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The Influence of Contextual Factors on HACCP System Practices in Four and Five Star Rated Hotels in Nairobi City County, Kenya

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Abstract

Hazard Analysis Critical Control Point (HACCP) system is an important food safety strategy that most food production entities throughout the world endeavor to implement. However, a variety of contextual factors influence its successful execution. This study sought to determine the influence of contextual factors namely food safety regulations, market forces, size of the hotel, management commitment and funding level on HACCP system practices in four and five star rated hotels in Nairobi City County. A total of 255 hotel cooks and 33 chefs in 16 four and five star rated hotels participated in the study as key informant respondents and units of analysis from whom data was collected using a self-administered structured questionnaire. Additional data was collected from hotel managers through an interview schedule for cross-validation. Analysis of data was conducted through a set of descriptive statistics that provided detailed explanations of the study variables as well as multiple linear regression to test the set null hypothesis at 95 percent confidence level ($\alpha = 0.05$). The results of the study reveal that on the aggregate, the context within which the hotels operate significantly influences their HACCP system practices. In particular, regulatory framework, size of the hotel, management commitment and funding level were found to have a positive influence on HACCP system practices of the hotels while market forces had negative effect on the hotels' HACCP system practices. The study provides significant insights for the advancement of knowledge on HACCP concept as well as appropriate recommendations to hotel managers and other food production industry practitioners on the effective implementation of HACCP system practices.

Keywords: Food Safety, HACCP System Practices, Contextual Factors, Star Rated Hotels

1. Introduction

Food safety issues in developing countries are mostly centered on illnesses that are linked to poor hygiene practices. Since the hospitality sector deals mainly with providing food, drink or accommodation to people who are away from home, food poisoning may arise whenever there is unhygienic food preparation (Habeb *et al.*, 2018). Food borne



infections or food poisoning refers to the illnesses that result from intake of food having bacteria, viruses and other food pathogens. Studies by various scientists and health agencies with an interest on food related diseases have observed that diseases such as diarrhea occur as a result of individuals consuming contaminated food ([Argudin et al. 2010](#)). [Bisholo et al. \(2018\)](#) notes that food-borne disease is associated with both low and high socio-economic status populations and more than 30 pathogens have been identified as the major causes of foodborne disease outbreaks globally, and some food-borne pathogens have long term health consequences.

Numerous microbiological hazards and risks are associated with the food industry and research has indicated that eating food prepared in many restaurants is a key source of most foodborne illnesses globally. In Ghana for instance, [Darko \(2016\)](#) observed an increase in foodborne diseases. In the same vein, [Desiree \(2019\)](#) argues that food safety is a major challenge in low and middle-income countries (LMIC) where 40% of diarrheal diseases are attributed to contaminated food. For instance, in Cambodia, diarrheal disease is a prominent cause of childhood mortality where the majority of consumers purchase food through informal markets that escape food safety standards and controls. [Stephanie \(2009\)](#) states that most demographic and environmental changes in the world's developing regions have led to food-borne pathogens outbreaks plus numerous newly identified and re-emerging pathogens that are food-borne.

Non adherence to food safety requirements can have drastic consequences to food establishments. A study by [Mahdu \(2015\)](#) reviewed legal databases to identify cases of foodborne illness (FBI) which were resolved through the United States of America (USA) court system examining how case attributes impacted plaintiff success and payouts in jury settled FBI lawsuits. The study found that of the 511 FBI jury trials between 1979 and 2014, plaintiffs won 34.8% of cases, and received a median award of \$32,264. Given the risk to firms in terms of potentially large payouts, future litigation and lost reputation, the study suggests that food firms and others in the supply chain need to produce safer and better-quality foods. A related study conducted by [Dunn \(2014\)](#) in New Zealand concluded that irrespective of the methodology used for its quantification, foodborne disease is responsible for a considerable health and financial burden on the New Zealand society. Food safety authorities expend much effort monitoring and controlling chemical and biological hazards. Whereas chemical hazards are easier to control and monitor and New Zealand does a good job at minimizing the chemical burden of foodborne diseases, the majority of acute foodborne illness in New Zealand is thought to be due to pathogenic hazards, which are much harder to control. Further studies by [Gormley et al \(2011\)](#) observe that much as a reduction in outbreaks of food borne diseases from 1992 to 2008 in Wales and England were reported, outbreaks associated with food service establishments went up.

