



**SURVEY ON CONSUMER'S KNOWLEDGE, ATTITUDES, PRACTICES  
AND GAPS IN FOOD SAFETY IN HANOI AND HO CHI MINH CITY**

**December 2023**

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**About the project**

Funded by Global Affairs Canada, our project seeks to enhance access to safe and competitive agri-food products for the Vietnamese people (in Hanoi & Ho Chi Minh City), with an aim to improve the well-being of consumers as well as other agri-food actors. SAFEGRO project is implemented by Alinea International in partnership with the University of Guelph.

Food safety is a significant public health concern. Many people lack trust in the enforcement of food safety regulations, particularly at informal markets where they frequently purchase their food. Vietnam's commodity exports also face challenges due to non-compliance with international standards.

SAFEGRO project works with national and municipal governments to modernize food safety capabilities among regulators, thousands of smallholder farmers, cooperatives, processors, retailers, and consumers along specific meat and vegetable value chains in Hanoi and Ho Chi Minh City. SAFEGRO provides support to Vietnam's Ministry of Agriculture and Rural Development, Ministry of Health, and Ministry of Industry and Trade through a joint effort.



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## ACRONYMS AND ABBREVIATIONS

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CEA	Canadian Executing Agency (Alinea International and University of Guelph)
GAC	Global Affairs Canada
GlobalGAP	Global Good Agricultural Practice
FAO	The Food, and Agriculture Organization
FDG	Focus Discussion Group
KAP	Knowledge, Attitudes and Practices
SAFEGRO	Safe Food for Growth Project
VietGAP	Vietnamese Good Agricultural Practices
VietGAHP	Vietnamese Good Animal Husbandry Practices
WTP	Willingness to pay

## EXECUTIVE SUMMARY

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**Background.** Foodborne diseases are a prominent problem in Vietnam due to the persistent existence of dirty and unsafe food (Nguyen-Viet et al., 2017). The level of contamination in Vietnamese food products consumed in the domestic market has confirmed the validity of public concerns regarding unsafe food and related trade issues (“Vietnam food safety risks management” n.d.). The increasing demand for safe and high-quality food in Vietnam is driven not only by the rising standard of living but also by consumer concerns about food safety.

The Safe Food for Growth Project (hereinafter referred to as SAFEGRO or the Project) is funded by Global Affairs Canada (GAC) as a Technical Assistance Project aimed at improving Vietnam's food safety management system. The project's objectives include enhancing the operational efficiency of central and local governments in enforcing food safety regulations. With this task, Alinea International and the University of Guelph (CEA) wants to carefully learn about consumer characteristics to design project activities for component 3 and evaluate the impact of the project in Hanoi and Ho Chi Minh City.

**Objectives.** The main objectives of the survey are to (1) Assess consumers’ knowledge, attitudes, and practices regarding food safety (2) Evaluate consumers’ trust, affordability, and demand for hygienic and safe food at various price points; (3) Explore additional factors influencing consumer choices of hygienic and safe food; (4) Identify preferred communication channels of consumers in project areas to guide effective communication strategies.

**Methodology.** The study employed used two both qualitative and quantitative methods. Under qualitative component, the KAP survey conducted eight focus group discussions and nine in-depth interviews. At the quantitative component, the KAP survey conducted 368 questionnaires with men and women consumers in Hanoi and HCM city.

### Key findings

**The majority of research participants in Hanoi and Ho Chi Minh City demonstrate a correct awareness of food safety.** They believe that food safety means the assurance that food does not pose harm to human health and life (71.8%). The leading causes of food contamination include unsafe processing, storage, and transportation, natural toxins, organic compounds, heavy metals, chemicals, and microorganisms. Besides, the survey participants in Hanoi and Ho Chi Minh City have an average level of knowledge; with women demonstrating better knowledge about food safety compared to men. According to consumer perception, the four food groups at a high risk of food safety issues are: "Meat and processed meat products"; "Fresh or processed aquatic food", "Frozen foods", "Fresh fruits and vegetables".

**The biggest concern of consumers in Hanoi and Ho Chi Minh City when consuming safe food, especially pork, is the worry about food adulteration.** The mixing and swapping of meat from clear and safe origins (with veterinary "marks") with products of unknown origin, as well as the swapping of old meat from the previous day with newly slaughtered meat, are common concerns among both men and women when shopping at traditional market.

**Participants in Hanoi and Ho Chi Minh City both believe that the vegetables and pork they consume are safe<sup>1</sup>.** Findings from the questionnaire survey involving 368 consumers show that participants in Hanoi rate the safety level of vegetables higher, but rate the safety level of pork lower than participants in Ho Chi Minh City.

**According to the survey in Ho Chi Minh City, the majority of participants (64.3%) believe that the aquatic food they consume is safe.** The perception of safe food is associated with the freshness and liveliness of the food, especially regarding aquatic products. Participants perceive aquatic animals that are alive, and swimming are safe choices for aquatic food.

