Analysis Of The Social And Economic Implications Of The Healthy Markets Program (PMS) In The Canton Of Ibarra – Ecuador

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Abstract

The purpose of this research is to analyze the social and economic implications of the Healthy Markets Program (HMP) in Ibarra city. To achieve this objective, a study of the Amazonas and Mayorista markets was carried out, focusing on a supply and demand perspective. Particularly, supply actors were evaluated using PMS compliance verification sheets, which are included in the NTE INEN 2687:2013 Standard. Using a set of variables with cross-sectional data obtained through the application of a survey with closed questions, consumers were examined. Subsequently, a correlational study was developed to determine the level of association of these variables with foodborne diseases. Finally, a proposal for improvement measures from an economic point of view for the problems detected in both markets is presented.

Keywords: Healthy markets, supply, demand, socio-economic implications.

Resumen

La presente investigación tiene como objetivo analizar las implicaciones sociales y económicas del Programa de Mercados Saludables (PMS) en el cantón Ibarra. Para tal fin se realizó un estudio de los mercados Amazonas y Mayorista desde el enfoque de la oferta y la demanda. Particularmente, mediante el uso de fichas de verificación de cumplimiento del PMS, que constan en la Norma NTE INEN 2687:2013, se evaluó a los actores de la oferta. Usando un conjunto de variables con datos transversales obtenidos a través la aplicación de una encuesta con preguntas cerradas se examinó a los consumidores. Posteriormente, se desarrolló un estudio correlacional para conocer el nivel de asociación de dichas variables con las enfermedades de transmisión alimenticia. Finalmente, se expone una propuesta de medidas de mejora desde el punto de vista económico para los problemas detectados en ambos mercados.

Palabras clave: Mercados saludables, oferta, demanda, implicaciones socio - económicas.

Introduction

A healthy market is a public space that is characterized by guaranteeing and promoting the health of consumers through the sale of safe food, while at the same time having an adequate infrastructure that prevents[1] the entry of animals or pests, to maintains appropriate sanitary conditions, among which are, hygienic service facilities, lighting, drinking water,

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solid waste, and drainage. In addition, it must be away from sources of contamination, industrial zones, or areas exposed to flooding (Ministerio de Salud Pública, 2016).

According to the Ministry of Public Health of Ecuador, in 2014, 542,569 cases of foodborne diseases were registered, which means that three out of every 100 inhabitants have presented such diseases. Of the total number of registered cases, 96% were due to diarrheal diseases, 2% were due to food poisoning and in smaller amounts, cases of hepatitis A, infections due to salmonella, fever, typhoid, and paratyphoid were found, being this an important health problem. (Juan, 2015). The implementation of healthy markets at the national level is intended to reduce the burden of patients and care caused by water- and food-acquired diseases.

On the other hand, through the Ecuadorian Institute of Standardization (INEN), the government establishes a quality system, defining regulations, metrology, and conformity assessments, which are general principles universally accepted to measure the degree of reliability of both products and services, although the use of this standard is not mandatory, its implementation improves the productivity and competitiveness of the sector in which it is applied. The NTE INEN 2687:2013 standard for healthy markets addresses and collects multiple requirements, guidelines, and practices for wholesale and retail markets in Ecuador, which they are obliged to comply with in the different activities they perform such as handling, reception, marketing, storage, transportation, preparation, among others. In addition, requirements are established regarding infrastructure, services, utensils, and pest control, which must be known by traders, administrators, inspectors, and other people working in the market facilities. The purpose of the standard is to guarantee the quality of the different types of food marketed and prepared in the different market stalls by the people who sell them (Llanos & Zambrano, 2020).

Similarly, a fundamental right of all people is to have access to healthy and safe food to ensure their normal growth and development, and to maintain their health throughout their lives. The quality and wholesomeness of food is, therefore, a priority element that involves public health, the welfare of the population, and the economy of all countries (Kopper et al., 2009).

In turn, food in contact with contaminated water or pests such as rodents and insects can cause foodborne diseases, commonly referred to as FBD. The World Health Organization (n.d.) has defined FBD as "A disease of an infectious or toxic nature that is caused, or believed to be caused, by the consumption of contaminated food or water". (para. 1).

Against this background, a properly functioning healthy market integrates the public and private sectors in a coordinated manner, obliging manufacturers to produce high-quality products, distributors to deliver the necessary quantities, suppliers to manage them correctly, and customers to be informed and active participants in their health. However, for Kopper et al. (2009), the lack of knowledge about good manufacturing practices, as well as the scarce availability of complementary technical information, has a negative impact on food handling and preparation, both at the family and commercial level (pp.2). In this sense, the main objective of this study is to know and analyze the social and economic implications of a healthy market, considering the correct application of the PMS in the canton of Ibarra.

