain the origin of a contamination quickly, thereby reducing the loss of

lives and illness and mitigating the economic impact to the business (Jin & Zhou, 2014). Many of the strategies in this study focus on understanding and identifying problem areas within the agri-food business that might catalyze a product-harm crisis. Furthermore, my analysis of the interview and literature information suggests that agri-food managers that understand the inefficiencies of TPCs could provide a strategic advantage to their company by carefully reviewing all TPCs internally before passing products through to the consumer.

Additional strategies that apply to professional practice are using word-of-mouth (WOM) consumer communications and social media to discover what consumers are discussing about the organization and to provide communications to the consumer about the company. The Coombs' (2007) SCCT is the theory used in the conceptual framework for this study, which focusses on communication during all phases of a product-harm crisis and aligns with the interview data suggesting the importance of communicating during all phases of a product-harm crisis. My research findings should demonstrate to agri-food managers that communicating with the consumer previous to a crisis and steadily through mid- and post-crisis could alleviate negative consumer attributes after a crisis. The relationship between brand equity and the cumulative effects on a brand after a product-harm crisis are critical factors that affect sustainability and could reduce consumer willingness-to-buy a product after the crisis (Cleeren et al., 2013; He & Ran, 2015; Tan, Devinaga, & Hishamuddin, 2013). Managers who understand the relationship between cumulative effects of a crisis on brand equity are better prepared to avoid loss of brand and corporate sustainability.

Agri-food managers who are aware of spillover risk and how to mitigate potential losses from a product-harm crisis may not be aware of the possibility such risk extends to their company. My analysis of the interview data suggests that corporate image, brand, and sustainability are interconnected, and that protection of the corporate image assists in brand and corporate sustainability. Agri-food managers who are knowledgeable about using the strategies suggested in this study should be able to reduce the risk associated with company financial losses caused by a product-harm crisis. According to Zavyalova et al., spillover risks can affect the brands of companies in the same product category that are not directly involved in the product-harm crisis. Managers of agri-food organizations should develop mitigating strategies to reduce consumer and business losses for the organization responsible for a product-harm crisis as well as to protect organizations not directly responsible for the crisis (Cleeren et al., 2013; Soon & Baines, 2013).

All of the strategies in this study assist in answering the research question: What strategies do some United States-based managers of agri-food companies use to mitigate a product-harm crisis? In addition, the strategies align with the Coombs' (2007) SCCT. Agri-food managers should consider communicating immediately with consumers to repair negative image perceptions following a product-harm crisis by committing to share all information about the crisis, to correct the problem that caused the crisis, and to discuss corporate core values (Kim & Choi, 2014).

Implications for Social Change

The implications for social change from this doctoral research study are immeasurable and priceless. Managers who are aware that ingestion of contaminated

agricultural products may cause illness or death are poised to utilize and implement new strategies to reduce foodborne illness and save lives (Kher et al., 2013; Magdoff, 2015; Stallones & Beseler, 2016). Those who have experienced or witnessed the pain associated with foodborne illness realize the seriousness of the problem. This research provides agri-food managers the opportunity to embrace the information in this study and use it to create new thoughts and strategies to mitigate human illness and deaths caused by product-harm crises. Agri-food managers who understand the physical pain and suffering resulting from foodborne illness should be motivated to explore strategies to reduce or eliminate the problem (Choi et al., 2014; Collier et al., 2014; Kher et. al., 2013; Kuchler, 2016),

Foodborne diseases can cause morbidity (the loss of health and well-being) and mortality (death), both of which create the risk of impeding U.S. and global socio-economic development (Pozo & Schroeder, 2013). Foodborne illness hospitalized an estimated 48 million Americans in 2010 from a total of 31 global foodborne disease hazards (WHO, 2015). The information in this study can make a difference. There are 48 million reasons to provide social change.

Recommendations for Action

Companies in the agri-food business are continuously concerned with a contamination causing a product-harm crisis that results in a product-recall, monetary losses to the company, illness, and loss of life to the consumer. My analysis of the data from the literature, interviews, and relevant company documents revealed that enhanced sincere, meaningful, communication between agri-food organizations and government

agencies about the what, how, and why a strategy is viable could add to food safety in the United States. Consumer forgiveness for harm to a brand, caused by a product-harm crisis, could result from meaningful corporate communications that display sincere consumer social responsibility (Mango, 2012; Tsarenko & Tojib, 2015). My ability to interview executives from various agri-food sectors provided insight to believe that gathering executives together in an open conference platform to discuss their use of strategies could provide greater insight for agri-food managers about the what, how, and why specific strategies are viable to enhance U.S. food safety.

