

EVALUATION OF FOOD SAFETY IN FOOD AND BEVERAGE ESTABLISHMENTS OF THE COLTA CANTON, CHIMBORAZO PROVINCE

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Abstract

Research on food safety in food and beverage service providers in the canton of Colta, province of Chimborazo, is imperative, as these service providers possess limited knowledge regarding food processing, which can compromise the health of national and international tourists visiting the canton's tourist attractions. The objective of this research is to evaluate the relationship between food safety and the culinary practices of food and beverage service providers in the Colta canton, province of Chimborazo, in order to identify its impact on consumer safety and the development of gastronomic tourism. The objective of this study is to examine the present state of food safety in collective food establishments. Key aspects such as good manufacturing practices (GMP), hygiene conditions, compliance with standards according to the Ministry of Tourism, and consumer perception were evaluated. Following a series of descriptive and correlational analyses, it was determined that a significant proportion of establishments did not adhere to the requirements of the Collective Food Industry. The analysis revealed deficiencies in food safety standards, with particular regard to food handling and the sanitary conditions of food preparation and service facilities.

Keywords: Food safety, food processing, gastronomic tourism, manufacturing practices, collective food industry

Resumen

Es imprescindible investigar sobre la seguridad alimentaria en los proveedores de servicios de alimentos y bebidas del cantón de Colta, provincia de Chimborazo, ya que estos proveedores tienen conocimientos limitados sobre el procesamiento de alimentos, lo que puede comprometer la salud de los turistas nacionales e internacionales que visitan los atractivos turísticos del cantón. El objetivo de esta investigación es evaluar la relación entre la seguridad alimentaria y las prácticas culinarias de los proveedores de servicios de alimentos y bebidas en el cantón de Colta, provincia de Chimborazo, con el fin de identificar su impacto en la seguridad de los consumidores y el desarrollo del turismo gastronómico. El objetivo de este estudio es examinar el estado actual de la seguridad alimentaria en los establecimientos de alimentación colectiva. Se evaluaron aspectos clave como las buenas prácticas de fabricación (BPF), las condiciones de higiene, el cumplimiento de las normas del Ministerio de Turismo y la percepción de los consumidores. Tras una serie de análisis descriptivos y correlacionales, se determinó que una proporción significativa de los establecimientos no cumplía los requisitos de la Industria Alimentaria Colectiva. El análisis reveló deficiencias en las normas de seguridad alimentaria, en particular en lo que respecta a la manipulación de

los alimentos y las condiciones sanitarias de las instalaciones de preparación y servicio de alimentos.

Palabras clave: Seguridad alimentaria, procesamiento de alimentos, turismo gastronómico, prácticas de fabricación, industria alimentaria colectiva

1. Introduction

The assurance of quality and safety in food has emerged as a pivotal facet in the evolution of any given society. Consequently, it is regarded as an inalienable right for all consumers, irrespective of their patronage of collective food establishments. This heightened expectation has manifested in a discerning approach among tourists and locals when seeking food services outside their immediate environs, according to the findings of the Organización Mundial de la Salud (2020).

Tourism is an economically vital sector for nations with developing economies. A component of this economic activity is the commercialization of food and beverages. Establishments in this sector include restaurants, cafeterias, bars, and holes, which have undergone significant growth in the last decade. This rapid expansion has resulted in the employment of individuals with limited expertise in food safety, often referred to as "empirical people," in food service roles. This phenomenon has heightened the risk of food contamination, which can lead to public health concerns and a decline in food consumption across various tourist regions within the Colta canton (López & Martínez, 2022).

The escalating rate of food consumption and prevailing lifestyles are inextricably linked to the cultural and traditional practices of a given territory. In this particular case study, Colta represents a region where collective feeding customs fail to ensure proper food handling practices, thereby potentially resulting in the transmission of foodborne diseases. The present study was initiated with the objective of investigating the gastronomic practices of the servers of the canton (Silva & Gómez, 2023).

Colta, a canton located in the province of Chimborazo, is situated 18 km from the city of Riobamba, the capital of the province. The canton's gastronomy reflects its cultural diversity due to the native ingredients, gastronomic practices, and ancestral knowledge of the region. However, this cultural heritage can be undermined if the food served does not meet the minimum conditions for safe food handling. The development of gastronomic tourism has the potential to influence the economic growth of the canton. The availability of traditional culinary preparations in the region may be impacted by this dynamic, as tourists who seek these culinary experiences may be less inclined to consume them. This could result in a decline in the consumption of traditional food items by tourists, which could in turn lead to a loss of cultural heritage (Agrocalidad, 2020).