Theoretical Basis

Welfare State Theory of John Hicks

The publication of Value and Capital meant the foundation of neoclassical theory, both in its microeconomic and macroeconomic aspects. Marshall's book on the principles of economics contained the foundations of neoclassical theory, but some aspects were insufficiently developed, and others merited a broader treatment (Quintanilla, 2013). In this

sense, the concept of social citizenship is central to the understanding of Marshall's Welfare State (1950), a concept that was later deepened and studied by Hicks (1950).

Thus, economic and social inclusion programs seek to improve education, and productivity, overcoming social deprivation, health, and employment. For example, Ecuador's main social assistance strategy is the Plan for the Creation of Opportunities 2021 - 2025, which prioritizes a set of social protection projects, actions, and services aimed at meeting the specific needs of a person and his or her family (Ministerio de Inclusión Económica y Social, 2020).

Health Economics at Kenneth Arrow

Kenneth Arrow (1963) recognizes that the market, formally interpreted through the general equilibrium model, is a mechanism for coordinating the supplies and demands of individuals acting in a decentralized manner and communicating through price signals. It also admits that the market fails. Market failures are synthesized by Arrow into three types, namely: externalities and public goods, income distribution, and uncertainty (Cante, 2000).

Kenneth Arrow discusses the externalities that influence the healthcare market, characterizing medical services and explaining how they can be distanced from the perfect competition market.

Healthy Markets

Healthy markets are community meeting places or spaces since they are the important commercial and social centers of a specific locality, where the culture and traditions of a territory are manifested. With this background, the exchange of knowledge, know-how, and food should take place in healthy and safe environments, with hygienic conditions and the proper sale of nutritious and safe food, thus ensuring environments of mutual construction in society (Vaca et al., 2016).

When local authorities and the market community are committed to applying the Healthy Markets concept, the long-term prosperity and growth of the market are strengthened. These are, of course, enormous benefits for the vendors. However, the benefits extend beyond the markets, i.e., it helps the population to improve aspects such as physical and nutritional well-being and contributes directly to establishing a responsible market image with the citizenry and the canton. In particular, consumers in the communities in the area of influence benefit from having access to healthy and safe food (Organización Mundial de la Salud, 2006).

Materials and Methods

The scope of this research is descriptive, exploratory, explanatory, and correlational. Descriptive, because the aim is to identify and define theoretically and economically, which are the technical factors involved in the implementation of the healthy markets program. Likewise, this study is exploratory in scope, because this research topic has been little studied and investigated in the national context. It is of an explanatory type because a situational diagnosis of the Amazonas and Wholesale markets is made regarding the macro environment and risk factors. It is also correlational because it measures statistically how two or more variables are related.

Population

The population taken for the calculation of the sample is made up of the people who go weekly to the Amazonas and Mayorista markets in Ibarra. This information was provided by the market administrators, who determined that the total population for the Amazonas market is 893 people and for the Mayorista market is 7,980 people.

Table 1 Total population of the Amazonas and Wholesale market

Market	Population
Amazonas	893
Mayorista	7980

Own elaboration

On the other hand, to select the individuals from the population that make up the sample size, it was considered that in the two markets the influx of people is different. On the one hand, in the Amazon market, consumers come to buy in small quantities or retail. On the other hand, in the wholesale market, where they buy products in greater volume or wholesale.

Sample

To select the individuals of the population that make up the sample size, a stratified probability sampling was applied, which consisted of distributing equivalently according to the cartographic maps, 270 people for the Amazonas market and 368 people for the Wholesale market, according to the calculation of the sample size, considering the number of commercial stalls in each market.

Research Techniques

The data necessary for the study were obtained through the application of a structured survey with closed questions, organized in such a way as to focus on the topic, due to the complex social and economic implications of healthy markets. This survey was carried out with a sample of 270 people in the Amazon market and 368 people in the Wholesale market, the same people who are the object of the study on the demand side. The instrument was validated by experts from the academic, public, and private sectors, and a pilot test of 20 surveys was applied, to observe the consistency, likewise, the questions used for the research were developed with a focus on consumer demand to disaggregate the different variables and thus make a detailed analysis, classification questions were also implemented by occupation, age, academic level, working with multiple choice questions, to know the preferences of the surveyed population, multiple choice questions with a single answer to determine factors such as frequency of purchase. Hence, all this information was filtered in a cross-sectional database.

Verification Sheets

The application of the compliance sheets is aimed at market administrators, which provide information for demand and supply.

