The Effects of Food Safety Knowledge, Attitude and Practices on Hotel Competitive Advantages: Perceptions of Food Service Staff in Hotels

Omar Qoura and EL Hussein Ali.

Faculty of Tourism and Hotels, Fayoum University

Abstract

The study aims to explore the effect of gained knowledge, attitudes and practices KAP of food safety among food and beverage department staff on hotels' competitiveness. Data were collected by a Semi-structured questionnaire distributed to food and beverage department staff at five-star hotels in Cairo. The obtained data were analysed using SPSS version 22.

The results reveal that food and beverage staff perceives the KAP variables to have a positive effect on hotels' reputation, cost savings, market share, and competitiveness of hotels.

Keywords: Knowledge, Attitude, Practices, KAP, Reputation, Competitiveness, Hotel, Egypt.

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Introduction

Payne and Theis (2012) cleared that foodservice is unique in that it touches the lives of all of us on a daily basis. Food establishments can be found anywhere, including hotels, fast food outlets, hospitals, schools, universities, convenience stores, supermarkets, nursing homes, stadium concessions, child care and elder care, military bases, transport terminals, prisons, and so on (Garayoa et al., 2011). Kandampully, (2007) indicated that food industry is considered to be a large industry as it is made up of businesses that produce, manufacture, transport, and distribute food from farm to fork. With globalization, food service industry has developed enormously and the industry could prosper for its bottom line (Mcswane et al., 2004).

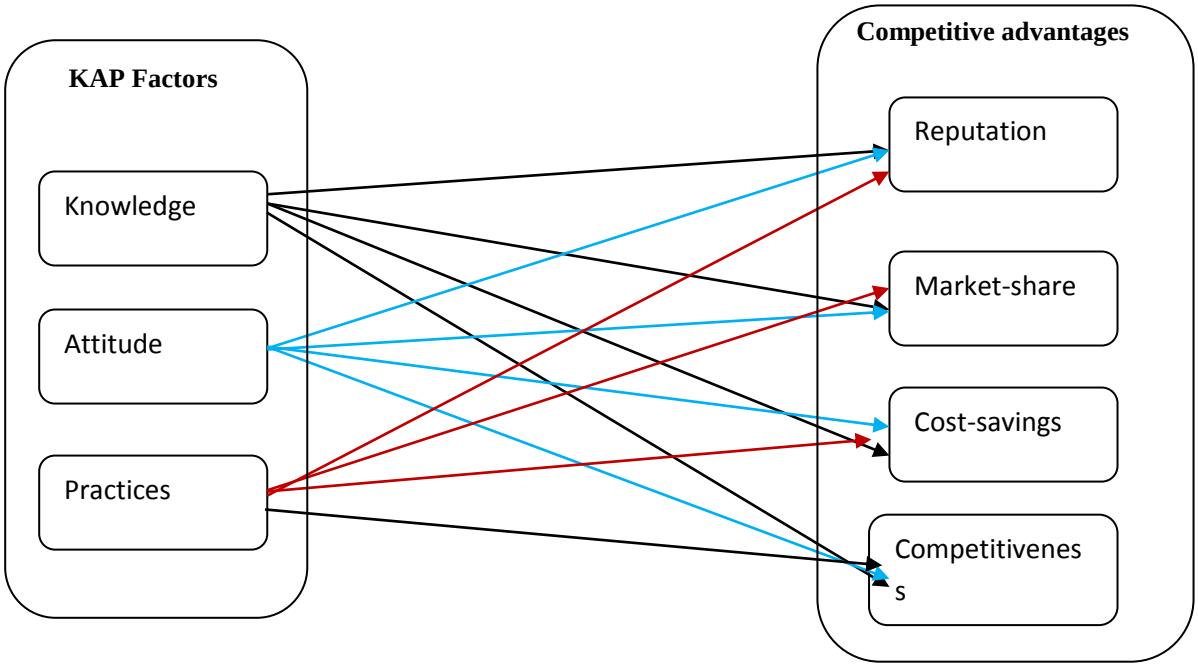
Greig et al., (2007) agreed with Jones and Angulo, (2006) that food-borne diseases have been increasing in the last years, with a greater effect on the health and economy of developing countries than developed countries (WHO, 2007). According to WHO report in 2005 alone, 1.8 million people died from diarrheal diseases and most of these cases were attributed to the ingestion of food and drinking contaminates water; each year roughly 1 out of 6 Americans (or 48 million people) gets sick, 128,000 are hospitalized, and 3,000 die from food borne diseases (http://homefoodsafety.org/food-poisoning/food-safety-facts: accessed in December 2014).And About 75% of the new infectious diseases affecting humans over the past 10 years were caused by bacteria, viruses and other pathogens that started in animals and animal products. Many of these diseases in people are related to the handling of infected domestic and wild animals during food production - in food markets and at slaughterhouses (http://www.who.int/features/factfiles/food_safety/facts/en/index3.html: accessed in December 2014). The prevalence of the bacteria in the population is so high that it is likely impossible to eliminate them. However, hand washing has been identified as one of the most important ways to prevent the spread of food-borne diseases (Clayton, and Griffith, 2008).

