



Enhancing Customer’s Patronage of Food and Beverage through Environmental Sanitation and Food Hygiene Standard

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Abstract. Poor hygiene practices among food vendors, including those in hotels and restaurants, pose a significant challenge in the hospitality industry. This study critically examines the impact of food hygiene standards, particularly environmental sanitation, on customer patronage in food and beverage establishments. The key objectives are to: analyze the correlation between good environmental hygiene and customer patronage; assess the effect of proper hygiene on restaurant reputation; and determine the impact of hygiene practices on restaurant growth and expansion. The study employs Spearman correlation and the logit binary regression model to analyze the collected data. Findings reveal a strong positive correlation between good environmental hygiene and customer patronage, highlighting that proper hygiene significantly enhances restaurant reputation. Additionally, high hygiene standards contribute to business growth and expansion. Based on these findings, the study recommends that regulatory task forces ensure strict adherence to environmental sanitation and hygiene guidelines within food and beverage establishments. Furthermore, hotel and restaurant management should implement and enforce high hygiene standards to improve reputation, attract more customers, and drive business expansion.

Keywords: Food Hygiene Standard, Environmental Sanitation, Customer’s Patronage, Food and Beverage

1. Introduction

A number of Nigerian entrepreneurs in the hospitality and food industry have taken advantage of the increasing demand for local and continental dishes to set up restaurants and related businesses. The proliferation of food joints across the length and

breadth of Nigerian communities has raised concerns among experts, especially because of the sanitary conditions under which they prepare and sell food to their patrons. Restaurant operators, local food joints, and wayside food sellers are all critical stakeholders in the food and beverage industry. Sanitation which is “an applied science that incorporates the principles of design, development, implementation, maintenance, restoration, and/or improvement of hygienic practices and conditions”, has been a major concern and subject of research interest among experts (Abdussalam & Käferstein, 2020).

Specifically, food hygiene is the major food safety concern when consumers dine out. Several findings have reported that consumers are usually concerned about hygiene practices in restaurant where they eat and will select restaurants that will meet their standard for quality and value (Barro, Bello, Savadogo, Ouattara, Ilboudo, & Traoré, 2019). Studies have associated good sanitation practices in preparation and service of food with healthy eating while bad sanitation practices have been linked with food contamination and food-borne diseases (Mensah, Yeboah-Manu, Owusu-Darko, & Ablordey, 2021). Sanitation within and around food joints have been found to be directly associated with customers repurchase intentions (Acho-Chi, 2021). In fact, the study found that cleanliness and sanitation are one of the most important factors in attracting new customers and in keeping the ones a restaurant already have. Poor service orientation sometime contributes to customer’s perception of how hygienic or otherwise a restaurant is. A study observed that customers conclude that the food is unhygienic simply because tables are not promptly cleared leaving particles of food on the tables as well as on the floor, sometimes, waiters do not appear professionally and neatly. In fact, food servers in some restaurant sometimes use

their hands to handle money given to them by customers and also use the same bare hands to serve food, thus impacting the repurchase intention such customers (Omotayo, & Denloye, 2020).

Studies claim that worldwide, about several millions of people are estimated to have post-consumption food-related illnesses; and among these, 420,000 died annually, in addition to cost of illness that is associated with illness associated with food related diseases in Nigeria estimated at US\$3.6 billion per annum (WHO, 2019; Ezirigwe, 2018). Therefore, it is imperative that food handlers along the food production and service value chain pay serious attention to this. Poor food hygiene and safety management starts from the farms where primary production takes place. The quantities of pesticide and other agrochemicals used in the farms are not in agreement with the quantities recommended by Codex Alimentarius Commission, and this results to their residues rising higher than recommended quantities. Majority of food vendors sell along the streets, carrying their food in carts, wheel-barrows or such other carriers like these from one customer to the other (Ezirigwe, 2018; Onyeneho & Hedberg, 2019). Some of the food handlers display their wares on bare ground (Iro, 2019). Poor food hygiene and safety management by food handlers is further compounded by the inadequate knowledge of food hygiene and safety management by food consumers themselves (ILRI, 2018). Report of World Health Organisation (WHO) in 2019 identifies the increasing burden of foodborne illness and new and emerging foodborne hazards that occurs in the food handling processes. This indicates that, unhygienic exposures and environmental contamination have an adverse effect causing a high risk of food poisoning (WHO 2019). Previous studies have also shown that, the unhygienic conditions in food production and service operations indicate that, the main reasons for poor food safety and poor hygiene practices includes insufficient training, lack of enforcement, lack of knowledge on personal hygiene and safe handling of food (Abdussalam, Käferstein, 2020). Despite these various studies, much uncertainty still exists about the roles, barriers and opportunities in the provision of safer and hygienic foods by the food service operations in their daily vending operations. This study examines the relationship between customer purchasing decisions, hygiene standard and environmental sanitation.