Table 2 Compliance check sheets for healthy markets

Tabs	Description
Infrastructure	It deals with the location, design, and construction where it is verified the proximity to sources of contamination, availability of space, childcare, and proper drainage system. The internal areas and structures such as the condition of the corridors. Lighting and ventilation such as the electrical system and finally the sanitary lighting.
Services	It deals with water supply, such as drinking water conditions, liquid waste, and drainage. Solid waste management.
Equipment and utensils	The condition of handling equipment and utensils, handling materials such as cutting boards, care and cleanliness of equipment and utensils

Procurement, marketing, and storage of food	Procurement and marketing of products traded within the market such as meats, processed foods, and fresh produce, transportation, reception, and storage of food and products traded within the market.
Trading Post marketing	Requirements relating to the merchandising stand such as shelf materials, handling of merchandising stands, equipment, and hygiene of the merchandising stand
Food preparation food	Preliminary preparation such as washing surfaces and mixing ingredients and containers. Food preparation such as cooking food, preserving and thawing food. Food protection and service such as arranging, packaging, and handling of food.
Hygiene of the food handler food	It refers to trader hygiene, clothing, hand washing, and food handling hygiene.
Cleaning and disinfection	Cleaning and disinfection of facilities such as the use of cleaning and disinfection chemicals.
Pest and rodent control	Pest and rodent control, how the program employs the use of pesticides, and the pest control measures adopted by dealers.
Training	Staff training and specific programs for better market functioning
Safety Assurance	Food safety control and assurance consists of the provision of people responsible for the supervision of food safety programs.
Health promotion	Health promotion with human rights and prevention of gender-based violence, healthy practices, and healthy spaces

Own elaboration

Evaluation Criteria according to the Methodical Guide for the Evaluation of Development Plans and Projects of the National Secretariat of Planning and Development (SENPLADES)

SENPLADES (currently Planifica Ecuador) in its methodological guide has established the parameters for the evaluation and monitoring of public development plans and projects. For this purpose, it has taken the guidelines and criteria established by international standards, including the "Methodological Guide Emerging and Sustainable Cities Initiative" (ICES methodology), developed by the Inter-American Development Bank (IDB).

The current theoretical benchmark (traffic light parameters) is based on regional averages, international standards, inputs from regional sector specialists, comparisons of large and medium-sized cities in the LAC region, and analysis of data collected about the ICES pilot cities. In the case of indicators used at the international level, the criteria are based mainly on international standards and regional averages (Banco Interamericano de Desarrollo, 2013, pág. 9).

The traffic light parameters indicate when the performance of the indicator is:

Table 3 Performance level rating

Performance Level	Evidence to Present	Meaning of the ISO 18091:2004 standard	Percentage to measure the level of performance
	Green	Complied	85% and 100%

✓	Evidence requested to obtain green (acceptable)	If it complies with the minimum essential requirements that a good government cannot fail to meet regarding the subject matter in question.	
⚠	**Yellow** Evidence requested to obtain yellow (with risk).	**Partially Complied** Below are the minimum requirements necessary to comprehensively address the issue in question.	70% and 84,9%
🛑	**Red** Combinations other than those requested to obtain green and yellow (critical).	**Non-complied** Unacceptable practices. It does NOT have the elements to address the issue in question.	0% and 69,9%

Source: PDyOT Unit of GAD de Ibarra

The traffic light parameters are established according to the direction of the indicator concerning the target (upward or downward direction).

When the direction is upward, the target will always be higher than the baseline. If the result is higher than planned, it is a sign of good performance, and when it is lower, it represents negative performance. For example: the population served with a service, agricultural productivity, and the competitiveness index of public investment (CONEVAL, 2010, p. 26).

When the direction is downward, the target will always be lower than the baseline. If the result is lower than the planned goal, it is equal to a good performance, and when it is higher, it is equivalent to a negative performance. For example: mortality rate, birth rates, and crime rates (CONEVAL, 2010, p. 27).

Results

To analyze the social and economic implications of healthy markets in Ibarra canton, a correlation was made between the variable foodborne diseases and the study variables collected in the survey, as shown in Table 5. In this context, the variables considered for the assessment of such correlation were taken based on previous studies conducted by Rodriguez (2015), Food and Agriculture Organization of the United Nations (2005), Blackwell et al. (2002), Avila (2016) and Kopper et al. (2009), Vergara (2017), United States Agency for Development (2014), Arias et al. (2019), Llanos & Zambrano (2020), which establish that the handling of prepared or unprepared food, pest and rodent control, cleaning conditions, hygiene, good solid waste management and service quality, significantly influence the health of consumers.