The food service sector requires adoption of suitable measures of food safety control so as to decrease the infection risk. Indeed, [Dunn \(2014\)](#) asserts that minimizing the burden of foodborne disease is a primary objective for most food safety interventions. [Aber et](#)



al., (2018) note that the Hazard Analysis and Critical Control Point (HACCP) is a globally recognized food safety program that was proposed as a suitable program to minimizing or even eliminating the risk of contamination. For instance, Steffen et al (2012) observe that adoption of HACCP based programmes by the food service sector had been confirmed to decrease travelers' diarrhea infections incidences considerably from a high of 23.22% to 5.31% by 2012.

Successful development, installation, maintenance and verification of an effective of HACCP system depends on a complex blend of organizational, technical as well as managerial hurdles which unfortunately provides the biggest challenge to some of the largest food businesses (Kontogeorgos, 2007; Sikandar et al/2013). Lack of commitment from management in particular has been identified by Katherine (2012) as a major challenge for the food industry since managers may not be motivated to implement the HACCP system. There is need to establish the influence of a wide array of contextual HACCP system practices within the Kenyan setting.

1.1 State of Food Safety in Kenya's Hotel Sector

The system of food safety control in Kenya is pronounced under various regulatory frameworks executed by different government ministries and agencies. There are over 20 different legislations on food management. The Kenya Bureau of Standards (KEBS) which is a certification body provides ISO 22000:2005 Food Safety Management Systems and FSSC 22000 Food Safety Systems Certification for adherence by establishments to ensure food safety for the customers (Muinde, 2012).

However, Kenya lacks a definitive national food safety policy and enforcement of the existing fragmented food safety legislations is also weak. As a result, Oloo (2010) observes that food borne illnesses are still a key crisis in Kenya within the food production sector. For instance, a study by the Kenya Medical Research Institute (2014) reported that the majority of chicken vended in butcheries and retail outlets especially supermarkets within Nairobi posed a severe health risk to customers. A similar study carried out by Wandolo (2016) in training institutions in Kenya established that the institutions were not adequately equipped to ensure food safety and in particular that HACCP system prerequisites were not in place in most of these institutions. The study also established that lack of resources posed a serious threat to food safety and hygienic practices within the training institutions.

1.2 Objectives of the Study

The study's general objective was to determine the influence of contextual factors on HACCP system practices in four and five star rated hotels in Nairobi City County with specific objectives being to:

- i) Establish the effects of food safety regulations on HACCP system practices in four and five star rated hotels in Nairobi City County.



- ii) Assess the effects of market forces on HACCP system practices in four and five star rated hotels in Nairobi City County.
- iii) Determine the influence of size of the hotel on HACCP system practices in four and five star rated hotels in Nairobi City County.
- iv) Establish the effects management commitment on HACCP system practices in four and five star rated hotels in Nairobi City County.
- v) Assess the effects funding level on HACCP system practices in four and five star rated hotels in Nairobi City County.

1.3 Conceptual Framework and Hypotheses

The key variables of the study are depicted in the conceptual framework in Figure 1.

