

Instrument to measure motivation of foodservice employees

**Development and use of an instrument to measure retail foodservice employees'
motivation for following food safety practices**

Susan W. Arendt, PhD *
Assistant Professor
Apparel, Educational Studies, and Hospitality Management
Iowa State University
9E MacKay Hall
Ames, IA 50011-1121
sarendt@iastate.edu
(515)294-7575

Jason D. Ellis, PhD
Assistant Professor
Agricultural Leadership, Education and Communication
University of Nebraska–Lincoln
300 Agricultural Hall
Lincoln, NE 68583-0709
jellis2@unl.edu
(402)472-9782

Catherine Strohbehn, PhD
HRIM Extension Specialist/Associate Professor
Apparel, Educational Studies, and Hospitality Management
Iowa State University
11 MacKay Hall
Ames, IA 50011-1121
cstrohbe@iastate.edu
(515)294-3527

Paola Paez, MS
Apparel, Educational Studies, and Hospitality Management
Iowa State University
11 MacKay Hall
Ames, IA 50011-1121
pabolap@iastate.edu

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* Corresponding Author

ABSTRACT

A foodborne illness outbreak can be costly to a retail foodservice operation. This research incorporated a mixed methods approach to develop an instrument for measuring retail foodservice employees' motivational factors related to following food safety practices. Using exploratory design for instrument development, a sequential data collection and analysis approach was taken. Instrument pilot testing revealed a reliable instrument with 3 factors related to external motivation. Additional items were added to also assess internal motivators. The final tool contained 35 questions assessing internal and external motivational factors. Uses of the instrument to help identify employee motivators are discussed.

KEYWORDS: Instrument development, exploratory design, food safety, motivation, food handling

INTRODUCTION

Addressing issues related to food safety and improving safe food handling practices as a preventive measure to foodborne illnesses are paramount in overall health. Following safe food handling practices is the primary way to reduce the prevalence of foodborne hazards from farm to table, thereby minimizing foodborne illness outbreaks. More than 25,000 cases of foodborne illness outbreaks were reported in 2006 (Centers for Disease Control and Prevention (CDC), 2007). Because illnesses may go unreported, the estimates are as high as 76 million people affected each year (Mead et al., 1999). Foodborne illnesses result in significant economic impact with high costs for healthcare and lost productivity; likewise, additional expenses are incurred by the operation linked to the outbreak. While a system of inspections is in place to monitor food safety in retail food establishments, one study reported that inspection scores for restaurants experiencing a food disease outbreak were not significantly different from establishments not experiencing an outbreak (Jones, Pavlin, LaFleur, Ingram, & Schaffner, 2004). Therefore, the ultimate responsibility for food safety rests on the foodservice operators and consumers.

The traditional method of prevention and control of foodborne illnesses has been training food handlers about food safety. More recent studies have suggested that training on food safety and subsequent acquisition of knowledge does not lead to practices of handling food safely (Clayton, Griffith, Price, & Peters, 2002; Green & Selman, 2005; Henroid & Sneed, 2004).

REVIEW OF LITERATURE

Safe food handling is the primary preventative for foodborne illnesses. Therefore, food safety practices at home and away from home are of importance. Americans are purchasing more meals prepared away from home than ever reported. Nearly half of a consumer's food dollar is spent on food at retail foodservice operations, and restaurant sales were projected to reach \$558.3 billion for the year 2008 (National Restaurant Association (NRA), 2008). Thus, the emphasis on food safety at "away from home" retail foodservice operations such as restaurants, work-site cafeterias, and schools is imperative. Retail foodservice operations are problematic in that employee and/or customer contamination of an initially safe food item can occur. Examples of such contaminations have been reported (CDC, 2008). Consumers' beliefs parallel those of scientific findings: consumers studied believed foodborne illnesses most likely come from restaurants, schools, or catering events as compared to home or commercially manufactured food (Brewer & Rojas, 2008).