The study variables were classified into two groups: economic and social, and then a descriptive and correlational analysis was performed based on the results obtained.

Table 4 Classification of variables

| Economic	Social
Expenses, Income	Foodborne diseases, Frequency of purchase, Consumption of prepared foods, Reason for purchase, Hygienic facilities, Food consumption health, Cleanliness.

Own elaboration

Table 5

Correlation variables

Variable	Sources
Foodborne diseases, food-borne health, food consumption health	Rodriguez (2015), the Food and Agriculture Organization of the United Nations (2005).
Frequency of purchase, reason for purchase, consumption of prepared meals	Ávila (2016)
Expenses, income	Blackwell et al. (2002)
Hygiene services (infrastructure), cleaning	Kopper et al. (2009)

Own elaboration

Macroenvironment and risks

The Amazonas Market is the retail market with more trading posts in the canton of Ibarra. There are 2045 according to the Department of Appraisals and Cadastre of 2011, is an important point of commercial exchange in the city because of the number of people who come to buy daily either inside or around it. It also has two infrastructures that function as extensions of this, La Playa and La Bahía markets.

If these risks are not examined, prevented, or corrected now, in the medium and long term, they will make it difficult for this market to be a healthy place. There are a variety of risk factors, as follows.

Figure 1 Riesgos existentes en el mercado Amazonas
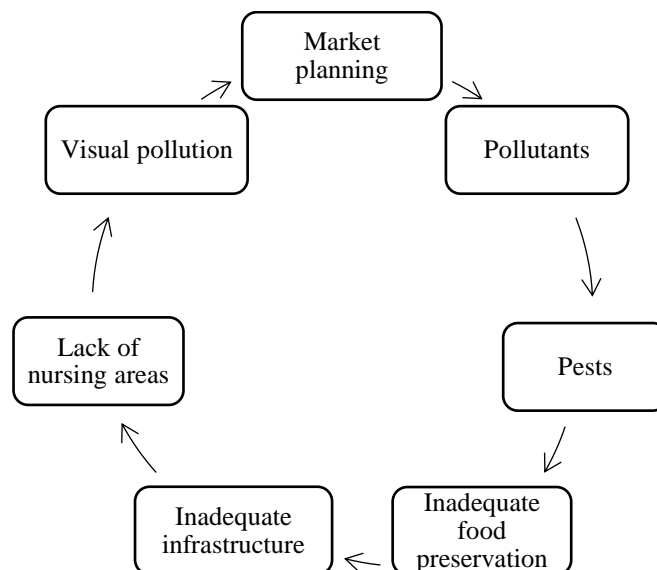
Own elaboration

The main risk factor to which the Amazonas market is exposed is the lack of planning according to the needs of traders and consumers. This leads to a complexity of problems, most of which have affected the area where food is sold. The sale of organic food generates a high concentration of pollutants, due to several factors such as toxic gases emanating from vehicles circulating in the sector, as well as the sale of fruits, vegetables, legumes, meat, and seafood, outlets that are located without any protection, which causes liquids and solid waste to be exposed to heat and the environment with an accelerated process of decomposition and consequently the emanation of bad odors that pollute the air.

Finally, visual pollution is an unknown risk, but a very important one, since the location of the products in the stores does not allow to observe or appreciate clearly what is to be acquired, distracting the consumers' sight and causing a tense atmosphere.

Concerning the Wholesale Market, Article 2 of the Ordinance that Regulates the Operation and Administration of this market mentions that "The Wholesale Market is a public services supply center, whose function is the commercialization of agricultural products in their natural state, semi-elaborated or elaborated, and other complementary products.

The main function of the wholesale market is to concentrate the total available supply of products of its line of business that enter the city, to offer a permanent and regulated supply service to retail markets, supermarkets, mini markets, retail stores, and other food distribution and consumption centers of the canton, the province and the country" (p.2).

Since its creation in 2000, it has evolved significantly, but it is still possible to observe that there are several shortcomings and, as a result, significant risks, which are described below.