Through the analysis of the interview information, it became apparent to me that some managers use strategies to mitigate a product-harm crisis as well as the areas deployed within the pre-, mid-, and post-crisis phases of a product-harm crisis. My additional review of the literature provided information about product-harm crises, but rarely specific examples of how and why to use a strategy. Publication of research information about explicit strategies to mitigate product-harm crises should advance the knowledge of how to handle a product-harm crisis through all phases. Agri-food executives that accept and implement the explicit strategies will enhance protection of the U.S. consumer from foodborne illness outbreaks. Publication of my research study should allow agri-food managers, government officials in the agri-food industry, and interested individuals evidence that open discussion, sharing, and issuance of the findings from these deliberations will add to mitigating product-harm crises. In addition to conferences for agri-food executives to discuss the specific use of strategies to mitigate product-harm

crises, the use of webinars, and blogs could be other methods to reach agri-food managers.

Recommendations for Further Research

The purpose of this study is to explore strategies some United States-based agri-food managers use to mitigate a product-harm crisis. The results of the research yielded significant information on the use of strategies to mitigate product-harm crises, as well as the time and place to use specific strategies, and the how and why. In addition, there was some apprehension about using specific mitigating strategies because of increased cost to acquire and implement. The procedures I suggested that are necessary to conduct a qualitative study could affect the results of the research because researchers may uncover different viewpoints than expressed in the literature. Future research could utilize the information from this study and expand the number of cases, geographic area, and diversity of management positions for the interview participants. In addition, providing a survey, rather than interviews, of a larger number of agri-food managers may determine an more precise number of agri-food managers that use mitigating strategies, rather than interviewing some agri-food managers that use mitigating strategies.

Furthermore, expanding the geographic area of the study may enhance the knowledge of different strategies used in various climates. An exploration of a larger sampling of agri-food products could also be an area for further research. The scope of this study was limited to determining what mitigating strategies some agri-food managers use in the U.S. A quantitative study may be appropriate to determine the relative percentage of managers using agri-food strategies in the U.S. More than 150 countries

exported food products into the U.S. in 2014 (Who, 2015). An additional area for further research might be to expand the area of exploration outside of the U.S. to provide a comprehensive study of the standards of third-party agri-food certifications to determine which certifiers meets U.S. government standards for quality assurance.

Reflections

The Doctor of Business Administration (DBA) program at Walden University has been an intellectual, physical, and emotional journey. The DBA course curriculum provided valuable methods and insights into why and how to compose an APA style research study. Reading numerous resources about how to compose a literature review provided excellent insight to answer the research question and gain collateral knowledge in unexpected areas that added to this study. The findings I discovered as a result of this study increased my knowledge about the number of illnesses and deaths associated with product-harm crises in the U.S. In addition, before starting the research, believed any agri-food company would gladly discuss the strategies they use to mitigate product-harm crises. Unfortunately, many companies received advice from their legal team not to discuss their strategies. Based on my analysis of the interview data, the inability to share knowledge about the strategies used to mitigate a product-harm crisis impairs the opportunity for other companies in a crisis to mitigate losses.

Knowledgeable business professionals from three companies provided valuable data about their use of strategies to reduce losses from a product-harm crisis. Linking the data from the literature review to the interviews and related documents from the interviews culminated by answering the central research question of this study: What

strategies to some agri-food managers use to mitigate a product-harm crisis? My research findings from this study provides a base of strategies for current and future agri-food managers to use to reduce the potential number of product-harm crises, lower the number of consumer illnesses, and reduce associated deaths. The study information should assist agri-food managers in reducing the financial losses associated with a product-harm crisis, but most importantly, the study resulted in a meaningful, insightful, and socially responsible study that should be helpful for United States-based agri-food managers as well as the global agri-food business.

