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# Food Safety Practices and Managers' Perceptions: A Qualitative Study in Hospitality

Susan W. Arendt

*Iowa State University, sarendt@iastate.edu*

Paola Paez

*University of Costa Rica*

Catherine Strohbehn

*Iowa State University, cstrohbe@iastate.edu*

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# Food Safety Practices and Managers' Perceptions: A Qualitative Study in Hospitality

## **Abstract**

Foodservice managers are responsible for making sure employees follow safe food handling practices so customers do not become ill from unsafe food. Therefore, this study ascertained managers' perspectives using two methods of data analysis to answer the question, "What would make managers more effective in their role of assuring safe food practices are followed in the workplace?" Focus groups with current and future foodservice managers were conducted. The software program, Atlas.ti™ was used to complement researchers' analyses of focus group transcripts and develop visual representations of qualitative data. Major thematic categories identified by the managers in this study included: role identification, food safety training, and manager effectiveness. Using Atlas.ti™, data are visually mapped and relationships between different themes and theoretical ideas are represented. Based on the three major theme areas identified, foodservice operations should focus on improving manager effectiveness, role understanding and training to promote a safe food climate. Understanding why safe food practices are not followed can help operators delegate resources accordingly. Visual mapping helps clarify areas to improve workplace food safety practices and illustrates linkages. Originality/value – The use of qualitative analysis software in conjunction with researcher review in food safety research is novel. In addition, although other researchers have evaluated reasons for following or not following safe food handling practices, most have done so by assessing employees' perspectives rather than managers' perspectives.

## **Keywords**

Qualitative research, Atlas.ti™, CAQDAS, food safety, management

## **Disciplines**

Food and Beverage Management | Hospitality Administration and Management | Occupational Health and Industrial Hygiene

## **Comments**

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Food Safety Practices and Managers' Perceptions: A Qualitative Study in Hospitality.

**Title: Food safety practices and managers' perceptions: a qualitative study in hospitality**

**Susan W. Arendt, PhD, RD\***

Assistant Professor  
Department of Apparel, Educational Studies, and Hospitality Management  
Iowa State University  
9E MacKay  
Ames, IA 50011-1121  
FAX: 5152946364  
sarendt@iastate.edu

**Paola Paez, PhD**

Assistant Professor  
School of Nutrition  
University of Costa Rica  
Sabanilla Montes de Oca  
Costa Rica  
PAOLA.PAEZ@ucr.ac.cr

**Catherine Strohbehn, PhD, RD**

Extension Specialist & Adjunct Associate Professor  
Department of Apparel, Educational Studies, and Hospitality Management  
11 MacKay  
Iowa State University  
Ames, IA 50011-1121  
cstrohbe@iastate.edu

\*Denotes corresponding author

## Structured Abstract

**Purpose** – Foodservice managers are responsible for making sure employees follow safe food handling practices so customers do not become ill from unsafe food. Therefore, this study ascertained managers' perspectives using two methods of data analysis to answer the question, "What would make managers more effective in their role of assuring safe food practices are followed in the workplace?"

**Design/methodology/approach** – Focus groups with current and future foodservice managers were conducted. The software program, *Atlas.ti*<sup>TM</sup> was used to complement researchers' analyses of focus group transcripts and develop visual representations of qualitative data.

**Findings** – Major thematic categories identified by the managers in this study included: role identification, food safety training, and manager effectiveness. Using *Atlas.ti*<sup>TM</sup>, data are visually mapped and relationships between different themes and theoretical ideas are represented.

**Research limitations/implications** – Based on the three major theme areas identified, foodservice operations should focus on improving manager effectiveness, role understanding and training to promote a safe food climate.

**Practical implications** – Understanding why safe food practices are not followed can help operators delegate resources accordingly. Visual mapping helps clarify areas to improve workplace food safety practices and illustrates linkages.

**Originality/value** – The use of qualitative analysis software in conjunction with researcher review in food safety research is novel. In addition, although other researchers have evaluated reasons for following or not following safe food handling practices, most have done so by assessing employees' perspectives rather than managers' perspectives.