Hayes et al., (2003) indicated that food may be contaminated by polluted water, insects e.g. flies, rodents and pets, unclean utensils, dust and dirt (Gudeta, 2007). Equipment and containers that come into contact with food should be designed to enable easy cleaning and disinfection. The materials used for making the equipment should not have a toxic effect on food (Aarnisalo et al., 2006; Evans et al., 2004). Adequate facilities should be made available for the different core functions in food handling. The working area within the production area should be maintained clean to prevent contamination. All sinks, dish washing machines and other equipment should be so constructed to be easily cleaned and to be kept in good repair (Egan et al., 2007; Fuster et al., 2008).

Griffith et al., (2004) clarified that cross contamination is a very significant concept in food safety. Raw food, particularly meat, should be successfully separated, either physically or by time, from ready to eat and cooked foods, with transitional cleaning or disinfection where essential (Allwood et al., 2004; Green, and Selman, 2005).

Aim and hypotheses of the study

The study aims to explore the KAP model factors and their effect on hotel competitiveness among the food and beverage department staff. To achieve this aim, a number of research hypotheses were developed as follows:



H1: Food and beverage staff perceive the gained knowledge, attitudes, and practices to have a significant effect on the hotel's reputation.

H2: Food and beverage staff perceive the gained knowledge, attitudes, and practices to have a significant effect on the market share of the hotel.

H3: Food and beverage staff perceives the gained knowledge, attitudes, and practices to have a significant effect on cost savings.

H4: Food beverage staff perceives the gained knowledge, attitudes, and practices to have a significant effect on the competitiveness of the hotel.

Literature review

Food, reputation and staff personal hygiene.

Al-Dagal, (2003) ensured that good personal hygiene and sanitary handling practices at work are an essential part of any prevention program for food safety. Although the majority of the food and beverage department staff have the skills and knowledge to handle food safely, human handling errors have been implicated in most outbreaks of food poisoning (Sharif, and Al-Malki, 2010). Greig et al., (2007) indicated that the inappropriate handling of foods by the food service industry has been implicated in 97% of food poisoning cases.

Prianka et al., (2012) showed that food handlers should maintain a high level of personal cleanliness and wear suitable protective clothing, head gear and footwear. Tang, and Fong, (2004) also explained that People involved in food handling should refrain from smoking, spitting, chewing and sneezing or coughing over unprotected food. So, Food safety is dependent upon the significant roles played by food handlers along the food service system (Todd et al., 2010). Food handlers may introduce pathogenic microbes to the food during the process of preparation, distribution and serving (Green et al., 2007).

Improper food handling may be implicated in 97% of all food borne illness associated with catering outlets (Clayton, and Griffith, 2004). Improper practices responsible for microbial food borne illnesses have been well documented (Martins, 2012) and typically involve cross-contamination of raw and cooked foodstuffs, inadequate cooking and storage at improper temperatures.

Herztman, and Barrash, (2007) cleared that the food and beverage department staff may also be asymptomatic carriers of food poisoning organisms (Jianu, and Chis, 2012).

It is important to have an understanding of the interaction on prevailing food safety knowledge, attitudes and practices of food handlers in order to minimize food borne outbreaks (WHO, 2008). Food safety has been defined

as the conditions and measures that are necessary during the production, processing, storage, distribution and preparation of food to ensure that it is safe, sound, and wholesome and fit for human consumption (Dewaal, and Robert, 2005). Griffith et al., (2010) also propose a definition of food safety culture as the aggregation of the prevailing, relatively constant, learned, shared attitudes, values and beliefs contributing to the hygiene behaviours within a particular food handling environment.

KAP Model in the food Industry

Hubbard and Hayashi, (2003) mentioned that Rogers proposed DOI theory (Diffusion of Innovations) in 1962. This theory tries to describe the process by which new ideas, or new methods, spread over time (Lee, 2006). In recent years, scholars have been conducting empirical research on innovation diffusion theory, and have integrated the innovation adoptions into three stages: knowledge, attitude and practice (Hubbard & Hayashi, 2003).

The learning knowledge of the learner affects his learning attitude, while learning attitude affects, and is shown through, the learner's behaviour (Wang et al., 2009). On one hand, KAP model had been employed in the hygiene education field from 1960's to teach patients how to correct their health behaviour in practice, cognitive learning focuses on the knowledge and the ability of realization; affective learning means to change subject's intention, attitude or norms to adjust themselves through hygiene education, the psychomotor learning focuses on cultivating learner's health behaviour (Nyi et al., 2007; Lothian, etal.,1996). On the other hand, educational field focus on cultivating student's cognitive, affective, and psychomotor, against KAP model in hygiene education field, K (knowledge) to cognitive, A (attitude) to affective, and P (practice) to psychomotor in educational field, the difference is that psychomotor require students learned some skills, compared with P (practice) which requires the changing of behaviour as target (Lin, 2001).