Figure 2 Risks in the wholesale market
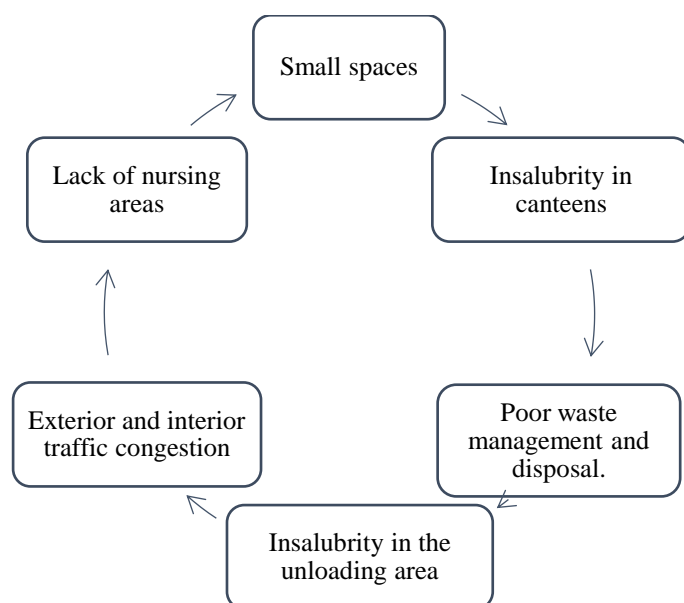
Own elaboration

One of the main risks evidenced in the wholesale market is the reduced space of the warehouses, aisles, and canteens that exist there. This generates several inconveniences for both the seller and the consumer. Because the space is so limited, people bump into each other or trip over each other, which has often been the cause of falls in some cases.

Cleanliness in the warehouses is also important, since the products that remain there are not ventilated, which has caused them to be damaged and the buyer is not provided with a quality product.

Another risk is that the restrooms are located at a different height from the floor, which makes it difficult for people with disabilities to enter and exit. In addition, as this is a wholesale market, there should be more toilets, so for some customers and traders, it is a bit far away.

Traffic congestion is also a polluting factor; it is known that the days that products enter the market are Mondays and Thursdays, but early in the morning is when the influx of vehicles is the most common. Producers must wait in long lines and during this period they are prone to contracting some type of respiratory illness due to the low temperatures characteristic of the canton. Likewise, the carbon monoxide produced by the fuels causes customers and merchants who pass through the sector to be affected.

Another risk factor that the Amazonas and Mayorista markets have in common is that they do not have an infirmary area to assist people in case of medical emergencies, nor do they have daycare centers.

As can be seen in Figure 1, 5 dimensions meet the requirements of the PMS. However, there are many aspects in which it should improve, mainly in terms of food safety to prevent diseases in consumers and customers who go there. Finally, it is important to mention that the dimensions that are at an intermediate level are very close to complying with the percentage indicated in the methodical guide to have an acceptable level of compliance.

The Amazonas market has many aspects to improve and work on, the level of compliance is below the standards established by the PMS, this result indicates that it is a place where you can easily contract a disease because it is not a safe space when acquiring different products for daily consumption, in other words, it is not in the category of healthy market.

Figure 3 shows the level of compliance of the markets concerning PMS and a comparison between the two organizations.

Figure 3
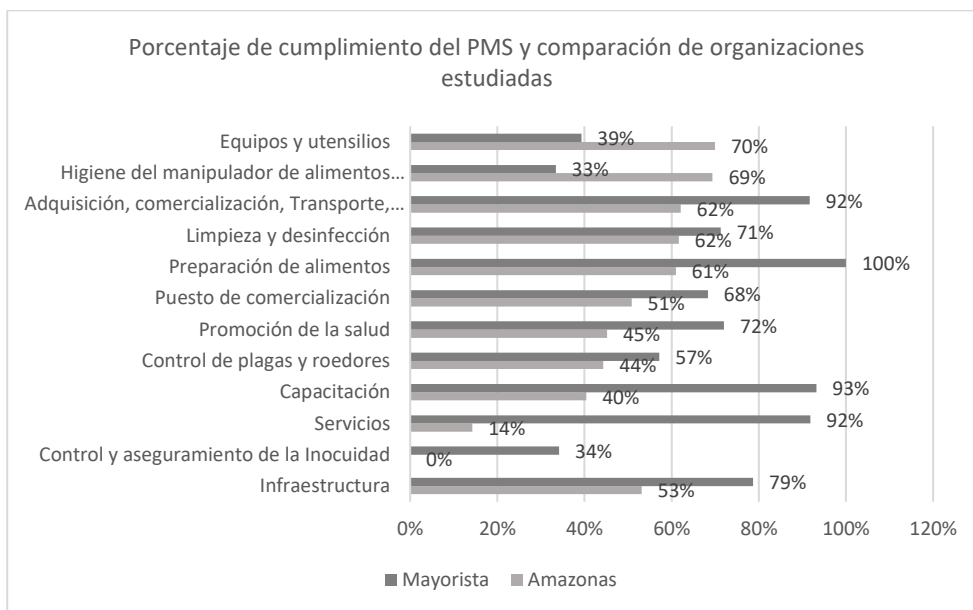
Own elaboration

Social and economic implications

To evaluate the social and economic implications of healthy markets concerning foodborne diseases (TEA), a series of correlations have been estimated with data obtained through surveys of consumers in the Amazonas and Mayorista markets in the Ibarra canton, obtaining the following results:

Table 6 Pearson correlation. Amazon Market

Variables	Foodborne diseases (ETA)	
	Bilateral asymptotic/exact significance: Chi-Square/Fisher Chi-Squared	Correlation coefficient value Cramer's V
Frequency of purchase	0.284	0.118
Expenditure	0.165	0.168
Reason for purchase	0.014	0.217**
Pests	0.262	0.083
Cleaning	0.275	0.145
Income	0.224	0.156
Toilets	0.282	0.080
Consumption of prepared foods	0.671	0.065

** The correlation is statistically significant at a significance level of 5%.
Own elaboration

The results of the correlation tests of the variables shown in Table 6, according to Pearson's Chi-square test or its equivalent, Fisher's exact test, indicate that the only variable that has a direct relationship with foodborne diseases (FBD) is the reason for purchase since the null hypothesis is rejected and the alternative is accepted ($\alpha=0.05$), establishing that there is a level of association between the two variables. This result is contrasted with the estimation of Cramer's V correlation coefficient, which indicates a low and statistically significant positive correlation.

The explanation arises from the fact that consumers in their purchasing choices decide on quantity and price rather than quality. This preference has a negative impact on their health since prepared or unprepared food that does not have the proper transport,

handling, and marketing process is exposed to bacteria contaminating the product, affecting its nutritional quality.

On the other hand, Pearson's Chi-square test and/or Fisher's exact test, indicate that the variables frequency of purchase, expenditure, cleanliness, income, pests, hygienic services, and consumption of prepared foods have no association with foodborne diseases (FBD), because the null hypothesis is accepted and the alternative is rejected (α=0.05). In contrast, according to the estimation of the correlation coefficients of Cramer's V test, all these variables show very low and/or almost null correlations and are not statistically significant at any significance level. This implies that none of these variables is associated with the probability that people suffer an illness due to the consumption of prepared or unprepared food in the Amazon market.

Table 7 Pearson correlation. Wholesale Market

Dependent variable	Foodborne diseases (ETA)	
	Significance asymptotic/exact bilateral: Chi-Square/Fisher	Correlation coefficient value Cramer's V
Frequency of purchase	0.597	0.067
Expenditure	0.667	0.083
Reason for purchase	0.016	0.190**
Pests	0.004	0.192***
Cleaning	0.400	0.115
Income	0.607	0.094
Toilets	0.294	0.069
Consumption of prepared foods	0.445	0.084

*** The correlation is statistically significant at the 5% significance level.
** The correlation is statistically significant at a significance level of 10%.
Own elaboration

The results of the correlation tests of the variables proposed in Table 7, considering Pearson's Chi-square test and/or Fisher's exact test, indicate that the purchase motive and pests are the variables that evidence a direct relationship with foodborne diseases (FBD), because the null hypothesis is rejected and the alternative is accepted (α=0.05), which implies that there is a level of association between the variables of interest. These results coincide with the estimated Cramer's V correlation coefficients, which show a low and statistically significant positive correlation between purchase motive, pests, and foodborne diseases.

In the case of the purchase motive variable, although the Cramer's V correlation coefficient is low (0.190), it shows a statistically significant association at 5%. As in the case of the Amazon market, consumers choose quantity over quality and price; it is necessary to emphasize that in the wholesale market, the products are sold in greater volume, so the chances of suffering from a disease are also higher.

Concerning the pests variable, according to Cramer's V correlation coefficient, it has a very low correlation (0.192) with foodborne diseases, which is very similar to the level of association of the purchase motive variable, however, it shows a statistically significant correlation even at 1%. In this context, other authors, such as Espitia (2021), state that "the presence of rodents, insects, cockroaches, and other pests are a food safety risk since they can contaminate when in contact with foodstuffs that are handled, processed, served, transported and stored" (para. 2).

In the context of this market, considering the results of Pearson's Chi-square test and/or Fisher's exact test, they indicate that the variables frequency of purchase, expenditure, cleanliness, income, hygienic services, and consumption of prepared foods do

not correlate with foodborne diseases, because the null hypothesis is accepted and the alternative is rejected ($\alpha=0.05$). Similarly, these findings can be corroborated through the correlation coefficients of Cramer's V test, which show that these variables have very low and/or almost null correlations and are not statistically significant at any level of significance with foodborne diseases.