**Keywords:** Qualitative research, *Atlas.ti*<sup>TM</sup>, CAQDAS, food safety, management

**Article Type:** Technical paper

## **Introduction**

Making certain that the food served to customers is safe for consumption is a priority for retail foodservice operations such as restaurants, hospitals, schools, and catering. Operations risk reputation loss, financial difficulties, legal actions, and even closure if employees' unsafe food handling practices result in a foodborne illness outbreak. Food safety researchers studying retail foodservice employees have focused primarily on food safety knowledge acquisition in contrast to food safety behaviors. This work used qualitative data collection methods to study managers' roles in assuring safe food handling practices and their perceptions on food safety. Specifically, these were the initial questions to which answers were sought, "What roles do managers play in making certain that employees follow safe food handling practices?" and "What would make managers more effective in their role of assuring safe food practices are followed in the workplace?" Two methods of data analysis were used: researchers' manual review of data and computer assisted qualitative data analysis software (CAQDAS).

## **Review of Literature**

### *Importance of Food Safety*

Food safety is a global issue. Governments all over the world are working to decrease foodborne diseases and illnesses. Consumers' concerns and new food safety issues are the drivers for this heightened awareness (WHO, 2007). Knight et al., (2007) assessed consumers' perceptions of restaurant food safety and found that consumers in the United States (U.S.) believed restaurants were capable of producing and serving safe food yet rated restaurants as less capable of providing safe food compared to grocery stores and producers (farmers). In the U.S., many states require the foodservice person in charge and other employees to demonstrate knowledge of food safety; although training alone may not be sufficient to improve food handlers safe food practices (York *et al.*, 2009). Despite food safety training requirements, 59% of reported foodborne illnesses have been traced back to commercial foodservice operations (CDC, 2006). In 2010, the Center for Disease Control and Prevention (CDC) released new estimates of foodborne illness outbreaks in the U.S.. Every year, an estimated 9.4 million illnesses, 55,961 hospitalizations and 1,351 deaths result from consumption of foods contaminated with *known* disease agents (Scallan *et al.*, 2011b) with an additional 38.4 million illnesses, 71,878 hospitalizations and 1,686 deaths estimated from consumption of foods contaminated with unspecified agents (Scallan *et al.*, 2011a). In the United Kingdom it is estimated that a million people suffer from foodborne illnesses each year; 20,000 people are hospitalized and 500 die because of foodborne illnesses (Food Standards Agency, 2011). Gormley et al. (2011) noted a decrease in foodborne outbreaks between the years of 1992-2008 for England and Wales; however, the outbreaks linked to foodservice establishments had increased. "The food service sector needs to adopt appropriate control measures, and follow advice provided by national food agencies in order to reduce the risk of infection" (pg. 697, Gormley *et al.*, 2011). Preventative measures can be taken to mitigate the risks of foodborne illnesses and diseases.

### *Foodservice Workers and Food Safety*

Americans spent approximately \$604.2 billion in 2011 on purchasing food from retail foodservice operations in the U.S. (NRA, 2011). The United States Department of Agriculture (USDA) has estimated that about half of every dollar Americans spend on food is spent on food prepared away from home (USDA, 2010). Foods consumed at retail foodservice establishments in commercial and non-commercial sectors are an important control point for outbreaks of foodborne disease. Because of this, it is important those working in retail foodservices are prepared with the knowledge and instilled with the attitudes to practice safe food handling. According to the U.S. Food and Drug Administration, the top five factors contributing to foodborne illnesses are: 1) poor personal hygiene, 2) food from unsafe sources, 3) contaminated equipment, 4) improper holding temperature, and 5) inadequate cooking (FDA, 2006). Foodservice workers may contaminate food either in the preparation phase or service phase. Any operator dreads an accusation of an outbreak or a confirmed outbreak as one foodborne outbreak can affect hundreds. There are several operational costs associated with a foodborne outbreak; legal and medical costs, hospitalizations, and liability problems. Todd et. al. (2007) analyzed 816 foodborne illness outbreaks in which foodservice employees had spread the disease to consumers. Restaurant settings had the most frequent number of outbreaks, with 324 outbreaks affecting 1693 people, compared to other foodservice settings (e.g. prisons, hospitals, schools). Workers in good health, who use proper personal hygiene, maintain time and temperature controls along with proper cleaning and sanitizing practices help to mitigate risks of foodborne illnesses. Although workers may be trained and learn what needs to be done to prepare and handle food safely, actual behaviors may not be consistent with learned preventative measures (Chapman *et al.*, 2010; Roberts *et al.*, 2008; Tokuc *et al.*, 2009).