Conventional thinking in the field of education is that knowledge affects the learner's attitude directly, and the attitude is transformed into behaviour (Lee, 2006). Xie, (2003) ststes that if the student has a higher level of knowledge, his learning attitude will be relatively more positive. Other related studies find that knowledge will directly affect the attitude and practice, and that attitude will directly affect practice or intention, except that the degree of impacts of knowledge on practice through attitude is better than that of knowledge on practice directly (Li, 2002; Lin, 2001; Lee, 2006).

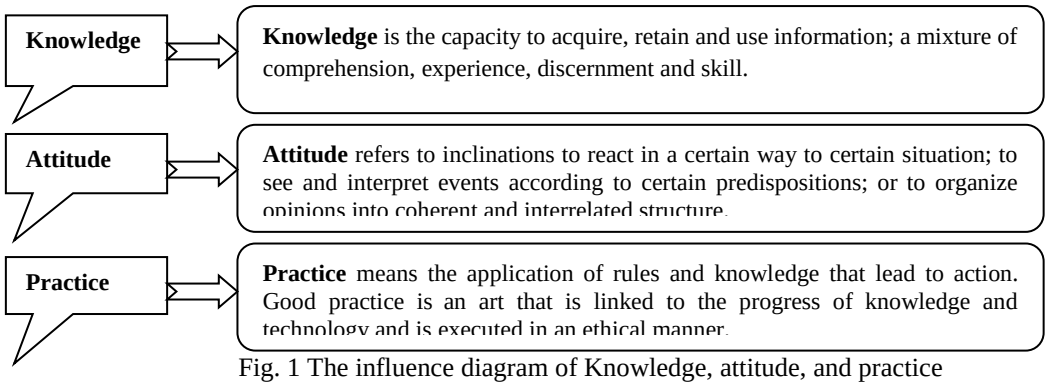


Fig. 1 The influence diagram of Knowledge, attitude, and practice

Food Safety Knowledge, Attitudes and Practices

Roberts et al., (2008) explained that training of food handler is seen as one strategy whereby food safety can be increased, offering long-term benefits to the food industry. Seaman, (2010) defined training as 'a planned process to modify attitude or skill behaviour through learning experience to achieve effective performance in an activity or a range of activities'. Evaluation is integral to the training cycle, providing feedback on the effectiveness of the methods used, checking the achievement of the objectives set by both the trainer and trainee and assessing whether the needs originally identified have been met (Acikel et al., 2008). Criteria that may be used for assessing the effectiveness of a training programme include reaction to training, knowledge acquisition, changes in job-related behaviour and performance and improvements of organisational-level results (Seaman, and Eves, 2010; Hine et al., 2003).

Seaman and Eves, (2010) agreed with Askarian et al., (2004) that the provision of knowledge to change food hygiene attitudes and behaviours has not been adequately proven in literature. An effective food-training course should not only provide food hygiene information, but it should implement knowledge into practice for proper information retention.

(Cecilia et al., 2007). Three factors are playing a major role in the occurrence of food contamination with regard to the food and beverage department staff represented in knowledge, attitude and practice (Sharif & Al-Malki, 2010). Training programs are important for improving the knowledge of the cuisine staff; however, more knowledge of food hygiene practices does not always lead to positive changes in food handling behaviours (Ansari et al., 2010). Because of this,

Knowledge items	Researchers

various parts of the world (Bas et al., 2006; Martins et al., 2012; Seaman and Eves, 2010).

Food safety knowledge many studies on the knowledge, attitudes and practices of the food and beverage department staff have been conducted in

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Personal Hygiene	
Smoking, spit, wear excessive jewellery, touches mouth, and pick nose is prohibited in the kitchen.	Seaman, and Eves, 2010; Greig et al., 2007; Martins et al., 2012; Wang et al., 2009.
Wearing protective cloth while handling food reduces the risk of food contamination.	Prianka et al., 2012; Herztman and Barrash, 2007.
Washing hands before work reduces the risk of food contamination.	Aarnisalo et al., 2006; Ansari et al., 2010.
Eating and drinking in the work place increase the risk of food contamination.	Bas et al., 2006; Mcswane et al., 2004; Jianu, and Chis, 2012.
During infectious disease of the skin, it is necessary to take leave from work.	Cecilia et al., 2007; Ansari et al., 2010; Jianu, and Chis, 2012.
Microbes are in the skin, nose and mouth of healthy handlers.	Green et al., 2007; Ansari et al., 2010; Jianu, and Chis, 2012
Dealing with approved suppliers.	Ansari et al., 2010; Jianu, and Chis, 2012; Nyi et al., 2007.
Washing hands after coughing or sneezing.	Acikel et al., 2008; Ansari et al., 2010; Jianu, and Chis, 2012.
Medical screening and exclusion of infected food handlers.	Clayton, & Griffith, 2008; Xie, 2003; Ansari et al., 2010; Jianu, and Chis, 2012.
Cross Contamination	
Cross contamination is when microorganisms from a contaminated food are transferred by the food handler's hands or kitchen utensils to another food.	WHO, 2008; Jones and Angulo, 2006; Egan et al., 2007; Xie, 2003.
Ready to eat food contaminated if not handled properly.	Garayoa et al., 2011; Ansari et al., 2010.
Contamination occurs when mix raw and ready to eat food.	Wang et al., 2009; Todd et al., 2010.
Avoid bare hand contact with ready to eat food.	Griffith et al., 2004; Fuster et al., 2008.
Damage merchandise should be rejected	Dewaal and Robert, 2005; WHO, 2008
Food prepared in advance reduces the risk of food contamination.	Jones and Angulo, 2006; Griffith et al., 2004
Salmonella, Hepatitis A virus, and Staphylococcus are among the food-borne pathogens.	Evans et al., 2004; Herztman and Barrash, 2007; Sharif and Al-Malki, 2010.
FIFO method ensures earlier ordered foods are used first.	Nyi et al., 2007; Griffith et al., 2004; Mcswane et al., 2004.
Proper bins with lids for food and other waste.	Todd et al., 2010; Ansari et al., 2010; Jianu and Chis, 2012.
Time and Temperature control	
Cold food should be below 5ºC.	Griffith et al., 2010; Egan et al., 2007.