Foodborne illnesses are costly to all parties involved in the outbreak, including the consumer and operation. Healthcare and lost productivity cost estimates have ranged from \$405 million annually for *E. coli* (Frenzen, Drake, & Angulo, 2005) to upwards of \$7.1 billion annually for all foodborne illnesses in one state (Scharff, McDowell, & Medeiros, 2009). An estimated 60,854 hospitalizations occur each year due to foodborne transmission (Mead et al., 1999). These cost figures do not address the cost to the foodservice operation when a foodborne illness is linked to food served at the retail operation. Both hidden costs (poor public relations and lost business) and visible costs

(lawsuits and employees' healthcare costs) can be devastating to an operation (Hume, 2004; Liddle, 2005).

The U.S. Food and Drug Administration (FDA) (2004) reported three major food safety contributors to foodborne illness outbreaks in retail foodservice operations: poor personal hygiene, time and temperature control, and contaminated equipment. Recognizing all three contributors are controllable, researchers have focused their efforts on food safety knowledge, attitudes, training, and behaviors (Allwood, Jenkins, Paulus, Johnson, & Hedberg, 2004; Lynch, Elledge, Griffith, & Boatright, 2003; Pragle, Harding, & Mack, 2007; Strohbehn, 2003). Researchers have found consistent results among various age groups studied (i.e., young, elderly, employees, caregivers) and in different context areas (i.e., school, home, and workplace). While food safety training has been shown to increase food safety knowledge and attitudes (Wei & Strohbehn, 1997); having food safety training, knowledge, and a willingness to follow safe practices does not necessarily equate to safe food handling behaviors (Almanza, Namkung, Ismail, & Nelson, 2007; Byrd-Bredbenner, Maurer, Wheatley, Cottone, & Clancy, 2007; Dharod, Pérez-Escamilla, Bermúdez-Millán, Segura-Peréz, & Damio, 2004; Sneed & Henroid, 2007).

Motivation to follow safe food handling practices has been a food safety study focus, recognizing that education alone does not result in behavior change. Tesone, Ricci, and Severt (2005) studied motivational priorities for younger workers and older workers. Their findings indicated differences whereby younger workers had higher scores for social belonging and lower scores for self actualization (using Maslow's Hierarchy of Needs Theory). In another study on motivation, Salazar, Ashraf, Tcheng, and Antun

(2005) measured employees' self-perceived motivation and learning after food safety education and found no relationship between motivation and learning.

Use of qualitative and quantitative works in food safety research has been reported. Utilizing the qualitative-quantitative research spectrum as described by Achterberg and Arendt (2008), the vast array of food safety research spans from more quantitative microbial studies (for example Bucher et al, 2007 and Pang, Potenski, & Matthews, 2008) to the more qualitative studies including focus group research (Green & Selman, 2005) and content analysis (Rhoades & Ellis, in press). While none have labeled their work as mixed methods research, several have in fact utilized combinations of qualitative and quantitative methods. In Strohbehn, Sneed, Paez, and Meyer (2008), foodservice workers were observed and monitored. Observations were tallied and benchmark indicators were developed for hand washing frequency in various foodservice sectors.

METHODS

The purpose of this project was to develop an instrument to assess factors that motivate foodservice employees to follow safe food handling practices. Exploratory design was used as no current instrument is available for measuring motivators for safe food handling practices by foodservice employees. "This design (exploratory) is particularly useful when a researcher needs to develop and test an instrument because one is not available" (Creswell & Clark, 2007, p. 27).