### *Manager's Role and Food Safety Culture*

The National Restaurant Association reports that 12.7 million employees are employed in the restaurant industry (NRA, 2010), and the majority of those employees have not received food safety training. The role of managers and supervisors, to encourage and motivate employees to follow proper practices, is critical. The manager plays a key role in the food safety culture by establishing policies and standards, expecting accountability, serving as a role model, controlling rewards and punishment, providing training, and providing needed resources to follow food safety practices. Manager oversight has been found to be of paramount importance to get foodservice employees to follow safe food handling behaviors such as handwashing, cleaning and sanitizing, and taking food temperatures (Arendt and Sneed, 2008). Arendt and Sneed (2008) proposed a model for employees' motivations to follow food safety practices. The sample used for their model development included primarily employees in the under 26 year old age category. The motivators for this group included all external motivators as controlled by the manager or leaders of the foodservice operations. In addition, this work found the manager sets the tone for practice of safe food handling behaviors, or the food safety culture. Researchers have advocated the important role the organization plays in influencing employees' safe food handling practices. It has been suggested that undesirable food handling practices are often deeply rooted in the work environment and are not easily changed (Sheppard *et al.*, 1990). Mitchell *et al.* (2007) noted that food safety interventions in the foodservice

environment are more likely to be effective if the organizational context is taken into consideration. Likewise, Yiannas (2008) argued that the importance of organizational factors in improving workers' safety behaviors has been proven in occupational and health fields, thus the foodservice industry could follow similar steps to ensure safety of food. The literature supports the importance of the manager's role in ensuring food safety practices are followed.

## **Methodology**

Four focus groups with current and future foodservice managers were conducted to determine managers' perspectives regarding their role and reasons for employees' unsafe food handling practices. Purposive sampling was done with both current (those working in the industry) and future foodservice managers (those working in the industry and preparing to move into management positions) recruited. Foodservice managers were recruited from foodservice operations (commercial and noncommercial) and had formal responsibility for the supervision of food production employees. Those who were future managers were graduating from hospitality programs within a year and expecting to have a management position. Future managers were recruited at two U.S. universities with hospitality management programs located in the Midwest. This allowed for depth and breadth in the data reflecting views of current managers as well as the new generation of incoming managers. Focus groups were held in two different states by researchers from the two university hospitality programs. Morgan (1998) recommended that focus groups generally have 6 to 10 participants. For this study, focus groups ranged between 5 to 12 participants due to "no shows" or over recruitment efforts. Before each focus group started, participants completed a consent form and were assigned pseudonyms. The study was approved by Institutional Review Boards at the two U.S. universities where data collection originated.

Focus group questions were developed based on the current literature on food safety, culture and climate. Here are three sample focus group questions, 1) Tell me what roles you play related to food safety?, 2) Would you talk a little about how you feel you do in these roles?, and 3) What would make you more effective in these roles? It is important to recognize that although these questions were the guiding questions, qualitative methods of data collection allow for the group to establish the direction and exploration of areas the researchers might not have anticipated.

Each focus group was led by an experienced moderator with the assistance of an experienced assistant moderator, as recommended by Krueger and Casey (2000). For purposes of this research, an experienced moderator was defined as someone who had conducted at least 10 focus groups in the past. The assistant moderator observed the session and took field notes using a form adapted from Krueger (1998). Focus groups were audio recorded and transcribed to facilitate data analysis. Each focus group lasted approximately 2 hours. The moderator and assistant moderator met for a debriefing session following each focus group. During these debriefings, clarifications and additional details were added to the field notes.

The focus groups recordings were transcribed by a hired, experienced transcriptionist. The transcripts from each focus group resulted in a range of 20 to 35 pages of typed, single-spaced text with 12 point font. Five researchers independently analyzed manually the transcripts from the focus groups. An estimate of 50-60 hours (~ 11 hours/reviewer) was spent in independent review. After independent review, members of the research team reached 100% agreement on themes and related codes. No new themes emerged as a result of the fourth focus group analysis, therefore data collection ceased. Additional analysis of findings from these focus groups and implications for foodservice management educators is reported by Roberts et al. (in press). For this current publication, data were used to illustrate how focus group data can be translated into useful and relevant information for practitioners by answering the questions: "What roles do managers play in making certain that employees follow safe food handling practices?" and "What would make managers more effective in their role of assuring safe food practices are followed in the workplace?"