The current state of food and beverage service providers in the Colta canton is not well understood. To address this knowledge gap, a research study was developed using a non-experimental methodology. This approach included a field study, where surveys were utilized as a data collection instrument. This methodological framework enabled the identification of existing hazards and risks. Moreover, it is responsible for formulating recommendations to improve food safety conditions, guaranteeing the health of consumers and ensuring compliance with health regulations (Agencia Nacional de Regulación, Control & Vigilancia Sanitaria, 2023).

1.1 Objective of the research

To evaluate the relationship between food safety and the culinary practices of food and beverage service providers in the canton of Colta, province of Chimborazo, in order to identify its impact on consumer safety and the development of gastronomic tourism.

1.2 Hypothesis

Compliance with food safety practices by food and beverage providers directly influences consumer safety and food quality, impacting the development of gastronomic tourism in the Colta canton.

1.3 Previous investigations

In his research, "Food Security and Gastronomic Tourism in the City of Guano, Province of Chimborazo," Saquina(2024) analyzes how food safety practices in collective food establishments influence tourists' perceptions of these businesses. Additionally, he highlights the lack of knowledge and training in food processing issues as the primary factors threatening the development of the tourist potential of the area, emphasizing that compliance with health regulations is essential.

In his research, Vire (2024) examines the relationship between tourism, gastronomy, and healthy eating in Ecuador. He discusses the significant connection between healthy eating, gastronomy, and tourism, emphasizing the necessity of ensuring the quality and safety of food in food and beverage establishments that aim to provide a traditional culinary experience. Vire's analysis demonstrates how food safety policies significantly enhance the supply and competitiveness of destinations focused on tourism that prioritize these components.

In his research, "Gastronomic Tourism: An Alternative for the Development of Bahía de Kino, Sonora," Ochoa (2020) conducts a thorough analysis of the potential of culinary offerings centered on seafood to stimulate gastronomic tourism in the region. A central theme in his study is the imperative of ensuring the safe handling of food to safeguard the well-being of visitors. Additionally, Ochoa examines the obstacles encountered by food and beverage providers in adhering to the prevailing regulations in the area.

In his research, "Sustainable Gastronomic Tourism Development Model in Kiel," Kraus (2019) analyzes the direct relationship between food safety and sustainability on the one hand, and the development of gastronomic tourism on the other. The author evaluates how a food safety system known as HACCP can influence the improvement of tourists' perceptions of the destination's culinary offerings. Furthermore, he conducts an in-depth analysis of the use of technologies as a resource for improving quality in the supply chain to restaurants in the area. This analysis was carried out in Germany.

2. Research methodology

The methodology employed in this study aligns with the conventional approach by integrating qualitative and quantitative methods. This non-experimental study involves the examination of existing variables without any manipulation. The research design encompasses a documentary approach, supplemented by exploratory analysis, which employs descriptive and correlational methods to investigate the relationship between the study variables. The cross-sectional design of the study facilitates the analysis of the interplay between these variables.

The population of the independent variable "Food Safety" was studied. The population was comprised of six establishments offering food and beverage services, including hostels, hotels, and restaurants. Five additional establishments were also considered, as they are registered by the Municipal GAD of Colta canton. This decision was made due to the absence of a specific cadastre that mentions the existing servers and their categories.

Table 1- Food and Beverage Establishments registered by the Municipal GAD

No.	Trade name	Activity	Category
1	Sumak Pakari	Accommodation and Food	1 star
2	Hostal Tren al Sur	Accommodation and Food	1 star
3	Hostal Colonial Colta	Accommodation and Food	2 stars
4	Hostal Dulce Aurora	Accommodation and Food	1 star
5	Tashnu	Restaurant	1 fork
6	Hostal Kucha Wasi	Accommodation and Food	1 star

Table 2- Food and Beverage Establishments not registered

No.	Name of the Owner of the Food and Beverage Establishments	Activity	Location
1	Fátima Gisela ChilvizaCuvi	Sale of baking	Pan-American Highway and Juan Bernardo de León
2	María Manuela Quinche Mullo	Café	Pan-American Highway and Juan Bernardo de León
3	Carmen natividad Lucio Sánchez	Sale of baking	Pan-American Highway and Juan Bernardo de León
4	Silvia Yolanda Jara Guevara	Restaurant	Pan-American Highway and Juan Bernardo de León
5	Jenny Alexandra Andrade Pilamunga	Sale of baking	Pan-American Highway and Juan Bernardo de León

Regarding the dependent variable "Food and Beverage Establishment", local consumers and tourists who visit the restaurants considered within the study population in the independent variable were studied, to whom a survey was carried out, which was previously subjected to a study of the reliability of the instrument, obtaining a Cronbach's Alpha of 0.853, this being an instrument classified as good. (SPSS, 2024)

3. Results and Discussion

Through the inquiry that was carried out on the owners of the food and beverage establishments of the Colta canton, the following results were reached.