Hot food should be above 63ºC.	Sharif and Al-Malki, 2010; Ansari et al., 2010.
The temperature danger zone for potentially hazardous foods is 5°to 63°c.	Fuster et al., 2008; Dewaal and Robert, 2005; Martins et al., 2012.
Freezing kills all bacteria that may cause food-borne illness.	Nyi et al., 2007; Egan et al., 2007.
Cooking should be above 75ºC.	Xie, 2003; Garayoa et al., 2011.
Reheating cooked food can contribute to food contamination.	Wang et al., 2009; Herztman and Barrash, 2007.
Sanitizing	
Cleaning is the systematic application of energy to a surface or substance with the intention of removing dirt.	Garayoa et al., 2011; Dewaal and Robert, 2005; Egan et al., 2007; Herztman and Barrash, 2007.
Proper cleaning and sanitization of utensils decrease the risk of food contamination.	Martins et al., 2012; Nyi et al., 2007; Jianu and Chis, 2012.
Clean is the same as sanitized.	Griffith et al., 2010; Gudeta, 2007.
Washing utensils with detergent leaves them free of contamination.	Fuster et al., 2008; Wang et al., 2009; Ansari et al., 2010; Xie, 2003.
Following clean as you go policy.	Sharif and Al-Malki, 2010; Mcswane et al., 2004.

Hotel reputation, competitive advantages, satisfaction, and loyalty

Hotel reputation from the perspective of a customer is the extent to which a hotel is honest and committed to the customer's welfare (Boo, 2003). Moreover, because reputation shapes customers' expectations before they patronize a business, a good reputation suggests that the customer will expect the hotel's products/services to be of high quality, which is a direct antecedent to customer satisfaction(Novikova, 2009).

Furthermore, high-reputation companies are likely to gain customer trust because a good reputation can strengthen customer confidence and reduce the perception of risk when customers evaluate the organizational performance and the quality of the hotel's products/services (Liu, 2012, Abd-El-Salam E. et al., 2013). Regarding the relationship between perceived trust and customer satisfaction, some studies have examined the effect of customer satisfaction on customer-perceived trust; other researches have demonstrated that customer-perceived trust is the antecedent of customer satisfaction(Novikova, 2009).

Kinzey (2013) built on previous research and concluded that a perceived value can generally be defined as "a judgment or a valuation by the customers of the comparison between the benefits or utility obtained from a product, service or relationship, and the perceived sacrifices or costs." Although customer-perceived value comprises multidimensional constructs, elements such as the cost of service continues to be important to customer evaluations (Torres, 2012, Xin and Fan, 2013).

Though customer loyalty can be manifested in multiple ways, such as by "expressing a preference for a company over others, by continuing to purchase from it, or by increasing business with it in the future", customer satisfaction is thought to be an important antecedent of customer loyalty (Novikova, 2009, Park et al., 2014).

Methodology

The current study is based on quantitative approach to achieve its aim. Data were collected by a semi-structured questionnaire from different food and beverage department staff at 33 Five-star hotels in Cairo. The obtained data was analysed using SPSS version 22. The total population of the study was 9333 (The Central Agency for Public Mobilization and Statistics, 2013) but the food and beverage department' staff (2790 nearly) were selected for sampling .The sample size was calculated according to the following formula:

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N = Study Population= 2790

Z= 0.95 = 1.96

d = 0.05

p = 0.50

n = 325

$$n = \frac{N \times p(1-p)}{\left[\left[N-1\times\left(d^2 \div z^2\right)\right] + p(1-p)\right]}$$

The sample size formula revealed a number of 325 staff member. A simple random sample of 350 five-star hotel employees was selected. A modified questionnaire (modified from Ansari et al., 2010; Jianu, and Chis, 2012) was designed to explore the KAP model among the food and beverage department staff that have a critical effect on hotels' competitive advantages.