Use of Atlas ti™ (version 6.0), a CAQDAS, provided confirmation of manual analysis and allowed for enriched analysis and visual presentation of the relationships of the findings. Other researchers have addressed the value of CAQDAS programs and potential to improve overall rigor of analysis through use of these (Kidd and Parshall, 2000). Therefore, further analysis and data display were conducted using one qualitative software program Atlas.ti™, a code-based theory building software which has the ability to create code classifications or networks (Lee and Esterhuizen, 2000). Reported usage rates of CAQDAS programs in literature are limited. Rettie *et al.* (2008) found that of 153 marketing researchers, 81% had not heard of CAQDAS programs or had heard of, but had not used. Eight percent reported usually using CAQDAS programs to analyze data, whereas, 10% had tried using them but were not successful.

Using Atlas.ti™, an independent Hermeneutic Unit (HU) was created for each one of the focus groups. Each of the focus group transcripts was used as the primary document (PD) of analysis. Because Atlas ti™ uses different terminology; themes and codes will be used interchangeably, likewise, the terminology family code/family refers to a major code category which includes a group of codes. Passages were categorized using the appropriate code. The code-by-list function of the software was primarily used; the quick-coding function was used as appropriate. After the manual analysis of the transcripts was incorporated into the HU; the document was reviewed to verify all necessary information from participants was analyzed by the research team. After the document was coded and reviewed, codes were grouped in code families (categories); codes included in one family are conceptually related (Muhr, 1991). Hyperlinks were created by the researchers (based on the manual analysis) to show relationships in the data and names were assigned to the links depending on the nature of the relationship by a set of predetermined categories, such as "relates to", "is part of", or "contradicts".

## Results

Fifteen current managers and twenty-one future managers participated in the focus groups. Most were male (72%) and between 18-30 years of age (80%). Sixty percent had

been at their current place of employment for less than 2 years, 28% for 2-5 years, and the remaining 12% over 5 years. As would be expected, the participants had a history of working in foodservice; 28% having less than 2 years of work experience, 39% had worked 3-4 years, 19% had an experience of 7-10 years, and 14% having 12 years or more foodservice work experience. A total of 28 themes were identified with hand coding. Three of these themes related to the manager's role and the remaining themes were related to manager's effectiveness in these roles. Following hand coding, a CAQDAS was used to further analyze the data; 19 themes (or what is referred to as codes in the CAQDAS) remained. The presentation of these 19 themes follows.

Participants voiced the need to continuously train and retrain employees on food safety principles because without this, managers could not be effective. Various modes of communication such as posters and "level appropriate" reading materials were some of the examples given to assist managers in this communication with employees. This theme was referred to as continuous and varied communication.

retraining with things that come up that are new and new food code expectations and things like that (current manager)

I would say posters. ...it is memorable, that is important also. Because it's visual and you, at points sometimes you just see that thing over there and then you don't pay attention anymore but at least you got the attention the first two or three times and then it's in your mind. (current manager)

Managers in the focus groups recognized that training of employees was crucial; and if employees were trained on food safety, this helped managers be more effective. The need to have customized training that targeted particular employee demographics was one aspect to training. This theme was referred to as customization and choices in messaging and training thereby recognizing that managers should tailor their training to the specific needs and wants of their employees.

I would like to have more online, I would like to have more online training for our student staff that is geared specifically for our operations. (current manager)

And right at the beginning, with, is, not right at the beginning, but the first time it comes up, try to identify how they learn best. (current manager)

Overcoming employee resistance to food safety is a problem that managers face. Employees resist following safe food handling practices for a variety of reasons. Focus group participants noted that lack of motivation, lack of time as well as not believing that they needed to follow safe food handling practices were some examples.

Because it's a part-time job and they're not, they don't pay enough to be motivated to learn and to actually do it because they're not affected. (current manager)

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And they wouldn't take the time to put the gloves on because they weren't, like in the back being a cook or something so they didn't think that they needed to follow those rules. (future manager)

...in our operation there's about 30 people that work there. Five of us are long-term restaurant people; 25 people are there for a paycheck. (current manager)

Part of a manager's job is to enforce the rules that govern the organization by making sure that employees are adhering to these rules. Managers, current and future, recognized their role as the enforcer of food safety rules. These illustrative comments are examples of how this was verbalized in the focus groups.