Initially, open-ended questions were used and analyzed to seek understanding of what motivates employees and to seek terminology used in these responses for development of instrument items. Themes from this phase then were used to create the

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Factor analysis and analysis of verbal and written feedback ensued and the questionnaire was revised and tested a second time (n = 52). An exploratory factor analysis, using principal axis factoring (PAF) with varimax rotation, was conducted to reduce the number of items of the preliminary pilot questionnaire and final questionnaire. Only factors with Eigenvalues equal to or greater than one were retained (Pedhazur & Schmelkin, 1991). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was used to make sure that the variables were grouped properly. The Bartlett's test of sphericity was used to test for intercorrelation. Revisions and additions were made to the instrument based on the two pilot tests and the final questionnaire was used for data collection and analysis (n = 285). Figure 1 is a visual representation of this methodological process, spanning three years in duration. Each phase of the study is described in detail in the following sections.

Identifying Motivators

The sequential data collection and analysis process used started with a preliminary open-ended questionnaire administered to 168 college students in hospitality management courses. Students in these courses were selected purposefully as most were working in the foodservice industry as non-supervisory employees and therefore could provide valuable insight. This preliminary questionnaire contained four open-ended questions, each focusing on a specific topic. All four topics were related to the FDA-identified (2004) food safety areas of personal hygiene, time and temperature control, and contamination prevention.

Questions were as follows:

1. What do you think would motivate foodservice workers to wash their hands when they should?
2. What do you think would motivate foodservice workers to wear a clean uniform?
3. What do you think would motivate foodservice workers to monitor temperatures of food and equipment?
4. What do you think would motivate foodservice workers to clean and sanitize work surfaces properly?

Each of six researchers with an understanding of food safety concepts reviewed the qualitative responses for two of the questions; thus, each question was analyzed by three researchers to keep work loads reasonable and to decrease potential fatigue.

Theming and coding were conducted individually by the researchers. The individually identified themes were retained when all researchers had identified the same theme using consistent coding. A representative example of the process is displayed in Tables 1 and 2. The six themes identified through this process were: establishing policies and standards; expecting accountability; serving as a role model; controlling rewards and punishment; providing training; and providing resources.

After theming was completed, the researchers noted a commonality that all themes were related to the manager or supervisor, meaning all motivation areas identified were done by the supervisor or manager of a foodservice operation. This indicated that all themes were external motivators rather than internal motivators (See Arendt & Sneed, 2008, for a proposed model of motivation as it relates to the supervisory role of

Instrument to measure motivation of foodservice employees (foodservice managers). The respondents to these open-ended questions were not asked about their supervisor or manager, making this a noteworthy finding that was integrated into subsequent item modification and development.

Preliminary Instrument Development

A total of 31 questions was developed for the pilot questionnaire. A demographic section with 12 questions was included. Scales were developed related to the six theme areas identified from the open-ended question analysis process: policy, accountability, reward/punishment, role model, training, and providing resources. Views of the participants in stage one were used during the item development process. As recommended by DeVellis (2004), each identified scale had five questions, except for the area of punishment/rewards with seven questions. Additional questions were used because they allowed for the use of factor analysis to determine if punishment and rewards were viewed as separate constructs by the participants.

The exploratory design dictated using different participants in the first and second study phases. Therefore, this preliminary pilot test was conducted with foodservice employees working in a variety of types of retail foodservice operations. In total, 283 employees from foodservice operations located in two states completed the questionnaire. Of those completed, 210 (74.2%) were unusable; the primary reason for unusable questionnaires was employee status (employees had supervisory responsibilities and therefore did not meet selection criteria for the study.) Factor analysis ensued and three factors emerged, as shown in Figure 2. The chi-square of the variables was significant at .001 and the KMO value was 0.953; greater than 0.5 which indicates that a factor analysis is suitable for the data (Pedhazur & Schmelkin, 1991).

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Three factors were extracted with Eigenvalues greater than one (Table 3), which represented 71.41% of the variance explained. The communalities of the items ranged from 0.508 to 0.852. Based on the communalities it can be suggested that the variance of the items is explained by the common factors. The reliability and internal consistency of each factor was evaluated using Cronbach's alpha reliability coefficient. Alpha greater than 0.5 was considered an acceptable indicator of construct reliability (Pedhazur & Schmelkin, 1991). The three factors had alpha levels from 0.937 to 0.971. Items one and two were eliminated for the final questionnaire. The factors were labeled based on the items that constituted them.