Discussion of Results

As previously mentioned, the results of the traffic light evaluation for the Amazonas market showed that the 12 evaluation dimensions are in red traffic light, but for the Wholesale market, 4 dimensions are in green traffic light, 3 in yellow, and 5 in red. Now then, limiting to the study conducted by Changoluisa (2017) according to the INEN STANDARD FOR HEALTHY MARKETS 2687:2013 in the Pujilí market, the results found were not favorable, the author mentions that the research allowed to know that food handlers do not have a good culture of good manufacturing practices. Similarly, most of the dimensions with their respective attributes, did not meet the needs of customers, of which, visually attractive facilities, staff appearance, attractive tangible elements, fulfillment of promises, completion within the promised time, and absence of errors, have the lowest levels of not satisfying what the customer wants, which means that they are points in which to improve to obtain a good quality service.

On the other hand, in this study it has been evidenced that the determinants that can generate foodborne diseases are consumer preferences (quantity instead of quality), the family income level, the perception of cleanliness and pests that may exist in a market, which implies that customers are affected in their health, thus generating distrust for prepared or unprepared food products that are sold there, which derives to a decrease in sales. As mentioned by Vergara (2017) "Through the correct application of the processes of handling, cleaning, disinfection, pest control, waste collection, and conservation, strategies will emerge to obtain better profits in the sales made during the day" (p. 52).

In relation and contrast with what other authors have investigated on the social and economic implications of a healthy market Zúñiga & Caro (2017) can be mentioned, as they state that the problem of foodborne diseases is not limited to the physical damage they cause, although sometimes it can be fatal, but also to the negative socioeconomic effect that it implicitly entails, for example, a person can get sick and also represents a risk as a cause of contamination, presents a decrease in the performance of their work activities, causes non-attendance at work or school, and incurs medical expenses, whether by the public or private service to which they have access to.

In developing countries, the incidence of various diseases caused by the ingestion of food that does not meet the appropriate quality and safety standards is frequent. This situation prevails from the collection of the food to the consumption of the product, since it is subject to a series of exposures and operations that without adequate control can turn the food into a harmful element and a health risk.

Conclusions

The popular markets are an instrument of local development, to achieve an appropriation of this concept it is required to structure a participatory and open organization at the local level, which has a high degree of representativeness of the municipality, the community, government institutions, and the business sector. With this affirmation, the ideal is that the supply centers are places and spaces for frequent healthy encounters, to move to the next level of economic development. The activities to achieve this objective should consider two main lines of work. On the one hand, to strengthen what already exists, people, resources, companies, institutions, municipal governments, among others, and on the other, to develop the management capacity to obtain resources from outside the territory, such as financing, technical assistance, and support of all kinds.

Recommendations

To prevent the risks described in this study (for both markets) from materializing, the GADMI through a Management or Administration System should assume responsibility for the provision of services such as education or health and offer them in a non-discriminatory manner and at no cost to the citizens.

The Amazon and Wholesale markets should have an adequate program to ensure food safety in both handling and conservation.

Training in food safety, sanitation, and proper waste management should be provided to consumers in terms of presentation, safety and confidence in the different products and services offered by each merchant.

Controls and organizational measures for cleaning and disinfection of the place and work equipment should be reinforced. It is recommended to increase the frequency of cleaning (with appropriate products) of common areas such as aisles, counters, doors, furniture, floors, and display cases, among others.

To consumers, take care of the market facilities, and maintain good interpersonal relations with traders, to achieve a healthy market.

References

Ávila, R. (2016). LA ECONOMÍA PETROLERA EN UN MUNDO POLITIZADO Y GLOBAL. México y Colombia. Cuadernos de Economía , 791–890. www.ceconomia.unal.edu.co

Banco Interamericano de Desarrollo. (2013). Anexo 2. Indicadores ICES. https://issuu.com/alexandragarinfranz/docs/anexo_2_-_indicadores_ices

Banco Interamericano de Desarrollo. (2015). Guía Metodológica Programa de Ciudades Emergentes y Sostenibles: Tercera edición | Publications. https://publications.iadb.org/publications/spanish/document/Guía-Metodológica-Programa-de-Ciudades-Emergentes-y-Sostenibles-Tercera-edición.pdf

Blackwell, R., Miniard, P., & Engel, J. (2002). Comportamiento Del Consumidor. International Thompson Editores S.A. . https://es.scribd.com/document/437411346/Blackwell-R-Miniard-P-Engel-J-Comportamiento-Del-Consumidor-Cap-8-1