The investigation of food safety knowledge, attitudes and practices in the hotel foodservice was carried out using multiple sources of data, including the semi-structured questionnaire, observations of the business environment, and a review of documentation.

Questionnaire

The questionnaire was organized as the follows: part 1: demographic information (such as gender, age, level of education, length of employment and participation in training); part 2: knowledge about food safety; part 3: attitudes on food safety; part 4: food hygiene practices; and part 5: hotel reputation.

The knowledge section (part 2) included 30 close-ended questions with five possible answers, "strongly agree", "agree", "neutral", "disagree", and "strongly "disagree". These questions focused on issues regarding personal hygiene, cross contamination, diseases carried by food, microorganisms, temperature control and hygiene practices. This scale ranged between 1 and 5 points.

The attitude section of the questionnaire (part 3) aimed to determine the understanding of the handler about food safety and contained 25 questions that required five levels of answers, "strongly agree", "agree", "neutral", "disagree", and "strongly "disagree".

In section 4, the good hygienic practices of the food and beverage department staff were evaluated and through 29 questions with five levels of answers, "never", "seldom", "sometimes", "often", and "always"; We used the same criterion as that used for the other parts, handlers who answered 4 or more questions correctly were regarded as good practices.

Section 5: Contained 4 questions of five levels of answers, "Strongly Agree", "Agree", "Neutral", "Disagree", and "Strongly "Disagree".

Pilot Test

The questionnaire was pre-tested by 5 experts who work in foodservice and academic field to check its validity. All experts were asked to complete the questionnaire and to identify concerns and suggestions. All suggestions had been considered before data collection.

Statistical analysis

Statistical analyses were performed using the Statistical Package for Social Sciences (version 22.0, SPSS,) software. Means, standard deviation and percentages were calculated for the scores from the cuisine staff knowledge, attitudes and practices sections. Chi square correlation was used to explore the correlation between food safety (KAP) model and hotel competitiveness. Statistical results were considered significant at $p \leq 0.05$.

Results and Discussion

The analysis of the next questions will be ranked according to the objectives of the study as follows:

Questionnaire Reliability Analysis

Reliability was tested by Cronbach's alpha coefficient. The result for all the variables was acceptable (76.25).

Questionnaire Response Rate

A total of 263 usable replies out of 350 were obtained, representing an effective response rate of 75 percent.

Questionnaire Analysis Results and Discussion

Demographic Characteristic of The respondents

Table 1 demonstrates the demographic data of respondents. Out of the 263 respondents involved in this study, 82.1% were men, 17.9 % were women; 52.5 % of the participants were 36 to 55 years old. The education level of more than half of the respondents (52.9 %) were of middle school compared with high school 47.1%. (29.7%) of the respondents had less than five years of working experience, 23.6 % have been in this sector for five to ten years, 34.6 % for ten to 15 years and 12.2% for more than 15 years of experiences. About 64.3 % of participants reported to have participated in food hygiene training programs over the past 12 months and 12.2 % of participants had attended food safety training courses more than 3 times.

Table 1. Demographic characteristics of the respondents

Characteristics	Demographic characteristic	Number	(%)
Gender	Male	216	82.1
	Female	47	17.9
Age (years)	< 25	0.00	0.00
	25- 35	93	35.4
	36-55	138	52.5
	> 56	32	12.2
Education Status	Elementary school	0.00	0.00
	Middle school	139	52.9
	High school or higher education	124	47.1
Working Experience	Less than five years	78	29.7
	5 to 10 years	62	23.6
	10 to 15 years	91	34.6
	More than 15 years	32	12.2
Number of food safety training session's received (last 12 months)	0	62	23.6
	1-2	169	64.3
	3-4	32	12.2
Occupation	Food and Beverage	125	47.5

Characteristics	Demographic characteristic	Number	(%)
	Banquet	0.00	0.00
	Food production area	138	52.2

Food Safety Knowledge

Table 2. Food Safety Knowledge

Items of Personal Hygiene Knowledge.	Mean	Std. Deviation
Personal Hygiene		
Smoking, spit, wear excessive jewellery, touches mouth, and pick nose is prohibited in the kitchen.	3.81	1.478
Wearing protective cloth while handling food reduces the risk of food contamination.	4.37	0.780
Washing hands before work reduces the risk of food contamination.	4.46	0.597
Eating and drinking in the work place increase the risk of food contamination.	3.96	1.125
During infectious disease of the cuisine staff, it is necessary to take leave from work.	3.94	1.405
Microbes are in the skin, nose and mouth of healthy handlers.	3.90	1.056
Dealing with approved suppliers.	4.44	0.534
Washing hands after coughing or sneezing.	3.85	1.032
Medical screening and exclusion of infected food handlers.	2.25	1.101
Average Mean	4.03	

***1=** Strongly Disagree **2=** Disagree **3=** Neutral **4=** Agree **5=** Strongly Agree

The results in table (2) show that the largest mean is (4.46), and this value is closer to the agreeable value, which indicates that food handlers believe that Washing hands before work reduces the risk of food contamination. The results also indicate that the smallest mean is (2.25), and this value is closer to the disagreeable value, which illustrates that five star hotels in Cairo do not hold medical screening and exclusion of infected food handlers.