The aim of this study is to investigate the effects of hygiene practices on the performance of food service operations. The specific objectives guiding this study are to: determine the relationship between good hygiene standard in food service operations and customers' patronage of food service outlets; assess the effects of environmental sanitation on the reputation of food service operations; and examine the

impacts of hygiene standards and environmental sanitation on the growth and expansion of food service operations.

The formulated hypotheses for this study are:

H₀₁: Good hygiene standard has no significant relationship on customers' patronage of food service outlets.

H₀₂: Environmental sanitation has no significant effect on the reputation of food service operations.

H₀₃: Hygiene standard and environmental sanitation have no significant impacts on growth and expansion of food service operations.

2. Literature Review

2.1 Hygiene Standard

Food can be exposed to various biological, chemical, or physical hazards at different stages of the production process, potentially leading to foodborne illnesses, which are an increasing public health concern globally. To ensure food safety, good hygiene practices must be monitored. This can be done by competent authorities through official inspections and other control mechanisms, as well as by qualified auditors in coordination with the establishment manager, owner, or HACCP consultant. This process is referred to as hygiene standards. Ovca, Jevšnik and Raspor (2019), describe hygiene standard as comprising 'conditions and measures necessary for the production, processing, storage and distribution of food that are safe, sound, wholesome and fit for human consumption'. These conditions and measures must start from the farm where the primary production of the crops and animals are raised for food, through the food manufacturing, processing and the final preparation of the food for the table, till it enters the mouth through the fork. It is indeed a complex set of activities, beginning from production stages with good agricultural practice (GAP) starting from selection of healthy uncontaminated seedlings (for plant) and young healthy animals for animal husbandry. The use of pesticides, fertilizers, soil, water, feeds and veterinary drugs must be used in line with regulations provided to avoid residues of these chemicals in the plant and animals overshooting levels allowed by regulations (Gershon, Nuoh, & Atelu, 2021). Particularly, appropriate management of wastes and storage of harmful materials should be intentionally avoided. Additionally, on-farm programmes need to be supported to attain definite food safety goals as avital part of primary production. The code continues and gives recommendations for handling storage and transport; cleaning, maintenance and personal hygiene at primary production; design and layout of premises for food production; water supply, drainage and waste disposal; cleaning facilities; personal hygiene facilities and toilets; air quality and ventilation; lighting; and storage (Ovca,

Jevšnik & Raspor, 2019). Hygiene standards include hygienic control of operations, including control of food hazards through hazard analysis and critical control points (HACCP), in key aspects of control of systems: incoming material requirements, packaging, water, management and supervision, documentation and records, and recall procedures. In addition, food hygiene involves establishment maintenance and sanitation which include, maintenance and cleaning, establishing health status, illness and injury, personal cleanliness, personal behaviour, and visitors; use and maintenance of transportation; product information and consumer awareness; and training on food hygiene (Tinker, 2021)

To establish a standard guideline for food preparation, the WHO identified five essential principles for ensuring food safety (Thilagamani & Keerthana, 2020). These include maintaining cleanliness in food handling areas, keeping raw and cooked food separate, thoroughly cooking food, storing food at safe temperatures to eliminate pathogens, and using safe water and raw materials. Anyone involved in food preparation should adhere to these principles to ensure food safety. However, consumers cannot be entirely sure about the safety of food prepared in a closed kitchen, nor is it practical for them to carry a thermometer to check the food temperature or a microbiological test kit to assess microbial levels. As a result, they must rely on their subjective judgment of various safety cues present in dining establishments to identify potential hazards