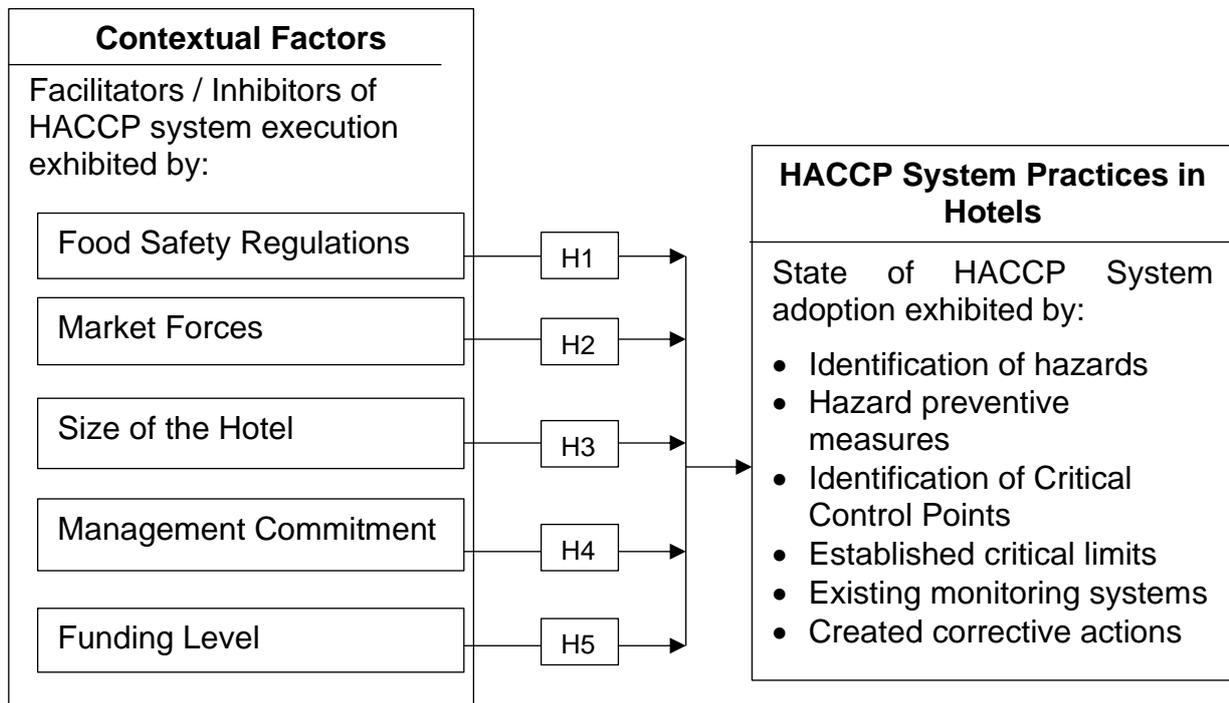


Figure 1: A Conceptual Framework of Contextual Factors and HACCP System Practices in Hotels

Source: Researchers (2019)

Arising from the conceptual framework in Figure 1, the following five null hypotheses guided the study:

- i) **H₀₁:** There is no relationship between food safety regulations and HACCP system practices in four and five star rated hotels in Nairobi City County.
- ii) **H₀₂:** There is no relationship between market forces and HACCP system practices in four and five star rated hotels in Nairobi City County.

- iii) **H₀₃**: There is no relationship between size of the hotel and HACCP system practices in four and five star rated hotels in Nairobi City County.
- iv) **H₀₄**: There is no relationship between management commitment and HACCP system practices in four and five star rated hotels in Nairobi City County.
- v) **H₀₅**: There is no relationship between funding level and HACCP system practices in four and five star rated hotels in Nairobi City County.

2. Methodology

The study adopted a cross-sectional survey research design and was conducted in the Nairobi City County since the county has a higher number of star-rated hotels in Kenya. All the hotels classified by the Tourism Regulatory Authority (TRA) as either four or five star-rated were targeted. According to the 2016 TRA classification, there were 22 classified hotels in Nairobi City County of which ten were 5-star and twelve 4-star. A purposive and stratified sampling technique was used to select the study units who constituted the respondents for the study. The study units/respondents were classified into two strata namely the chefs and cooks who were deemed the ideal key informants since the execution of HACCP system practices in their respective hotels is part of their day to day work.

Given the limited number of chefs usually engaged in hotels, a sample of three chefs from each of the 22 hotels constituting the population of study were randomly selected thus totaling to 66 chefs targeted as the respondents of the study. On the other hand, given that hotels engage a sizeable number of cooks, the size of the sample constituting the hotel cooks from the entire study population of 22 hotels was computed to be 384 cooks. The average number of cooks targeted for interview from each of the 22 hotels was therefore 17 (that is: 384/22) who were consequently selected randomly from each of the hotel. The total study units/respondents targeted for the study were therefore 450 (66 chefs and 384 cooks). However, data was successfully collected from a total of 16 hotels from the study population of 22 hotels with a total of 255 hotel cooks and 33 chefs from the 16 surveyed hotels successfully responding to the administered questionnaires totaling to 288 respondents, a response rate of 64%.

A self-administered structured questionnaire was used to collect the primary data from the respondent units of study. In addition, an interview schedule targeting one manager in each hotel was personally administered by the researcher to obtain the hotel managers' views and cross-validate the answers given on the key questions covered by the questionnaires targeting on the respondent chefs and cooks.