Additionally, the results indicate that the overall average of personal hygiene knowledge is (4.03), indicating fair knowledge among food handlers about personal hygiene.

This finding is consistent with previous studies conducted by Seaman, and Eves, (2010) who mentioned that the hotel management should make sure that food handlers are knowledgeable about personal hygiene rules. In addition, Smoking, spitting, wearing excessive jewellery, touching mouth, and picking nose are prohibited in the kitchen (Martins et al., 2012; Wang et al., 2009). Similarly Prianka et al., (2012) agreed with Herztman and Barrash, (2007) that Wearing protective clothes while handling food and Washing hands before work reduce the risk of food contamination. Generally Jianu, and Chis, (2012) assured that Medical screening and exclusion of infected food handlers improve the food safety issue.Regarding dispersion in the responses of respondents concerning this issue, the Standard Deviation showed no dispersion among the groups, indicating that they answered this question in the same way.

Table 3. Cross Contamination Knowledge

Items of Cross Contamination Knowledge.	Mean	Std. Deviation
Cross Contamination		
Cross contamination is when microorganisms from a contaminated food are transferred by the food handler's hands or kitchen utensils to another food.	4.94	0.239
Ready to eat food is contaminated if not handled properly.	3.91	0.731
Contamination occurs up on mixing raw and ready to eat food.	3.97	0.053
Avoid bare hand contact with ready to eat food.	4.35	0.593
Damage merchandise should be rejected	4.33	0.607
Food prepared in advance reduces the risk of food contamination.	1.98	1.132
Salmonella, Hepatitis A virus, and Staphylococcus are food-borne pathogens.	1.88	0.806
FIFO method ensures earlier ordered foods are used first.	4.00	0.728
Proper bins with lids for food and other waste.	1.97	0.824
Average Mean	3.96	

***1=** Strongly Disagree **2=** Disagree **3=** Neutral **4=** Agree **5=** Strongly Agree

The results in table (3) that the largest mean is (4.94), which indicates that the majority of food handlers know the cross contamination concept, the smallest mean is (1.88), illustrating that food handlers do not know that Salmonella, Hepatitis A virus, and Staphylococcus are food-borne pathogens. The overall average of Cross Contamination is (3.96), which indicates adequate knowledge among food handlers about food contamination and its control. And this finding is in line with Garayoa et al., (2011) and agrees with WHO,(2008).

Table 4. Time and Temperature control

Items of Time and Temperature control.	Mean	Std. Deviation
Time and Temperature control		
Cold food should be below 5ºC.	4.26	0.674
Hot food should be above 63ºC.	1.86	0.754
The temperature danger zone for potentially hazardous foods is 5°to 63°c.	3.88	1.040
Freezing kills all bacteria that may cause food-borne illness.	2.11	0.988
Cooking should be above 75ºC.	3.98	0.865
Reheating cooked food can contribute to food contamination.	2.11	0.988

Average Mean	3.97

***1=** Strongly Disagree **2=** Disagree **3=** Neutral **4=** Agree **5=** Strongly Agree

The results table (4) show that the grand mean is (4.26), which indicates that food handlers are aware that cold food should be below 5ºC; the smallest mean is (1.86), which illustrates that food handlers have not adequate knowledge about Hot food should be served above 63ºC. The results also indicate that the overall average of Time and Temperature control knowledge is (3.97); this value indicates adequate knowledge among food handlers about Time and Temperature control.

Table 5. Sanitizing Knowledge

Items of Sanitizing Knowledge.	**Mean**	**Std. Deviation**
Sanitizing		
1. Cleaning is the systematic application of energy to a surface or substance with the intention of removing dirt.	4.63	0.381
2. Proper cleaning and sanitization of utensils decrease the risk of food contamination.	4.98	0.729
3. Clean is the same as sanitized.	2.09	0.693
4. Washing utensils with detergent leaves them free of contamination.	3.97	0.704
Average Mean	4.01	

***1=** Strongly Disagree **2=** Disagree **3=** Neutral **4=** Agree **5=** Strongly Agree

The results in table (5) show that the grand mean is (4.98), which indicates that the majority of food handlers know that proper cleaning and sanitization of utensils decrease the risk of food contamination. The results also indicate that the smallest mean (2.09), illustrates that food handlers know that Clean is not the same as sanitized. Additionally, the results indicate that the overall average of cleaning and Sanitizing is (4.01), indicating adequate knowledge among food handlers about cleaning and sanitizing management and this finding is in line with Garayoa et al., (2011).