I've tried to keep it as stringent as possible as far as preparing stuff. (current manager)

I'm also an enforcer of food safety rules. (current manager)

Participants discussed the desire to learn about a variety of food safety topics so they could be more effective in their job of assuring employees follow food safety practices. For example, they addressed the need to know how to avoid cross contamination, the appropriate use of gloves, recognizing allergens, and understanding Food Code guidelines. Integrating a variety of interesting food safety topics into training is a need voiced by the participants.

People think when they have gloves on that they can do anything and touch anything or, you know, they don't understand that you can cross-contaminate, that gloves can get dirty, you know. They think it's to keep their hands off the food, or somethin', but gloves can be dirty just like your hands. (current manager)

And I'm a stickler on like touching nuts and then touching the salad because I, I'm worried about the, the, like allergy sort of things. (future manager)

One of the roles of managers is to make certain employees have the tools and resources needed to do the job. Managers in the focus groups noted that there often were limited resources and this interfered with their ability to be effective in their roles or assuring safe food handling practices. Budgetary constraints were one of the reasons for these limited resources.

Or even having the resources to train them, like with posters or different things, like around to link them because, like if you don't have anything, sometimes you can't just bring your Serve Safe book in. (future manager)

...and we probably don't build that into our budgets for buying some of the materials. So it's finding material already created versus investing the time to create your own, I think is a real conflict also. (current manager)

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Consistency in communication and food safety behaviors, as exhibited by managers, was a theme expressed during the focus groups. Current and future managers discussed the importance of carrying out food safety behaviors by all managers as well as sending a consistent message among managers.

...all of your managers need to be on the same page because like if one manager is a real stickler about it and someone else isn't, then your employees are gonna do the right things around that particular manager and not the other ones. (future manager)

Focus group participants voiced that one of their roles was to monitor employees' safe food handling behaviors. One participant emphasized that monitoring needed to be done consistently and others noted the challenges in monitoring employees' food safety behaviors. It was emphasized that managers should be the role models of good food safety behaviors; they should show passion for it. This area was called managers monitoring and the following comments illustrate this theme.

I know in my position, my job is to follow up constantly on food safety. (current manager)

I think being an effective manager means just letting them know how passionate I am about it. (future manager)

Managers voiced interest and willingness to train employees on food safety but sometimes did not have the simple tools necessary to carry out and document training. It is imperative that upper-level management recognize the importance of providing needed training tools to managers; it is not necessary that these be elaborate but simple items like checklists and tracking forms were noted as helpful.

I'm thinking checklists or something to help train (current manager)

...someone to help keep track of the documentation of who has had training in our full-time staff members (current manager)

To be effective in their role, managers noted they must make the food safety messages memorable for employees. The importance of making food safety messages memorable and repeating the message multiple times was emphasized. Ways of doing this were discussed.

Like a jingle or something. (current manger)

...we have flash cards that we also show throughout the shift. We show 'em what is this, what's the situation, how would you solve the situation? (current manager)

Utilizing technology for training was a main theme that emerged from the focus group data. Particularly, managers discussed the positive and negative benefits of using

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technology for training. Focus group participants noted that newer technologies were not always desirable as a method of training. Some participants voiced the concern that they did not know how to use newer technologies.

...for computer simulation, it helps a lot especially for the younger people.”  
(current manager)

That’s the last thing I want to do is sit back in front of the computer or the TV and watch a video.” (current manger)

Is it an iTunes sort of thing? I don’t even know what it is. (future manager in reference to Podcasting)

The current workforce challenges made it difficult for participants to be effective in their role assuring food safety practices are followed. Participants touched on lack of food safety and food preparation background, and generational challenges.

the group that I’m working with has absolutely no background information on food safety or food preparation practices at all. (current manager)

Like in our operation we have such a wide range of ages so that’s an issue.  
(current manager)

Managers offered insights into the priorities of the foodservice operation, handling customers, not documenting food safety compliance or following food handling procedures (e.g. washing hands). They commented:

We may not do the proper documentation, and that’s probably where I feel I lack a little bit is making sure the documentation is done correctly. (current manager)

But on a busy day, I can say, hey we’re busy, why are you washing hands? It’s wasting your time. (future manager)

Participants voiced the importance of providing rewards or benefits to employees who followed safe food handling practices. Likewise, they noted that it was important to reward employees who had completed food safety training. Both monetary and nonmonetary rewards were mentioned along with the immediacy of the reward.