Measures for the study variables were adopted from well-established scales in the existing literature for validity with measures for HACCP practices being adopted from the principles of HACCP implementation by Codex Guidelines (2008) and [Semos and Kontogeorgos \(2007\)](#). An analysis of the reliability of the measures for variables which had multiple measures namely Market Forces, Management Commitment and HACCP System Practices revealed their Cronbach's alpha coefficients exceeded the 0.7 lower



level of acceptability. Hence, the internal consistency reliability of the measures used was considered to be sufficiently high and to have adequately measured the study's variables.

Analysis of the data utilized a set of descriptive statistics that provided detailed description of the study variables. To establish the statistical significance of the hypothesis, multiple linear regression analysis was conducted at 95 percent confidence level ($\alpha = 0.05$). The following sections highlight the relevant results.

3. Results and Discussions

The data analysis and resultant discussions of findings is presented under descriptive and inferential analysis.

3.1 Descriptive Findings of the Study

The key contextual factors of interest to the study were food safety regulatory framework, market forces, size of the hotels in terms of lettable rooms, management commitment and level of funding on HACCP systems. The following sections highlight the study results on these set of organizational factors.

3.1.1 The Food Safety Regulations Complied with by the Hotels

A total of 14 food safety regulatory frameworks in existence in Kenya were reorganized into three categories and the hotels were required to indicate which of the regulatory frameworks they complied with. Table 1 highlights the relevant results.

Table 1: The Food Safety Regulatory Framework Complied with by the Hotels

Food Regulatory Framework	Frequency	Percent
Liquor, food and health safeguards regulations	234	81.3
Liquor, food, crops & health safeguards regulations	36	12.5
health & food	18	6.3
Total	288	100.0

Source: Research Data (2019)

The results in Table1 show that the highest percent (81.3%) of the hotels complied with the category of food safety regulatory frameworks relating to liquor, food and health safeguards, 12.5% of the hotels complied with the wider category of liquor, food, crops and health safeguards while only 6.3 % of the hotels conformed to the narrow category of the food safety regulatory frameworks consisting of health and food only. It is significant to note that hotels in Kenya are required as a matter of operation to comply with food safety regulations without exception and this was established to be the case for the star rated hotels in the study.

3.1.2 Market Forces Affecting the Operations of the Hotels

To establish the extent to which market forces have affected the operations of the hotels over the last 3 years, a total of 4 market dynamics measures were assessed as indicated in Table 2.



Table 2: Market Forces Complied with by the Hotels

Market Forces	3	2	1	Mean	SD
The number of customers who demand our services has remained high and stable over the last three years	62.5%	37.5%	-	2.63	.485
Cost of food raw materials has remained reasonably stable over the three years	12.5%	87.5%	-	2.13	.331
Overall, the number of customers we serve our food has continued to grow over the last three years	25.0%	75.0%	-	2.25	.434
The price we charge for our food has remained unchanged over the last three years	25.0%	75.0%	-	2.25	.434
Aggregate Scores for Market Forces				2.31	0.421
Notes: N = 288, 3 = To a large extent, 2 = To a small extent, 1 = Not at all, SD = Standard Deviation					

Source: Research Data (2019)

The detailed results in Table 2 show that all the hotel employees felt that their hotel businesses had been affected by the market forces over the last 3 years since none gave the answer for 'Not at all' when asked the effects of the market forces on their businesses. The employees (62.5%) agreed to a large extent that the number of customers who demanded their hotels' services had remained high and stable over the last three years. On the other hand, respondents agreed to a small extent that the cost of food raw materials had remained reasonably stable over the three years (87.5%), that the overall number of customers they serve food had continued to grow over the last three years (75%) and that the price they charge for food had remained unchanged over the last three years (75%).

The results in Table 2 show that on a scale of 1 to 3 (where 3 = to a large extent and 1= not at all), the aggregate mean score for the existence of the measured market forces is 2.31 which rounds off to 2 on the scale 1 to 3 thus indicating that the employees rated statements indicating the existence of key marketing forces as affecting their sector to a small extent within a standard deviation of 0.421. The most significant market force affecting the hotels was recorded on the statement that the number of customers who demand their services had remained high and stable over the last three years (mean = 2.63; standard deviation = 0.4851) and the least was observed on the statement that cost of food raw materials has remained reasonably stable over the three years (mean = 2.13; standard deviation = 0.331).

This results are consistent with the findings of Henson and Holt (2002) who carried out a study to examine food firm's motivation to implement food quality and safety controls and concluded that food firms adopt systems for food safety not just because of external forces such as regulations and market forces but also because of internal requirements to do so.