2.2 Sanitation

This agenda urges nations to initiate fresh efforts to accomplish 17 SDGs within the next 15 years, one of which aims to "ensure the availability and sustainable management of water and sanitation for all (Aman et al, 2024). Consumer policy has evolved to integrate consumers into the single market while driving economic growth. As a crucial component of national economic policies, consumer protection enables individuals to make informed purchasing decisions, thereby enhancing market efficiency (Cumming et al, 2023). A fundamental consumer right is the assurance that food consumed is both safe and of high quality. To uphold this, food service establishments implement quality assurance measures, including robust sanitation programs, Hazard Analysis and Critical Control Points (HACCP), and other prerequisite safety protocols. Sanitation plays a pivotal role in food safety by preventing contamination and ensuring high-quality standards in food production and service.

Food-borne diseases remain a major global public health concern, contributing to significant morbidity and mortality (Grace, 2023). Contaminated food serves as a vehicle for harmful pathogens, including

bacteria, viruses, parasites, and chemical contaminants. Contributing factors such as inadequate hygiene practices, improper food handling, and the use of unsafe water exacerbate the spread of these diseases. Among the most pressing concerns is poor sanitation, which facilitates contamination at multiple stages of the food supply chain, from production and processing to preparation and consumption. Despite the existence of food safety regulations, gaps persist in enforcing proper sanitation measures in food service operations, thereby exposing consumers to health risks.

Existing literature emphasizes environmental sanitation within food establishments but often overlooks the role of food-contact surfaces as vectors for contamination. Microbial communities, particularly biofilms, thrive on technological equipment and food preparation surfaces, serving as reservoirs for both pathogenic and spoilage microorganisms. These biofilms, once established, are difficult to eliminate and can significantly compromise food safety (Liu et al, 2023). Therefore, a more rigorous approach to sanitation—beyond general environmental cleanliness—is required to mitigate microbial risks and ensure consumer safety.

A critical gap in research remains in understanding the direct relationship between sanitation practices and customer patronage. While hygiene is often assumed to influence consumer behaviour, empirical studies are needed to establish its impact on customer retention, restaurant reputation, and business growth. Addressing this gap requires an interdisciplinary approach that combines food safety research with consumer behaviour analysis. By strengthening sanitation policies, enforcing hygiene regulations, and integrating sanitation awareness into consumer protection frameworks, food service operations can enhance both public health outcomes and market competitiveness.

2.3 Theoretical Review

2.3.1 Health Belief Theory/Model

The Health Belief Theory/Model is the underpinning theory for this study. The health belief was chosen over other models in the study to understand what factors are involved in the provision of safer and hygienic foods by food service operations (Abdussalam, & Käferstein, 2020). The health belief model was at the start developed in the 1950's by American social psychologists and used in order to account for why people failed to participate in health promotion programs. The model has developed over the years as a response to public health concerns (Champion & Skinner 2018). The model is constructed on two major sources: Cognitive Theory and Stimulus Response Theory. As noted by Stimulus

Response Theory on the term reinforcements, Skinner developed the hypothesis: “the frequency of a behaviour is determined by its consequences or reinforcement” (Champion & Skinner 2018). This indicates that, for a behaviour to be repeated, an act of reward for such behaviour needs to be reinforced (Acho-Chi, 2021). The Health Belief Model (HBM) is normally used in order to prevent health risks, and its purpose in this study is to find how factors to safer and hygienic food provision can be enforced in food service operations for the prevention of diseases. The primary ideas of the HBM constructs is to predict why people will take action to prevent disease or to control illness conditions through their behaviour, therefore the behaviour of food handlers in food service operations is of interest in this study (Gershon, Nuoh, & Atelu, 2021).

3. Methodology

Descriptive research design has been adopted. Descriptive study seeks to gather information so that description of what is going on can be made. They again stated that it may be designed to discover whether there is any relationship between two variables. The purpose of descriptive research is to observe, describe and document aspects of phenomenon as it naturally occurs. This study was conducted among food service operations in Ojota, Lagos Nigeria. Structured questionnaire was employed to solicit data used to achieve the objectives of this study. The targeted population on which this study has been conducted included the middle-class restaurants and hotels within the Ojota, Lagos Nigeria Metropolis. Hotel. ng website accessed on 20th June, 2024 listed over two hundred (200) hotels and restaurants service food providers within the metropolis. Respondents for this study comprise of managers, food handlers and customers in these restaurants and hotels.