...maybe give them a little extra raise or you know something like that, just to make sure that they’re on the ball. (future manager)

anything that can get immediate gratification from your employees also helps immensely. (current manager)

Be it monetary or a slap on the back, hurrah... (current manager)

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Assure training for employees and consider training by managers were two other theme areas. The timing of training and amount of training were discussed during focus groups. Focus group participants recognized that it was not only the training content that was important but the way in which they trained employees on safe food handling practices.

...efficient training needs to happen earlier. (current manager)

I would want all of my employees in the facility to be aware of food safety rules (current manager)

I don't think I could be trained better (on food safety) but I think I could train the people below me better. (current manager)

Managers reported that it was difficult to do their jobs well with the turnover in their operations. Employees coming and leaving constantly make it challenging for them to ensure a safe food environment. Two managers had the following to say regarding turnover in the industry:

...staff turnover, we don't have a lot of time, we don't all work the same shifts, and you can't be there 24/7 (current manager)

...we have such a transient workforce, that's an issue for us. (current manager)

Having support by upper level management was viewed as important and an aspect that would assist managers in their role of assuring safe food handling practices. This theme area was termed upper level management support because without this support, managers' effectiveness is minimized. An illustrative comment follows.

I'd say education is a big problem in every organization, especially with hierarchies in different places. (current manager)

### *Major Categories*

Following preliminary theme identification, researchers grouped hand coded themes into categories (code families) and labeled them consistent with the themes included in each category and the quotations included in each theme. Four categories were identified: food safety training, predisposition to food safety, manager's role, and manager's problems with being effective in food safety. These four categories represented employees' motivators or challenges of following safe food handling practices as identified by the managers. Each of the themes is included in one of the four categories. For example, the category of manager's role has the following themes: managers monitoring, employee food safety tasks, enforcing rules, role model of good food safety behaviors, and training for employees. In other words, managers viewed their role as important and that without managers monitoring employees, enforcing roles, serving as a role model by exhibiting safe food handling behaviors, and training employees, the safety of food served would be compromised. As further analysis was done using CAQDAS with Atlas.ti™ for corroboration and enhancement purposes, some themes were regrouped and the

categories were reduced from four to three families: manager's effectiveness, manager's role, and food safety training.