3.1.3 Size of the Hotels

The study sought to establish the size of the hotels using the number of lettable rooms. Table 3 highlights the results.



Table 3: Size of the Hotels by Number of the Rooms

Rooms in the Hotel	Frequency of Respondents from Hotels with Different Room Sizes	Percent	Actual Number of Hotels	Cumulative Percent
<25 rooms	72	25.0	4	25.0
>25≤90 rooms	108	37.5	6	62.5
>90≤250 rooms	108	37.5	6	100.0
Total	288	100.0	16	

Source: Research Data (2019)

The results in Table 3 indicate that with respect to size of the hotels in terms of number of lettable rooms, 25% of the respondents indicated that their hotels had less than 25 rooms representing 4 hotels out of the 16 hotels from which respondents were drawn with the remaining 75% respondents indicating that the rest of 12 hotels had rooms ranging from 25 to 250 rooms with 6 hotels having >25≤90 rooms while another 6 hotels had >90≤250 rooms. The results indicate that the star rated hotels in Nairobi County have sizeable residential clients who would typically take most of their meals within their hotels thus requiring conformance to food safety standards to safeguard clients' wellbeing.

3.1.4 Extent of Commitment by the Hotels' Management Commitment towards HACCP System

To establish the level of commitment expended towards HACCP System by the hotels management, two top management behavioral practices measures were used as highlighted Table 4.

Table 4: Level of Commitment towards HACCP Systems by Hotel Management

Extent of top management Commitment towards HACCP system practices	5	4	3	2	1	Mean	SD
In our hotel top management has a positive attitude towards HACCP system execution	68.8%	18.8%	12.5%	-	-	4.56	.706
In our hotel top management commits resources and time in support of HACCP system execution	43.8%	50.0%	6.3%	-	-	4.38	.601
Aggregate Scores for Management Commitment						4.47	0.654

Notes: N = 288, 5 = To a very great extent, 4 = To a great extent, 3 = To a Moderate extent, 2 = To a small extent, 1 = Not at all, SD = Standard Deviation

Source: Research Data (2019)

The results in Table 4 show that on a scale 1 to 5 (where 5 = to a very great extent and 1= not at all), all respondents were of the view that their hotels' top management was committed towards HACCP system practices either moderately, to a great extent or to a very great extent and none of the respondents rated their top management support of HACCP system practices as being to a small extent or not all.



Accordingly, the majority (68.8%) of the respondents agreed to a very great extent that their hotels' top management had a positive attitude towards HACCP system execution while on the dimension of hotel top management committing resources and time in support of HACCP system execution as a demonstration of their commitment, the majority of the respondents (50%) agreed to a great extent that this aspect rightly reflected the behavior of their top management towards HACCP practices while an additional 43.8% indicated that it captures to a very great extent the commitment of their top management towards HACCP system support.

The aggregate mean score for the hotels management commitment towards HACCP practices was rated to be a great extent at a mean score of 4.47 within a standard deviation of 0.6535. The highest level of management commitment was observed on the hotels' top management having a positive attitude towards HACCP system execution (mean = 4.56; standard deviation = 0.7061) and the least was observed on the hotels' top management committing resources and time in support of HACCP system execution (mean = 4.38; standard deviation = 0.601).

The findings of this study on management commitment towards HACCP system practices collaborate with the findings by CDC (2005) who observe that for the HACCP system programme to succeed, management team needs to provide commitment, strong leadership and adequate resources.

3.1.5 Funding Levels of the Hotels towards HACCP System

The study also sought to establish the adequacy of the hotels' funding towards HACCP system the results of which are shown in Table 5.

Table 5: The Funding Level of Hotels on HACCP System

Level of Funding	Frequency	Percent
Inadequate	108	37.5
Adequate	180	62.5
Total	288	100.0

Source: Research Data (2019)

The results in Table 5 indicate that the majority of the respondents (62.5%) were of the view that the funding level expended towards HACCP System execution by their hotels was adequate while the rest of the respondents (37.5%) felt the funding level towards HACCP System execution by their hotels was inadequate. The adequacy of financial support is particularly useful for successful HACCP implementation as suggested by CDC (2005) who note that lack of financial resources, technical expertise and small staff base impeded HACCP system implementation, both in small and large food outlets.