No.	Item	Analysis
a)	Gender	Overview In the owners of food and beverage establishments in the Colta canton, the participation of women stands out, representing 83.3% compared to 16.7% of men of all respondents, it is evident that most establishments are led by women in the area.
b)	Age	According to the respondents, it was evident that people who have an age range of 36 to 45 years are the ones who are mostly in charge of food and beverage establishments, representing 50.0%. In second place, it comprises the ages of 26 to 35 years representing 33.3%. In third place, they comprise the ages between 46 and 55 years, representing 16.7%, with those over 55 years of age occupying the last place.
c)	Level of	According to the surveys carried out, 50.0% have primary

	Education	education and the other 50.0% reach a secondary educational level. In conclusion, we can say that the education of the respondents does not have the instruction of completed studies, but they are not experts in the gastronomic area.
d)	Supplier Control	According to the results based on the survey carried out, it has been determined that 66.7% of the respondents consider that the quality control of the products supplied by the suppliers is of utmost importance, while 33.3% mention that it is not important to carry out a quality control of the products.
e)	Storage	It has been determined based on the surveys carried out that 41.70% do not carry out adequate storage of the raw material used to avoid food contamination, while 58.3% always do so having a correct implementation of storage of their products.
f)	Preparation	Based on the survey carried out, it was found that 8.3% never apply gastronomic methods and techniques specialized in food preparation, 16.7% sometimes apply method and techniques since they do not have the necessary knowledge, while 8.3% almost always apply gastronomic knowledge and finally we have 66.7% who indicate that they use the proper gastronomic techniques and methods, the same that help guarantee the quality of their products.
g)	Cross-contamination	According to the surveys carried out, 33.3% almost always avoid cross-contamination by maintaining an adequate method of verification of how the products are while 66.7% always try to keep an eye on their products so that they are in an optimal state for consumption.
h)	Food Handling	16.7% of those surveyed state that sometimes they handle food properly, while 83.3% always do it since it is a better way to prepare it.
i)	Hygiene	Thanks to the information provided in the survey, it was determined that 33.3% almost always apply disinfection and hygiene measures adequately, and 66.7% always perform adequate disinfection and hygiene.
j)	Cultural Practices	Food establishments in the city of Colta indicate that 41.7% do not promote cultural traditions and 33.3% almost always promote their culture, and only 25% always carry out activities that help promote culture.
k)	Traditions	In the establishments surveyed, 8.3% do not have any typical dish on their menu, 25% sometimes include a typical dish, 16.7% almost always have traditional dishes on their menu, while 50% always have as on their main menu.
l)	Ancestral dishes	Based on the establishments surveyed, 41.7% have never been trained about ancestral food, 33.3% have sometimes been trained or have followed an ancestral cooking course, 16.7% almost always have knowledge of ancestral cuisine, while only 8.3% have always had preparation for this type of gastronomy.

Through an observation sheet that was developed guided by the model of the accessibility file of the Ministry of Tourism, it was possible to qualify Food Safety in food and beverage establishments in the Colta canton. In addition, this document has the following parameters:

Table 3 Grading Parameters

Score (%)	Qualification
90 to 100	Excellent
80 to 89	Very good
70 to 79	Regular
60 to 69	Deficient

Table 4 Overall Check List Results

Item	%Obtained	Analysis
Location and accessibility	20%	According to the results of the observation sheet, food safety in food and beverage establishments was inquired about. Where it indicates that the location and accessibility of establishments reaches 20%, while food storage reaches 19% as well as equipment in establishments and as for current regulations it reaches 22% that comply with said regulations. In conclusion, the general results of the observation sheet show a low compliance, obtaining a weighting of 21% in the entire Colta canton.
Food Storage	19%	
Equipment	19%	
Current Regulations	22%	
Average	21%	

Analysis of the survey carried out on residents and tourists who consume in the food and beverage establishments under study.

No.	Item	Analysis
a)	Gender	Overview In the users/tourists who consumed in the food and beverage establishments of the Colta canton, the participation of women stands out, representing 36.7% compared to 63.3% of men of all respondents, it is evident that most of them go to these establishments are male.
b)	Age	According to the respondents, it was observed that people between 18 and 25 years old only represent 6.7% of consumers in these establishments. In the first place, it comprises the ages of 26 to 35 years representing 36.7%. In