Food service providers are dotted around the suburbs of Ojota, Lagos Nigeria. Thirty (30) premises were selected as sample size for the study while five (5) customers were selected from each premise for the study, the number of the customers was expected to sum up to one hundred and Fifty (150) customers. In order to get a fair sample for the study, the multi-stage sampling method was employed. The sample size is 107.

The study adopted Taro Yamane Formula i.e.

$$n = N/(1+N(e)^2)$$

Where

n = Sample size

N = Finite population

e = Level of Significance = 5% or (0.05)

1 = Constant

Therefore

$$n=150/(1+150(0.05)^2)$$

$$n=150/(1+150(0.0025))$$

$$n=150/1.4$$

$$n= 107$$

The data collected were analyzed using both descriptive and inferential statistics. The descriptive statistics of simple percentages, mean and standard deviation were used for the analyses of the demographic data of the respondents. However, the research questions were answered with the analysis of regression. On the other hand, the hypotheses were analyzed with the used of Statistical Package for Social Sciences. All hypotheses were tested at 0.05 alpha levels. Spearman’s rho model was employed to test hypothesis one. This model is considered appropriate because it has the ability to establish relationship between variables.

Formula for Spearman’s rho model:

$$\rho = \frac{S_{xy}}{S_x S_y} = \frac{\frac{1}{n} \sum_{i=1}^n (R(x_i) - \bar{R}(x)) \cdot (R(y_i) - \bar{R}(y))}{\sqrt{\left(\frac{1}{n} \sum_{i=1}^n (R(x_i) - \bar{R}(x))^2\right) \cdot \left(\frac{1}{n} \sum_{i=1}^n (R(y_i) - \bar{R}(y))^2\right)}}$$

Where:

R(x) and R(y) are the ranks,

R(x)bar and R(y)bar are the mean ranks. Statistical Package for Social Sciences Software (SPSS) version 25 was used for the data analysis. The decision rule is to accept H₀: if and only if the P value is lower than 0.05, otherwise, accept H₁. Logit Binary regression model was employed to test hypothesis two. This model is considered appropriate because it has the ability to predict the effect of independent variables on the dependent variables.

Formula for Logit Binary regression model:

$$L = \ln \left[\frac{Pi}{1 - Pi} \right] = \beta_0 X_i$$

Where:

L = Logit Regression

ln = Log

Pi = Good environmental hygiene, Proper hygiene practices, High levels of hygiene, Restaurants reputation, and Growth and expansion of restaurant.

1 – Pi = No Good environmental hygiene, Proper hygiene practices, High levels of hygiene, Restaurants’ reputation, and Growth and expansion of restaurant.

β = Beta

X = Enhancement of catering ethics in the Restaurant establishment

4. Results and Discussion

A total number of 107 questionnaires was administered and 73 was correctly filled and returned. Hypothesis was tested using spearman correlation model and logit regression model.

Table 1: Administered, returned and non-returned questionnaires

	Freq.	%
Administered	107	100%
Return	73	83.88
Non-Returned	14	16.12

Source: Researcher’s Computation

Hypotheses Testing

Hypothesis One

H0: Good hygiene standard has no significant relationship on customers’ patronage of food service outlets. Spearman’s rho model was employed to test hypothesis one. This model is considered appropriate because it has the ability to establish relationship between variables.

Table 2: Correlations between Good hygiene standard and customers’ patronage in food service operations

		Hygiene standard	customers’ patronage in food service operations
Spearman's rho	Good hygiene standard	Correlation Coefficient	.828**
		Sig. (2-tailed)	.000
		N	73
Customers’ patronage in food service operations	Correlation Coefficient	.828**	1.000
		Sig. (2-tailed)	.000
		N	73

** . Correlation is significant at the 0.01 level (2-tailed).

Interpretation for Hypothesis One

Table 2 shows the relationship between hygiene standard and customers’ patronage in food service operations. The study revealed that the relationship between hygiene standard and customers’ patronage in food service operations is about 83% (.828), this was also found to be highly significant at 0.05 level of significance. This implies that there is a significant relationship between hygiene standard and customers’ patronage in food service establishment. This could simply mean that a good hygiene standard will always cause the customer to return for another patronage, and this will in turn affect the profitability of the food service business positively.