3.1.6 The Extent of HACCP System Practices in the Hotels

The extent of the HACCP system practices was assessed using six measures. Respondents were asked to confirm which of the six measures of HACCP system practices were being executed by their hotels (where 2 = Yes; 1 = No). Table 6 indicates the relevant findings.

Table 1: HACCP System Practices in the Hotels

State of HACCP System Practices	Yes	No	Mean	SD
There is a clear checklist of possible food hazards facing the hotel	93.8%	6.3%	1.94	.242
There is a list of steps to be undertaken by the hotel for food safety hazard prevention	87.5%	12.5%	1.88	.331
There is a clear checklist of food safety critical control points	87.5%	12.5%	1.88	.331
There are set threshold levels to be adhered to for existing food safety	81.3%	18.8%	1.81	.391
There exists a surveillance mechanism to ensure adherence to the established food safety systems	56.3%	43.8%	1.56	.497
There are remedial measures in existence in the event of lapses to ensure adherence to food safety	68.8%	31.3%	1.69	.464
Aggregate Scores for HACCP System Practices			1.79	0.376

Notes: N = 288, 2 = Yes, 1 = No, SD = Standard Deviation

Source: Research Data (2019)

The detailed results in Table 6 show that a large proportion of the employees indicated a high incidence of existence of HACCP system practices in the star rated hotels with 93.8% indicating that there is a clear checklist of possible food hazards facing their hotels; 87.5% confirmed that there is a list of steps to be undertaken by the hotel for food safety hazard prevention with a similar proportion of 87.5% indicating that there is a clear checklist of food safety critical control points within the hotels.

A further 81.3% of the hotel employees were of the view that there are set threshold levels to be adhered to for existing food safety while 56.3% indicated that there exists a surveillance mechanism to ensure adherence to the established food safety systems. Finally, 68.8% of the employees confirmed that there are remedial measures in existence in the event of lapses to ensure adherence to food safety within the hotels.

The results in Table 6 show that the aggregate mean score for the HACCP system practices in hotels was 1.79 which approximates 2 on the scale 1 to 2 thus indicating that the employees were generally in agreement that the listed HACCP system practices existed in their hotels at a standard deviation of 0.376. The practice of there being is a clear checklist of possible food hazards facing the hotel was the highest rated (mean = 1.94; standard deviation = 0.242) and the least was observed on the statement that there exists a surveillance mechanism to ensure adherence to the established food safety systems (mean = 1.56; standard deviation = .497). Further detailed HACCP system



practices scores are highlighted in Tables A37 to A42 in Appendix 9. These results contrast the findings by Taylor (2008) who observed a general lack of capacity food handlers in implementing the HACCP system practices.

3.2 Influence of the contextual factors on HACCP system practices in four and five star rated hotels in Nairobi County

To assess the influence of contextual factors on the hotels' HACCP system practices, the five contextual factors variables namely food safety regulatory framework, market forces, size of the hotel, management commitment and funding level were regressed against the aggregate mean scores of their HACCP system practices using a multiple linear regression model. The relevant results are presented in Table 7, 8, and 9.

Table 7: Results of the Goodness-of-Fit Model of the Regression of Contextual Factors against HACCP System Practices

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.831 ^a	.690	.685	.15720

a. Predictors: (Constant), Contextual Factors- Food Regulatory Framework, Market Forces, Size of Hotel, Management Commitment, Funding Level

Source: Research Data (2019)

The explanatory power of contextual factors on the variability of HACCP system practices as indicated in Table 7 is a high of 69 percent (R Square = 0.690) indicating that the contextual factors collectively contribute to a great extent on the variability of the HACCP system practices among star rated hotels in Nairobi County.

Table 8: Results of the Overall Significance of the Regression of Contextual Factors against HACCP System Practices

ANOVA ^a					
Model	Sum of Squares	df	Mean Square	F	Significance (p-value)
Regression	15.531	5	3.106	125.701	.000 ^b
Residual	6.969	282	.025		
Total	22.500	287			

a. Dependent Variable: Mean score of HACCP System Practices

b. Predictors: (Constant), Contextual Factors- Food Regulatory Framework, Market Forces, Size of Hotel, Management Commitment, Funding Level

Source: Research Data (2019)

The regression results in Table 8 show that the overall effect of contextual factors on HACCP system practices is statistically significant (overall significance p-value = 0.000). The null hypothesis of equal population means is thus rejected indicating that the 4 and 5-star categories of classified hotels have different mean values for the various categories of contextual factors that differently affect their HACCP system practices. Alternatively, since the calculated value of F (125.701) is larger than the critical value of

$F_{0.05}$ (which is 2.21 from the F Distribution Table with 5 and 282 degrees of freedom), the null hypothesis is rejected.