The multiple case study approach involved exploring participants' perceptions and experiences regarding the strategies some United States-based managers use to reduce losses from a product-harm crisis. I used the bracketing technique to mitigate my bias by identifying and reflecting on personal preconceptions, assumptions, limitations, and personal views while strictly adhering to the study protocol. I used a strict discipline of following the study protocol as a guide for asking the interview questions to prevent injecting personal bias from altering the participant answers.

Additionally, I utilized member checking as a method to verify the accuracy of the data collected by providing a summarysummary of the participant interviews. Participants received a copy of their interview summary to review as part of member checking. After careful member checking, all participants provided their signature acknowledging the accuracy of the summary.

Conclusion

Beginning a qualitative research study with little qualitative research experience, provided me an open mind to learn from the qualitative experience without preconceived procedural bias. The breadth of my findings from peer-reviewed articles, interview data, as well as relevant company documents about U.S. agri-food product-harm crises, demonstrated that some managers use strategies to mitigate product-harm crises. The problem statement that some United States-based agri-food companies lack strategies to reduce the financial losses from product-harm crises was confirmed. However, the lack of strategies appeared to be more a lack of knowledge where and when to use specific strategies to maximize their efficiency. My research findings support restating the theoretical proposition that some agri-food managers lack strategies to mitigate product-harm crises to state some agri-food managers lack the knowledge to utilize or afford the cost of some known strategies. In addition, my research data provided information about the scope of the foodborne illness problem and what strategies some managers use to mitigate the losses from product-harm crises. The review of the literature implied and the interview participants confirmed, some corporate legal staff advises agri-food managers not to share internal corporate strategies. The inability to obtain information about internal strategies eliminated numerous possible interview participants.

Reviewing the data from this study, I found similarities and differences in participants' experiences using mitigating strategy to reduce losses from a product-harm crisis. My initial exploration of the literature indicated that successful mitigating strategies could be "effective" if the strategy worked so well a crisis never occurred or

that a specific strategy reduced losses in measurable ways. However, my additional analysis of the interview data suggests that measuring the term “effective” is too subjective to correlate a specific strategy based on a lack of occurrence of a product-harm crisis. The best method to measure the effectiveness of a strategy may be through a quantitative study.

I explored numerous product-harm cases from the literature and compared that data to the interview information about the ability to communicate with consumers, stakeholders, and employees concerning a product-harm crisis openly, honestly, consistently, and with sincerity, was the belief each participant suggested would allow their company to survive a crisis. The Coombs’ (2007) SCCT, used as the conceptual framework for this study, suggests the same methods of communication for surviving a product-harm crisis as indicated by the participants.

All of the participants suggested they were aware of companies using a food safety specialist to assure that contamination does not occur in their agri-food products by monitoring food constantly as it passes along the supply chain. The participants used pre-planned strategies to mitigate losses from a product-harm crisis, but often used different combinations of strategies than other companies. All the participants plan to expand the use of consumer communications to enhance their brand before a product-harm crisis occurs.

One similarity between the literature review and the interview results was that the participants were congruent to the literature by showing a desire to prevent a product-harm crisis and to protect organizations, stakeholders, and consumers, from losses,

including consumer illness and death. Zavyalova et al. (2016) suggested that not all agri-food managers understand that it is not a question of *if* a product harm crisis will occur, but rather *when* one will occur. However, the participants in this study did understand that a product-harm crisis will occur it is just not known when.

Because there were no new strategies provided from the participant interviews or subsequent evaluation of supporting documents, saturation occurred because no new explicit data appeared. Data saturation occurs when analyzing data collected from the interviews provides no new information (Onwuegbuzie & Byers, 2014). Data saturation is a term used to demonstrate an exhaustive search of all relevant sources of evidence to ensure a sufficient collection of quality information to sustain the study (Fusch & Ness, 2015). To recognize when data saturation occured, I used a close review of individual participant responses to interview questions before commencing other participant interviews, which allowed me to ask additional probing questions until no new data surfaced as per the suggestions of Yin (2014). Data saturation for this study occurred because each of the participants provided the same responses about the strategies some United States-based agri-food managers use to mitigate a product-harm crisis. In addition, I asked many additional probing questions of the participants, yet no new data emerged.