### *Visual Diagram*

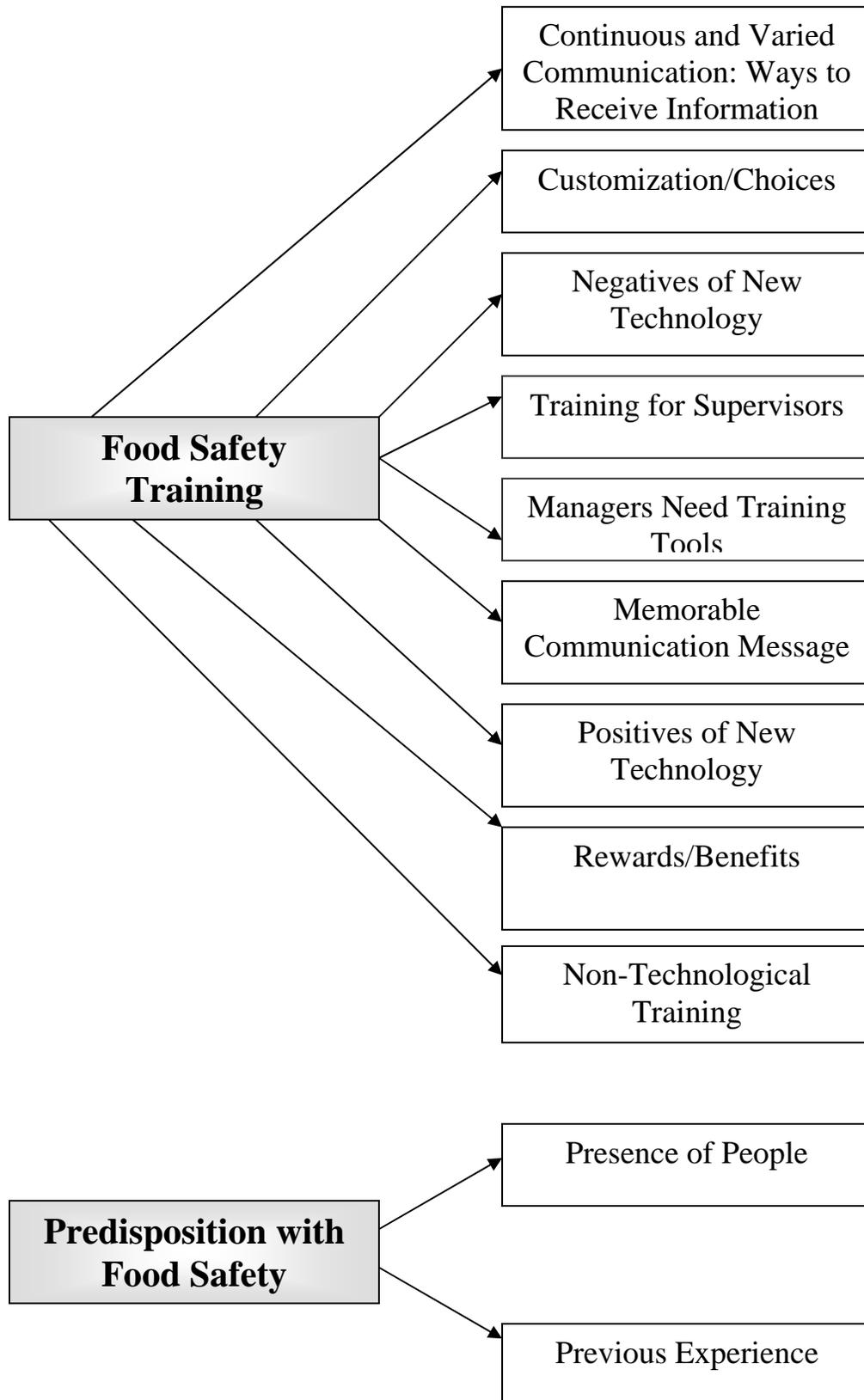
With Atlas.ti™, a visual display was obtained after all relationships of each one of the families and codes were imported to a single file; the diagram shows all families, codes associated to each code family, number quotations and relationships between codes (Figure 1). For example, for the family of managers' role, three codes were identified: manager's monitoring, enforcing rules, and training of employees. Manager's monitoring was associated with five quotes and related to two other codes. Enforcing rules had four quotes and was related to five other codes; and training of employees was associated with ten quotes and had eight relationships with other codes. It is important to recognize that the number of quotes is dependent on the members in the focus group and length of focus group. Further explanation of resultant code families, is provided below:

Manager's Role: Within this theme category (code family), managers noted the importance of their role as a manager. Aspects related to enforcing rules and monitoring employees were main codes associated with this theme. Managers voiced concerns related to the foodservice work environment such as high turnover of staff and busyness in the operation that make it difficult for employees to always keep food safe. Training of employees was one of the codes to be noted as a role of managers. Codes within this code family were associated with codes of the same family and codes of other families. The three codes associated with this code family had 19 quotes and 15 relationships.

Manager's Effectiveness: For this area, managers discussed the importance of having upper level management's support in developing a safe food climate but also noted the importance of having peer managers be consistent with messages given to employees about food safety. Some overlapping areas with Manager's Role were identified, for example, managers voiced concerns over high turnover and busyness as it related to their effectiveness as a manager who is responsible for food safety, in addition to productivity in outputs and other things. Six codes were associated with this code family; these were related within each other and with codes of other families. A total of 33 quotations and 14 relationships were identified for the codes in this code family.

Food Safety Training: The importance of manager food safety training was a major theme (code family) with majority of codes associated (9 codes). The managers reported that they could not train others unless they themselves had been trained appropriately. Managers indicated that they saw the benefits of using new technologies (e.g. podcast) for training but also noted drawbacks to using such new technologies (e.g. availability of technology). In addition, managers focused on the communication methods used for training giving examples of positive, memorable food safety messages and pointing out that communications must be continuous and methods varied (e.g. written and verbal communication) in order to keep the information fresh for staff. Codes associated to this family are: reward/benefit to completing training, managers need training tools, negatives of new technology, continuous and varied communication: ways to receive information,

**Figure 1: Researchers' Post Preliminary Theming**





positive memorable communication message, positives of new technology, customization/choices, training for managers, and work challenges. This family had the majority of quotations associated to it (118 quotes), the majority of relationships between codes (29 relationships), and was the only family who had a contradiction between codes, because of the nature of the quotations.