Food Safety Attitudes

Table 6. Food Safety Attitudes

Items of Food Safety Attitudes.	Mean	Std. Deviation
I think sanitation is an important part of my job responsibilities.	3.99	0.741
I believe that good employee hygiene can prevent food borne illness.	4.02	0.774
I think that it is the responsibility of all food handlers to ensure that food is safe to serve.	1.68	0.673
I am willing to change my food handling behaviours when I know they are incorrect.	4.04	0.753
I am willing to obtain more food safety knowledge.	4.01	0.731
It is more important to have tasty food rather than safe food.	1.68	0.708
I select a place to eat based on its reputation for good sanitation and cleanliness.	1.83	0.714
I think that managers should educate employees on personal hygiene and sanitation regularly.	4.02	0.741
I think that only full-time employees should receive food safety training.	1.67	0.704
I believe that food safety knowledge not only benefits my work but also my personal life.	4.00	0.728
I am willing to attend a food safety training course.	4.92	.311
I believe that food safety knowledge would make me more confident of my work.	4.87	.362
I believe that cleaning supplies should be stored separately to prevent food contamination.	4.88	.323
I think that food obtained from reliable and approved suppliers prevents food contamination.	5.00	.000
I believe that Wearing protective cloth is an important practice to reduce the risk of food contamination.	4.58	.989
I think the health status of workers should be evaluated before employment.	4.88	.323
I believe that Monitoring temperature of raw and cooked food are vital.	4.88	.323
I believe that Temperature Control is an effective method of reducing the number of cases of food poisoning.	1.67	0.704
I believe that previously cooked food must be reheated.	4.28	1.241
I think that checking internal temperature of food is very important.	4.94	.239
I believe that smoking should be prohibited in food preparation area.	4.99	.087
I think that Food contact surface should be cleaned using sanitizing agent.	4.82	.457
I think that Food room cleanliness monitoring system provides good feedback for improvement.	4.79	.458
I believe that Availability of food handling guideline is vital.	4.09	.403
I think that Well-cooked foods are free of contamination.	4.89	.363
Average Mean	3.97	

***1=** Strongly Disagree **2=** Disagree **3=** Neutral **4=** Agree **5=** Strongly Agree

The results in table (6) reveal that the grand mean is (5.00), which indicates that food handlers know that food obtained from reliable and approved suppliers prevents contamination. The results also indicate that the smallest mean (1.67), illustrates that food handlers believe that Temperature Control is an effective method of reducing the number of cases of food poisoning.

Additionally, the results indicate that the overall average of food safety attitudes is (3.97); this value indicates a good attitudes among food handlers to food safety. So, Prianka et al., (2012) showed that the hotel management should make sure those food handlers have good food safety attitudes. Regarding dispersion in the responses of respondents to this issue, the Standard Deviation showed no dispersion among the groups.

Food Safety Practices

Table 7. Food Safety Practices

Items of Food Safety Practices.	Mean	Std. Deviation
I use gloves or utensils to handle food that is ready-to-eat.	4.69	.654
I wash my hands properly before using gloves.	4.90	.331
I use a separate clean utensil for each food item.	4.76	.616
I use the same chopping boards to prepare raw food and cooked food.	1.43	.092
I use water proof plaster when get injured.	4.56	1.054
I wash my hands thoroughly with soap and water before working with food.	4.78	.615
I wash raw produce before using it.	4.89	.439
I use a handkerchief when coughing.	4.88	.357
I store chemicals in a non-food storage room.	4.84	.448
I store raw food items in an area separate from cooked food.	4.81	.529
I wear a clean uniform, when I work in foodservice.	4.82	.550
I wear a mask when I have the flu	4.57	1.023
I wear a hair restraint (cap or hairnet), when I work in foodservice.	4.74	.689
I wash my hands and change into a new pair of gloves after touching anything that may contaminate my hands, when I prepare or serve food.	4.25	1.540
I drink or eat food while I am serving or preparing food	2.20	.837
I clean and sanitize work surfaces after each task.	4.82	.609
When I am in doubt about the safety of a previously cooked food, I report it to the supervisor.	4.79	.589
I pay attention to shelf life on foods and do not use foods that have passed the expiration date.	4.84	.550

I check concentrations of sanitizing solutions used for sanitizing work surfaces or items washed in the pot and pan sink.	4.78	.527
I continue to work on a sick day.	1.35	0.826
I Keep watch while working because time is precious for you.	2.08	0.656
I do not cover your head when my hair is neatly combed.	1.30	0.292
I wear the same apron as long as it looks clean.	1.89	0.664
I taste the food with your hand cupped.	1.20	.324
I thaw food outside the refrigerator (i.e., room temperature).	1.56	.154
I check the internal temperature of meat with a thermometer.	3.84	1.577
I use cutting boards of different colours or sanitize a cutting board between preparation of raw foods and cooked foods.	4.79	.539
Average Mean	3.90	

***1=**Never 2= Seldom 3= Sometimes 4= Often 5= Always

Table (7) shows that the grand mean (4.90), indicates that food handlers always wash their hands properly before using gloves. The results also indicated that the smallest mean (1.20), illustrates that food handlers seldom taste the food with their hand cupped.