Table 9: Results of the Individual Significance of the Regression of Contextual Factors against HACCP System Practices

Model	Coefficients ^a				Significance (p-value)
	Unstandardized Coefficients		Standardized Coefficients	t	
	B	Std. Error	Beta		
(Constant)	.709	.220		3.229	.001
Food Regulatory Framework	.026	.026	.053	1.013	.312
Market Forces	-.165	.043	-.185	-3.851	.000
Size of Hotel	.199	.025	.556	8.069	.000
Management Commitment	.080	.030	.170	2.661	.008
Funding Level	.159	.033	.275	4.761	.000

a. Dependent Variable: Mean score of HACCP System Practices

Source: Research Data (2019)

As highlighted in Table 9, the five contextual factors have different effects on HACCP system practices at their individual levels. For instance, the size of hotel ($\beta = 0.556$, p-value = 0.000), funding level ($\beta = 0.275$, p-value = 0.000) and management commitment ($\beta = 0.170$, p-value = 0.008) have all a statistically significant positive effect on HACCP system practices while food regulatory framework practices ($\beta = 0.053$, p-value = 0.312) have a slightly positive effect on HACCP system practices that is not statistically significant. On the other hand, market forces ($\beta = -0.185$, p-value = 0.000) have a statistically significant slightly negative effect on the hotels' HACCP system practices.

Hence, since none of the β_i 's = 0 and overall p-value < 0.05, we reject H_0 and conclude that there is a relationship between contextual factors and the HACCP system practices among the four and five star rated hotels in Nairobi City County.

The results of this study therefore reveal that the context within which a hotel operates has a significant influence on its execution of HACCP system practices. Regulatory framework, size of the hotel, management commitment and funding level have considerable positive influence on HACCP system practices within the hotels. However, market forces can considerably erode the capability of the hotel to successfully implement HACCP system.

The study results are consistent with findings by Taylor (2004), Henson and Holt (2004) and Ward (2001) who observe a positive influence of environmental factors on HACCP system execution. Further, the findings on the implications of the contextual factors on HACCP food safety systems are collaborated by previous studies on food safety. For instance, Patricia *et al.* (2016) found that mandatory requirement by food laws for persons in supervisory positions were not stringently complied with as 31% of kitchen matrons reported not to have hygiene qualifications in the Ashanti region of Ghana and 82% of staff sampled had never received hygiene training. Further, Miriam (2015)



established in a study on developing government strategy to meet international standards on food safety across hospitality industry that initial responsibility for HACCP system execution lies within the food industry and specifically with the management of the sector.

4. Conclusions and Recommendations

This study sought to determine the influence of the contextual factors on HACCP system practices in four and five star rated hotels in Nairobi City County. Based on the findings of the study, it can be concluded that the contextual factors of interest to the study namely food safety regulatory framework, market forces, size of the hotels, management commitment and funding level were found to collectively influence the HACCP system practices of the four and five star rated hotels in Nairobi County in a statistically significant way although their individual effects were varied. For instance, the size of hotel, funding level, and management commitment had statistically significant positive effect on HACCP system practices while food regulatory framework practices had slightly positive effect on HACCP system practices that is not statistically significant. In contrast, market forces were found to have a statistically significant slightly negative effect on the hotels' HACCP system practices.

The results of this study have significant policy and practical implications to hospitality industry regulators and managers of star rated hotels that implement HACCP system practices. It is important for hotel management to note that on their own, contextual factors that directly positively affect HACCP system practices in hotels are the food regulatory framework, size of the hotel, management commitment and funding level with the size of the hotel being the contextual factor that mostly positively affects HACCP system practices in the hotels. On the other hand, market forces direct impact on HACCP practices in hotels is negative. Hotel management should take into consideration that these aspects need to be adequately addressed to enhance their HACCP system execution within their food establishments.

Further studies may seek to identify and include more contextual factors deemed to influence HACCP system practices other than the set of contextual variables used in this study so as to enhance the explanation on what really determines the level of HACCP system practices in hotel settings and thereby adequately inform management and organizational investment on this critical food safety initiative as well as further advance the frontiers of knowledge on the HACCP concept.

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