Since the $p < 0.05$, we hereby reject the null hypothesis which states that there is no significant relationship between hygiene standard and customers’ patronage and concluded there is significant relationship between good hygiene standard and customers’ patronage in food service establishments.

Hypothesis Two and Three

H02: Environmental sanitation has no significant effect on the reputation of food service operations.

H03: Hygiene standard and environmental sanitation have no significant impacts on growth and expansion of food service operations.

Table 3: Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	-44.124 ^a	.797	.774

a. Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.

Source: SPSS 25 Output

Table 4 Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)
Environmental Sanitation	3.141	3.212	2.211	4	.001	34.111
Ensuring compliance with standard	4.141	3.221	3.321	4	.001	15.214
High levels of hygiene standard	2.251	2.011	6.341	4	.009	5.214
Restaurant’s reputation	1.142	5.141	2.554	4	.001	6.641
Growth and expansion of restaurant	7.910	2.221	1.241	4	.007	3.240
Constant	6.141	22.117	5.141	4	.001	7.321

a. Variable(s) entered on step 1

Source: SPSS 25 Output

Interpretation for Hypothesis Two

The study revealed that environmental sanitation can enhance food service operation's reputation and in turn affect the growth and expansion of the establishment up to 79%. It further indicated that good and proper hygiene practices account for about 77% of reputation of food service operations and in turn affect the growth expansion.

Table 4 revealed that there is positive relationship between hygiene standard in food service establishments, the establishment's reputation, Growth and expansion. The table revealed that good hygiene standard in food service operations has significant effect on the establishment's reputation, growth and expansion, the p-value (0.001, 0.001, 0.009, 0.001, 0.007, and 0.001) is less than the significant level of 0.05. The decision rule is that if the p-value is less than the level of significance of 0.05, the null hypothesis was rejected while the alternate hypothesis is accepted. But if the p-value is lower than the level of 0.05, the null hypothesis was rejected. The result shows that the p-value is less than the level of significance of 0.05. Therefore, hygiene standard has significant effect on food service establishment's reputation; and sanitation contribute significantly towards growth and expansion.

This study revealed that:

There is significant correlation between hygiene standard and customers' patronage.

Environmental sanitation has significant effect on food service establishments' reputation.

Hygiene standard and environmental sanitation contribute significantly towards growth and expansion.

5. Conclusion

Majority of food vendors sell along the streets, carrying their food in carts, wheel-barrows or such other carriers like these from one customer to the other. Some of the food handlers display their wares on bare ground (Iro, 2019). Poor food hygiene and safety management by producers and manufacturers is further compounded by the inadequate knowledge of food hygiene and safety management by food consumers themselves. Report of World Health Organisation (WHO) in 2019 identifies the increasing burden of foodborne illness and new and emerging foodborne hazards that occurs in the food handling processes. Indicates that, exposure to the improper use of food additives, adulteration and environmental contamination by the street food vendors has an adverse effect causing a high risk of food poisoning due to microbial contamination.

Previous studies have also shown that, the unhygienic conditions under which food is generally prepared and

sold by these food vendors are related to limited access to safer water and proper sanitation facilities. Most studies in the sector of street food vending operations indicate that, the main reasons for poor food safety and poor hygiene practices includes insufficient training, lack of enforcement, lack of knowledge on personal hygiene and safe handling of food. Despite the various studies on street food vending and its effect on food safety, much uncertainty still exists about the roles, barriers and opportunities in the provision of safer and hygienic foods by the food vendors in their daily vending operations. This study examines the use of disposables (throwaway) as a panacea to the poor food hygiene practices.

This study concluded that there is a significant correlation between good environmental hygiene and customers' patronage; Proper hygiene does not have significant effect on Restaurant's reputation; and high levels of hygiene do not contribute significantly towards growth and expansion.

6. Recommendations

Based on the findings of this study, the following are recommended:

Regulatory task force should ensure that management of hotels and related food service establishments adhere to the ethical guidelines that ensure catering ethics in their establishment.

Regulatory task force should enforce good and proper hygiene practices are in place in the food service establishments.

Also, management of hotels and related food service establishments should enforce high levels of hygiene among their workforce in order to enhance the reputation, growth and expansion of their businesses.

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