Cante, F. (2000). EL TEOREMA DE LA IMPOSIBILIDAD DE ARROW Y LA ELECCIÓN INTERDEPENDIENTE. Scielo-Cuadernos de Economía , 19, 1–50. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0121-47722000000200004

Changoluisa, P. (2017). ANÁLISIS DE LA MANIPULACIÓN DE ALIMENTOS POR PARTE DE LOS COMERCIANTES DE COMIDA PREPARADA DEL MERCADO CERRADO DE PUJILÍ [Universidad de las Fuerzas Armadas]. http://repositorio.espe.edu.ec/bitstream/21000/12051/1/T-ESPEL-ITH-0054.pdf

CONEVAL. (2010). Guía para el diseño de Indicadores Estratégicos. https://www.transparenciapresupuestaria.gob.mx/work/models/PTP/Presupuesto/Seguimiento/guia_indicadores_estrategicos.pdf

Kopper, G., Calderón, G., Schneider, S., Domínguez, W., & Gutiérrez, G. (2009). Enfermedades transmitidas por alimentos y su impacto socioeconómico Estudios de caso en Costa Rica, El Salvador, Guatemala, Honduras y Nicaragua. In Organización de las naciones unidas para la agricultura y la alimentación. http://www.fao.org/docrep/pdf/011/i0480s/i0480s.pdf

Llanos, A., & Zambrano, C. (2020). PLAN DE MEJORA EN LA COMERCIALIZACIÓN DEL ARROZ BASADO EN LA NTE 2687:2013 PARA EL MERCADO LAS MANUELAS [Universidad de Guayaquil]. http://repositorio.ug.edu.ec/bitstream/redug/50977/1/BINGQ-ISCE-20P65.pdf

Ministerio de Inclusión Económica y Social. (2020). PROYECTO DE INVERSIÓN PARA LA MITIGACIÓN DEL RIESGO Y LA RECUPERACIÓN ANTE EMERGENCIAS EN ECUADOR (PMRRE) (pp. 1–33). https://www.finanzas.gob.ec/wp-content/uploads/downloads/2020/04/Evaluación-Social-ERL_Mar31_.pdf

Ministerio de Salud Pública. (n.d.). Programa Nacional Municipios y Mercados Saludables –

Ministerio de Salud Pública. Retrieved August 18, 2021, from https://www.salud.gob.ec/programa-nacional-de-municipios-saludables/

Organización Mundial Salud. (2006). Una guía para mercados de alimentos saludables. Información de Catálogos y Publicaciones de La Biblioteca de La Oms, 1–47. file:///C:/Users/Master/Downloads/Preg 3 TF Socioant mercados-saludables.pdf

Organización Mundial de la Salud. (2006). UNA GUÍA PARA MERCADOS DE ALIMENTOS SALUDABLES OMS. 1–47.

Organización de las Naciones Unidas para la Alimentación y la Agricultura (FAO). (2005). Enfermedades Transmitidas por Alimentos en Nicaragua . Fao/Ops/Oms, 32. http://www.fao.org/3/i0480s/i0480s06.pdf

Organización Mundial de la Salud. (2020, April 30). Inocuidad de los alimentos. https://www.who.int/es/news-room/fact-sheets/detail/food-safety

Quintanilla, R. H. (2013). Una aproximación a la microeconomía no neoclásica de Hicks. Economía Informa, 383, 77–89. https://doi.org/10.1016/S0185-0849(13)71342-2

Rodríguez, H., Barreto, G., Sedrés, M., Bertot, J., Martínez, S., & Guevara, G. (2015). Las enfermedades transmitidas por alimentos, un problema sanitario que hereda e incrementa el nuevo milenio. REDVET, 16, 1–28. https://www.redalyc.org/pdf/636/63641401002.pdf

Secretaría de Economía. (2010). Comercialización. http://www.2006-2012.economia.gob.mx/mexico-emprende/productos-servicios/comercializacion

Vaca, C., Guevara, M., Avecilla, D., & Tambini, G. (2016). Manual para el reconocimiento y la certificación de mercados saludables 1. 1–84.

Vergara, R. (2017). "Efecto del programa mercados saludables y satisfacción en los comerciantes del Mercado N° 03, Tarapoto 2016." Universidad Cesar Vallejo. http://repositorio.ucv.edu.pe/bitstream/handle/20.500.12692/30940/vergara_rr.pdf?sequence =1&isAllowed=y

Gutiérrez, G. (2005). Estudio de caso: Enfermedades transmitidas por alimentos en Nicaragua. En FAO. Cadmo Rosell. Recuperado 9 de febrero de 2022, de https://www.fao.org/3/i0480s/i0480s06.pdf