### **Conclusion and Implications**

From the managers' focus group data, 19 themes/codes and 3 code families were identified using CAQDAS versus 28 themes and 4 families identified with manual analysis. This more streamlined summary of the information illustrates the effectiveness of using CAQDAS for data analysis, and as a tool to corroborate hand coding of data. Similar to the visual mapping method used by Martin and Woodside (2012), the Atlas.ti map allows for visual representation of data. From an application standpoint, this is a more "user friendly" way to display data to practitioners who may not be as familiar with quantitative data analysis and interpretation, nor interested or have the time to read lengthy documents. The identified codes were: peer management consistency, turnover of staff, upper level management support, food safety topics, employee resistance, enforcing rules, training of employees, managers' monitoring, rewards/benefits to completing training, previous experience, managers' need for training tools, limited resources, time limitations (busyness), negatives of new technology, training, positive memorable communication message, continuous and varied communication, customization choices, and positives of new technology. Based on the quotations associated to each code; these codes were grouped into three families: manager's role, manager's problem with being effective in food safety area, and food safety training. With the use of CAQDAS, manual analysis was strengthened and confirmed. In addition, information was more easily and efficiently grouped for analysis and interpretation. Fewer themes and families were identified using Atlas.ti™ than with the manual method; thereby allowing for a succinct and more simplified and clarified understanding of food safety issues represented within the experiences and contexts of the focus group conversations. Translation of data into information that is useful and relevant to practitioners is the goal of applied research. Findings from the focus groups clearly indicate time is a pressure felt by managers in operations; thus research findings need to be presented in formats that provide information in a manner that understands these constraints. Visual mapping helps clarify areas to improve workplace food safety practices. This type of visual mapping might also be applied in other hospitality venues such as lodging or resorts to research productivity or service effectiveness.

Research findings also indicate there are several aspects managers need to consider in order for employees to follow safe food handling practices. The importance of training to improve food safety practices in the workplace was evident with this noted within each of the three code families. Training of employees, reward benefit to completing training, managers need training tools, negatives and positives of new technology, customization/choices, and training managers were the codes with the higher number of quotes associated; which indicates these are the considerations managers are more concerned about when analyzing which aspect affect employees food safety practices.

Yet, managers also identified the need to improve their training effectiveness and availability of readily available, easily understood tools and resources to use in these efforts. Findings suggest a gap exists between managers' food safety knowledge and ability to communicate this information to staff. Given diversity of the workforce in retail foodservice operations (multiple generations, various ethnic backgrounds, and literacy and language issues) this is not surprising. The need for succinct, customizable, and visual food safety messages and communication resources for managers is clear. Findings also show staff turnover and manager time constraints inhibit ability to ensure safe food practices are followed. Manager preparation programs should consider inclusion of "how to" communicate food safety principles in addition to learning content in the curricula. Foodservice organizations need to instill a safe food culture with internal/external and upward/downward integration of accepted practices and recognition this is a fundamental of any food related operation. There is widespread acceptance of a service culture within retail foodservices; yet findings suggest adoption of a safe food culture is less prevalent.

From a theoretical standpoint, researchers have assessed foodservice employee behavior related to safe food practices using the Theory of Planned Behavior and Expectancy Theory (Arendt and Sneed, 2008; York *et al.*, 2009). No known work has assessed the role of managers and supervisors. Findings from this qualitative research study may serve as the catalyst in theory development to help explain the role and responsibilities of supervisors and managers in providing a food safety culture within retail foodservice operations.

Although the researchers' discussion of independently, manually identified themes was important and allowed for full understanding and reflection upon the focus group findings, these inputs did require considerable time. Understanding the data and being able to appreciate participants' perspectives are important in qualitative research; the creation of hyperlinks and the visual representations that Atlas.ti™ offers illustrates graphically the relationships that exist within the data. Atlas.ti™ requires the active participation of the researcher in the software analysis; this is important for both hand coding and software methods of analyzing qualitative data. While sole use of CAQDAS would have resulted in fewer researchers' inputs, we are not confident exclusive use of the software would have yielded such a rich understanding of the findings, thus rigor of the process and confidence in the findings would be decreased.

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