Factor one was labeled "*communication and resources*". It involved 14 items related to communication between the employee and the supervisor and resources provided by the supervisor so that the employee could follow safe food handling practices. Items related to communication aspects were: development of rules to follow safe food handling practices; establishment of policies and standards to follow safe food handling practices; and hold employee meetings. Resources included items like tools and materials (cleaners, sanitizers, thermometers) provided to complete safe food handling practices; training provided to employees to follow safe food handling practices; and time given to employees to follow safe food handling practices.

Factor two was labeled "*punishments and rewards*" considering the seven items included were associated with punishment and rewards given to employees if safe food handling practices were followed or not. The items in this factor were: fired employees who do not wash their hands; supervise employees' handwashing; give warnings when

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safe food handling practices are not followed; give prizes or a reward for cleaning and sanitizing; and provide extra pay for proper cleaning and sanitizing.

Factor three was named “*model appropriate behavior*”. This factor consisted of 10 items associated with employee’s willingness to follow safe food handling practices if they observe their supervisor doing it. Items in this factor were: cleaning and sanitizing practices if supervisor also did it or provided training; practice food safety if it was enforced; good personal hygiene if supervisor came with good appearance; and take food temperatures if supervisor did it or had rules to do it.

Refining the Instrument

Some verbal and written comments during the pilot testing phase required attention. Examples included:

- “I take great pride in my job and what and who I cook for.”
- “I do it because it’s my job.”
- “I don’t need my supervisor to apply correct sanitary methods”.

Researchers convened to look for themes among the respondent-provided comments. Recognizing that all questions on the pilot questionnaire were related to external motivation as controlled by the supervisor or manager in the operation, the researchers determined from the comments that some questions related to internal motivation needed to be included on subsequent instruments. A set of six questions relating to internal motivators were added and the modified instrument was pilot tested with 52 undergraduate hospitality students to assure clarity and understanding of the newly added questions. Pilot test results confirmed clarity and understanding of the six added questions.

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The questions added were as follows (Question stem: I am likely to:)

1. follow safe food handling practices because it makes me feel good inside.
2. clean and sanitize my work area properly because it is my responsibility to do this.
3. follow safe food handling practices because I feel satisfied when I do this.
4. clean and sanitize equipment correctly because it is important in my work.
5. wash my hands the right way because it is beneficial to me.
6. take food temperatures appropriately because I have pride in my work.

Final Instrument

The final questionnaire was distributed to a national sample of 368 retail foodservice employees and 285 (77.4%) were returned usable. Approximately 135 participants were employed in commercial and 157 in noncommercial settings (some respondents reported working for more than one type of foodservice operation). The questionnaire was used to determine employee motivation to follow recommended food handling practices.

Factor analysis was conducted and four factors emerged, as shown in Figure 3. The chi-square of the variables was significant at .001 and the KMO value was 0.959; greater than 0.5 which indicates that a factor analysis is suitable for the data (Pedhazur & Schmelkin, 1991). Four factors were extracted with Eigenvalues greater than one, which represented 71.13% of the variance explained. The communalities of the items ranged from 0.511 to 0.832. Based on the communalities it can be suggested that the variance of the items is explained by the common factors. The reliability and internal consistency of each factor was evaluated using Cronbach's alpha reliability coefficient. The four factors

Instrument to measure motivation of foodservice employees had alpha levels from 0.904 to 0.971, which are greater than the 0.5 that is an acceptable indicator of construct reliability (Pedhazur & Schmelkin, 1991). The loaded factors were labeled based on the items that constituted them (see Table 4).

Factor one was labeled “*communication*” because it contained 14 items related to the communication between employees and supervisor; modeling behavior of the supervisor regarding safe food handling practices; using rules to promote safe food handling practices; and training provided to employees to follow safe food handling practices.