The lack of literature information about explicit mitigating strategies demonstrates the need to provide explicit information about the strategies agri-food managers use to reduce losses from product-harm crises. Participants P1, P2, and P3 suggested that most, perhaps all, companies used the same strategies. However, there was

a variance between participants as to the sequencing and specific time to use certain strategies. Participant P1 stated the following:

> There are no secrets when it comes to the strategies available to agri-food companies to mitigate a product-harm crisis. I would be surprised to find companies using different strategies from others. What does happen, in my humble opinion, is different companies implement and use strategies based on their financial capability for some and timing of others.

According to Cornelissen (2014), the constraints on managers to develop strategies to mitigate crises occurs because of several reasons, but mainly due to a lack of finances to pay for educational seminars and courses for agri-food managers to better understand available strategies. Another item derived from analysis of the information of this study is that managers aware of the consumer willingness-to-pay (WTP) for increased food safety could pass the costs on without fear of losing market share due to price sensitivity. In addition, analysis of the data indicated agri-food managers, who share information about the sequencing and use of specific strategies during different phases of a product-harm cycle, could serve a major role in reducing possible company financial losses, enhance corporate and brand sustainability, and save jobs. The most consistent comment from all participants was the desire to protect the consumer from illness and death resulting from a product-harm crisis.

The final results of this study indicate that agri-food organizations that continuously monitor their strategies placement for pre-, mid-, and post-crisis product-harm crises and communicate honestly to stakeholders, and consumers through all phases

of the crisis have a high probability of brand and corporate sustainability. The use of data from this study should provide the opportunity for numerous additional future research studies. Lastly, the research results of this study provide final data to answer the research question: What strategies do some agri-food managers use to mitigate a product-harm crisis?

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Appendix A: Interview Protocol

The aim of this interview is to answer the research question on strategies to mitigate losses from an agri-food product-harm crisis.

I will complete the following steps during each interview.

1. The interview will begin with a brief overview of the research, the purpose, and the time required for the interview.
2. Thank the participant for agreeing to participate in the interview.
3. Present a copy of the informed consent form and review the contents of the form with the participant. The items included in the consent form are: (a) the expected length of time to participate in the interview; (b) the interview will be audio recorded and if a participant chooses not to be recorded, handwritten notes will be taken; and (c) a summary of the interview will be presented to each participant to validate my interpretations of their responses to each interview question.
4. Explain that their participation is voluntary, and they can withdraw from the study at any time without prior notice and through a verbal or email request, even after the completion of data collection.
5. Provide my contact information to each participant in case a participant decides to withdraw from the study.
6. Obtain the participant's signature on the consent form as an indication of their agreement to participate in the study.

7. Collect the signed consent form and provide the participant a copy of the consent form for his or her records.
8. I will use a sequential coding system to identify the participants during the interview recording without using their names. For example, I will assign each participant an identifying pseudonym, such as A1, B1, and C1. I will explain that I will be the only person with access to the name of each participant associated with each pseudonym and that data from their interview will be identified in my database using only their assigned pseudonym.
9. I will record the interview after a participant signs a consent form. The interview will begin with open-ended questions, which may include probing additional questions to expand on the participant's responses.
10. At the end of the question period, I will remind the participant that they will be provided a summary of the interview and my interpretations of their responses to review and validate.
11. Request documents related to the use the interview discussion such as schedules, charts, graphs, or other internal records related to the use mitigating strategies that the organization is comfortable sharing. All document requests and received have been approved by the authorized representative of the company in the letter of cooperation.
12. I will end the interview and thank the participant for taking the time to participate.

Appendix B: Interview Questions

1. What factors and conditions led to the development of your company's strategies to protect your business against the likelihood of a product-harm crisis?
2. What adverse product-harm experiences are you familiar with and what were the results to the business?
3. What strategies has your company implemented to mitigate product-harm crises?
4. Are you considering modifying, updating, or adding any strategic plans to protect against a product-harm crisis?
5. What measures does your company use to determine suitable strategies to protect your company from a product-harm crisis?
6. How many of the following areas do you believe your company could use as strategies to further protect your company from a product crisis and why?
    a. Traceability and tracking,
    b. Corporate and executive ethics,
    c. Crisis communication protocols,
    d. Knowledge of systems to eliminate pathogens,
    e. Increased verification of third-party certification organizations, and
    f. Use of different forms of social media for pre, mid and post-crisis communications.
7. What other information regarding strategies for mitigating a product-harm crisis would you like to share?