Additionally, the results indicate that the overall average of food safety practices variable is (3.90), indicates good practice among food handlers concerning food safety.

Drivers of KAP Model Adoption

Table 8. Drivers of KAP Model Adoption

Drivers of KAP Model Adoption.	**Mean**	**Std. Deviation**
Cost savings in the hotel.	4.19	0.835
Increasing market share.	4.17	0.815
Is a competitive advantage.	4.48	0.833
Positive impact on the hotel's reputation.	4.25	0.769
Average Mean	4.27	

***1=** Strongly Disagree **2=** Disagree **3=** Neutral **4=** Agree **5=** Strongly Agree

The results (Table 8) indicate that the overall average of KAP model adoption drivers is (4.27), and this value indicates that the majority of food handlers believe that adoption of KAP model has an effective role in reducing production cost, creating sustainable competitive advantage, increasing market-share, and influencing on the hotel's reputation.

Regression analysis of KAP factors effect on hotels' reputation

Table 9. Good KAP effect on hotels' reputation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.563	.732		6.230	.000
	knowledge	.770	.099	.004	.067	.046
	behaviour	.640	.117	.049	.791	.030
	practices	.730	.058	.009	.149	.022

a. Dependent Variable: hotel reputation

The respondents perceive 3 variables to have a positive effect on the reputation of the hotel. The knowledge variable is positively affecting the hotel reputation (β=-0.770 and $p<0.05$) (H1). Furthermore, the behaviour is found positively affecting the reputation of the hotel (β=0.640 and $p<0.05$) (H1), and 50 practices (β=0.730 and $p<0.01$) (H1). These three variables (knowledge, behaviour, and practices) explain 58% of variance in hotel reputation (R^2=0.58). These results agree withMiller,(2003), Chun,(2005)

4.3.7 Regression analysis of good KAP effect on hotel market-share

Table 10 Good KAP effect on hotel market-share

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.392	.852		6.327	.010
	knowledge	.740	.115	.040	.646	.019
	behaviour	.640	.137	.007	.105	.037
	practices	.790	.067	.046	.737	.042

a. Dependent Variable: increasing hotel market-share

The respondents perceive 3 variables to have a positive effect on the hotel market-share. The knowledge variable is positively affecting the hotel market-share (β=-0.740 and p<0.05) (H2). Furthermore, the behaviour is found positively affecting the hotel market-share (β=0.640 and p<0.05) (H2), and practices positively affect the hotel market-share (β=0.790 and p<0.01) (H2). Those three variables (knowledge, behaviour, and practices) explain 56% of variance in the hotel market-share (R2=0.56). These results agree with Becker et al.,(2013)

Regression analysis of good KAP effect on cost savings in hotels

Table 11. Good KAP effect on cost savings in hotels

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.580	1.380		5.494	.032
	knowledge	.790	.186	.072	1.176	.018
	behaviour	.670	.221	.139	2.253	.025
	practices	.740	.109	.066	1.058	.041

a. Dependent Variable: cost savings

The respondents perceive 3 variables to have a positive effect on reducing the production cost in hotels. The knowledge variable (β=-0.790 and p<0.05) (H3); behaviour (β=0.670 and p<0.05) (H3), and practices (β=0.740 and p<0.01) (H3). These three variables explain 53% of variance in the production cost in hotels (R2=0.53). These results agree with Torres,(2012)

Regression analysis of good KAP effect on the competitiveness for the hotels

Table 12. Good KAP effect on the competitiveness for the hotels.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.545	.864		6.420	.000
	knowledge	.590	.116	.031	.507	.013
	behaviour	.670	.139	.021	.337	.025
	practices	.420	.068	.130	.083	.038

a. Dependent Variable: competitive advantage

Three variables have a positive effect on the competitive advantage for the hotels:The knowledge variable (β=-0.590 and p<0.05) (H4); behaviour (β=0.670 and p<0.05) (H4), and practices (β=0.420 and p<0.01) (H4). These three variables explain 51% of variance in the competitive advantage for the hotels (R2=0.51). These results agree with Loo and Davies, (2006) Abd-El-Salam E. et al., (2013).

Recommendations for food and beverage managers at five-star hotels in Cairo, based on results of this study include:

- Implementing an efficient food safety-training program for food and beverage department staff to ensure all food handlers have appropriate levels of food safety knowledge and positive attitudes, and demonstrate these in practice.
- Developing a checklist to ensure all food safety components are covered during food safety orientation and training.

Directions for future research

This study has several limitations, which affect the generalizability of the results and suggest the possibilities for future research. Throughout the research, several methodological decisions had to be made, such as choice of the theory, conceptual frame of reference, sample, and data collection and data analysis methods. Each of these decisions either implies some limitations or raises the question of how the choice of another research strategy would have affected the results. However, since the conclusions of previous studies back up what has been found here, it can be claimed that the study findings are somewhat generalizable.

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