	second place, they comprise the ages between 36 and 45 years, representing 33.3% and finally there are people between 46 and 55 years representing 23.3%, being the people who use these places on average.
c) Level of Education	According to the surveys carried out, 20.0% have primary education, 50% have completed secondary school, while 20% have a third-level degree and only 10% have acquired a postgraduate degree.
d) Restaurant Categorization	According to the results based on the survey carried out, it has been determined that 30% of the respondents consider that the categorization of restaurants is terrible, 46.75% the categorization is bad, in 20% the categorization is regular and finally we have that in 3.3% they think that there is a good perception of how restaurants are categorized.
e) Quality standards	As a result, it has been obtained that 46.7% of the respondents consider that the quality standards that are managed are terrible, 43.3% perceive it as bad, 3.3% think that it is regular and finally 6.7% think that quality standards are managed in the premises.
f) Product Quality	Based on the survey carried out, it has been determined that 23.3% of the respondents consider that the quality of the product is terrible, 46.7% indicate that the quality of the product is bad, in 23.3% it is regular and finally we have that in 6.7% we have that in 6.7% they think that there is a good quality in the products.
g) Menu in the establishments	It has been determined according to the survey carried out that 20% of those surveyed consider that the menu offered in restaurants is terrible, 43.3% indicate that their perception of the menu is bad, in 33.3% it is regular and finally we have that in 3.3% they have a good perception of the menu that the establishments make.
h) Product Processes	23.3% of those surveyed consider that the processes of restaurant products are terrible, 36.7% are bad, 33.3% perceive it as regular and finally we have that 6.7% think that there is a good perception of how they carry out their processes with food products in establishments.
i) Tools	According to the results based on the survey carried out, it has been determined that 13.3% of those surveyed consider that the tools used in the establishments are terrible, 23.3% are bad, 43.3% tell us that it is regular and finally we

	have that 20% think that there is good use of tools that are used in the establishments.
j) Customer satisfaction	Based on the survey carried out, it has been determined that 13.3% of those surveyed consider that the service and attention is terrible, 46.7% indicate that it is bad, in 86.7% they think that the service provided by these establishments is regular.
k) Price	According to the survey carried out, it has been determined that 6.7% of those surveyed rate the price of the menu as terrible, while 43.3% indicate that the price of the products offered is bad, 43.7% tell us that the price of the products offered is regular, while 3.3% indicate that the price of the products is good.
L) Purchase	Based on the survey carried out, it is indicated that 20% of the respondents do not meet their expectations as such, while 33.3% tell us that the expectation of the establishment is bad, 40% indicate that it is regular, while 6.7% of the respondents indicate that they do have a good expectation about the establishments of the place.
m) Customer loyalty	Based on the survey carried out, a negative perception of users is indicated regarding customer loyalty in the food and beverage establishments of the Colta canton, With 23.3% of the respondents evaluating loyalty as terrible, 63.3% rating it as bad and 13.3% perceiving it as fair, considering that the current strategies to obtain customer loyalty in users are not the correct ones since they do not meet their requirements.
n) Increased sales	According to the surveys carried out, 26.7% tell us that the quality of information about the products they offer is terrible, while 53.3% indicate that it is bad, while 13.3% indicate that it is regular and 6.7% indicate that it is good.

4. Conclusions

- Food safety and food and beverage establishments are related in the Colta canton, Chimborazo province, since the correlation coefficient is -0.114, which indicates a very weak negative correlation, having a significance level of 0.042 less than 0.05. This shows that both owners and consumers agree that food safety must be maintained in food preparation, even though in the surveys carried out we see that this is not fulfilled in reality.
- A very weak negative correlation suggests that as food and beverage establishments rise, the same is not true for food safety growth within the canton. In other words, the

expansion of food and beverage establishments does not promote or ensure compliance with food safety in the Colta canton, Chimborazo province.

- There is no relationship between local production and food and beverage service providers because the results obtained in the research reflect that products native to the area are not frequently used in culinary preparations, to address these local authorities should encourage the use of products from the area and thus achieve a circular economy in the canton
- It is indicated that there is a relationship between good manufacturing practices and food and beverage service providers, since a coefficient of -0.222 was demonstrated since it is a medium negative correlation and a significance level of 0.048 Where a medium negative correlation indicates that good manufacturing practices are negatively affecting food and beverage service providers, being that the products offered by them are harmful to visitors to the environment and their community, this can become a very serious problem regarding public health, it is crucial that training plans in GMP are carried out, in addition to having an urgent intervention of quality control entities such as the Ministry of Public Health, Ministry of Tourism and ARCSA.
- The interpretation of the results indicates that there is a high positive correlation, with a coefficient of 0.941 and a level of significance of 0.024, therefore it is determined that the gastronomic heritage positively helps food and beverage providers since visitors mostly consume the traditional food of the Colta canton. In the province of Chimborazo, however, not all the products offered are produced in the area.
- The results of the correlation between the observation sheet made to the food and beverage service providers demonstrate the lack of food safety within the establishments, in addition, it can be stated that the lack of food safety has a negative impact on the tourist experience of the canton since the quality of the products is deficient to the point of being harmful to the health of visitors and their own the community.
- It is extremely important that the canton urgently has an ordinance for the regulation and control of food and beverage establishments in the canton of Colta, with the aim of improving culinary practices focused on food safety for the benefit of the development of gastronomic tourism that will directly impact the economic development of the locality.

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