Factor two was labeled “*reward/punishment*” considering the nine items included were associated with rewards or punishment provided to employees if safe food handling practices are followed or not. Some of the items were: clean and sanitize counters if supervisor gave prizes; take food temperatures if supervisor appreciated it; and wash hands if supervisor fired employees who didn't.

Factor three was named “*internal motivators*” because the six items included were related to employees' internal motivation to follow safe food practices. Items were: employees feeling good when following safe food handling practices; clean and sanitize employee's responsibility; satisfaction on following safe food handling practices; importance of cleaning and sanitizing to the employee; employee's benefit of handwashing; and internal motivation linked to taking temperatures. The factor is represented by the six questions that were added based on comments made by participants of the pilot testing group.

Factor four was labeled “*resources*” because the items included were associated with resources provided to the employee to follow safe food handling; clean and sanitize

Instrument to measure motivation of foodservice employees if enough supplies are provided; safe food handling practices if a rule is developed; wash hands if training is provided; wash hands if time is given; and wash hands if supplies are available.

On the final questionnaire 12 items had high loadings on more than one factor, indicating that those factors might be similar. The 12 items were deleted to develop a more valid and reliable questionnaire. Reducing the number of questions created a more manageable questionnaire while maintaining its validity and reality, which makes it more respondent-friendly given that employees in foodservice operations do not have a lot of time to answer a questionnaires

DISCUSSION

This research extends the body of mixed methods research as it applies the Exploratory Design method of instrument design to a new context. Minimal research exists about motivational factors related to safe food handling; in other words, what motivates employees to practice safe food knowledge. Instruments intended to assess such motivators are nonexistent. The value of utilizing a mixed methods approach for developing this instrument to assess safe food handling motivators is evident in the resulting statistical soundness reported in the work. Creswell and Clark (2007) posited that the exploratory method was useful in developing a necessary instrument. The instrument developed and tested by this research further confirms the benefits of using a mixed methods approach to develop a rigorous data collection instrument.

The statistical soundness of the instrument not only supports the use of exploratory development methods, but also provides confidence to food safety researchers regarding the data collected with this new instrument. Having access to a

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reliable and valid instrument allows researchers investigating food safety training and behaviors to include another dynamic into the complexities of understanding food handling behaviors. As researchers work to better understand the intricacies of food handling practices, they then can begin to put the pieces together with greater confidence. It has been noted that the work forces in retail foodservice establishments have become and continues to be more diverse (in terms of generational, ethnicity, literacy and other attributes) than in past years (NRA, 2008). Thus, understanding various approaches to motivate employees with various frames of reference becomes more critical, particularly as the effectiveness of cost control strategies may dictate success or failure of a foodservice establishment. This assessment tool could be used as a guide in identifying training needs of employees and supervisors in retail foodservice as well as other operations-related practices.

The work and resulting instrument in this research builds upon the previous exploratory work in food safety research regarding employee behaviors and their relationships to training. As introduced by Arendt and Sneed (2008), deciphering the disconnect between knowledge of proper behaviors and the practicing of proper behaviors begins with the element of motivation and the role of the supervisor. A richer knowledge of why handlers do or do not perform proper behaviors can inform educational programs that prepare foodservice managers so they may work with their employees in a manner that maximizes the safety of foods produced.

CONCLUSIONS

A foodborne illness outbreak can prove devastating to a foodservice retail business in terms of lost revenue and “pay out” to customers affected. Therefore,

Instrument to measure motivation of foodservice employees operators strive to prevent such an occurrence. Although it is well known that training on food safety increases employee's knowledge about food safety, knowledge acquisition does not translate into safe food handling behavior. Through use of the instrument described in this research, foodservice operators can begin to understand what motivates employees to carry out safe food handling and help prevent foodborne illness outbreaks.

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