**Women are more concerned about food safety risks in the market than men.** In group discussions, female groups tend to raise more concerns about food safety risks in the market than their male counterparts. Even when discussing home-grown vegetables, doubts about safety were still mentioned in the discussions among women.

**Nearly 60% of women participating in the survey believe that preserving cooked food in the refrigerator is not good, a percentage higher than that of men (39.1%).** Participants believe that keeping cooked food in the refrigerator can cause food deterioration, which is detrimental to health. In addition, storing cooked food in the refrigerator is believed to compromise its delicious taste, and the participants do not have a habit of storing food in the refrigerator for a long time.

**The perception of safe food among people in the surveyed areas is relatively comprehensive, mentioned along the food value chain, including from farming (seeds, soil, and water environment) to processing, slaughtering, and food selection at retail points, and processing and preservation at consumers' homes.**

**More than two-thirds of research participants actively search for safe and affordable agricultural products (71.5% in Hanoi, and 67.9% in Ho Chi Minh City).** When considering gender, 67.9% of men and 70.8% of women in the survey actively search for safe agricultural products.

**Traditional markets are the main places for survey participants in Hanoi and Ho Chi Minh City to buy vegetables, pork, and aquatic food.** In Hanoi, consumers primarily obtain vegetables from home gardens (about 60%); acquaintances (nearly 50%); traditional markets (more than 50%); Meanwhile, traditional markets (more than 70%), and supermarkets (nearly 68%) are the main sources of food supply for consumers in Ho Chi Minh City.

**Supermarkets are considered safe places to buy vegetables, pork, and aquatic food in Hanoi and Ho Chi Minh City, with no notable variation in beliefs based on gender.**

**Survey participants base their food choices on three main factors: (1) perception of the product, (2) product information provided on the packaging label, and (3) product experience.** Product brands and recommendations from relatives or friends are also factors

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<sup>1</sup> Evaluate the safety level of food based on the consumer's perspective, on a scale of 1 to 5, from 1\_Very unsafe, 2\_Unsafe, 3\_Average, 4\_Safe, 5\_Very safe.'

that significantly influence the food choices of consumers in Hanoi, with a higher rate compared to Ho Chi Minh City. Advertising on mass media does not significantly influence consumers' food choices.

**In more than 70% of households participating in the survey, wives are the main persons responsible for choosing food.** Those who are primarily responsible for food selection have higher rate of correct practices (46.6%) than those who are not responsible for food selection (35.4%).

**More than half of the participants have an acceptable level of practice according to the survey.** Food safety practices among women consumers are higher than among men. Women consumers have a higher rate of correct practices than male consumers. The majority of research participants of both genders have the correct practice of using separate knives and cutting boards for raw and cooked foods.

**Consumers are willing to pay 10-20% higher than current prices for safe vegetables, pork, and aquatic food.** Ho Chi Minh City consumers pay more to buy safe vegetables than Hanoi consumers. Participants in Hanoi agree to pay for safe pork at a smaller additional amount than participants in Ho Chi Minh City. Willingness to pay for safe aquatic food is not affected by factors such as age, gender, education level, marital status, occupation, or children in the family.

**"Perception of social norms", "Perception of safe food", "Perception of price of safe food", and "Availability of safe food" are four main factors that have been identified to have a positive role in promoting consumers' intention to buy safe food.** When safe food is available locally, with the impact of the perception of social norms, consumers are more inclined to buy safe food.

**The most trusted sources of information for consumers about food safety in the study areas are health officials and the mass media.** In the survey, most consumers heard about food safety, mainly from TV, radio, the Internet, social networks, and health officials. The most trusted sources of information for consumers are the mass media (television, radio), and health officials. However, only about one-third of participants regularly search for information about food safety, with people aged 45 years and older searching more frequently than the other groups. Residential groups and women's unions serve as effective communication channels for consumers in Ho Chi Minh City. The Women's Union play an important role in communicating food safety to Hanoi and Ho Chi Minh City people.

### Recommendations

The survey on consumer knowledge, attitudes, and behaviors regarding food safety in Hanoi and Ho Chi Minh City resulted in the following three recommendations:

**Recommendation 1. Improve food quality management in traditional markets.**

- Strengthen inspection, control, and punishment activities throughout the production, distribution, storage, transportation, and retail stages to ensure that food reaches consumers in a truly safe manner.
- Strengthen inspections and checks on food sold in traditional markets.



- Implement transparent price labeling at food stalls, ensuring documentation of origin or labeling with visible stamps/labels.

**Recommendation 2. Enhance the availability of safe food.**

Interventions to enhance the availability of safe food encompass two aspects: *(1) developing a network of retail systems within people's living areas and (2) improving services to ensure convenient and easy access to safe food for consumers.* Encourage safe food companies to have booths to introduce and sell products locally, particularly in traditional wet markets. Placing clean food counters in or around traditional markets is an excellent solution to facilitate easier access to safe food for the public.

**Recommendation 3. Enhance consumer trust in safe food through communication campaigns**

Disseminate food safety information through reliable channels such as those of the Government, the Ministry of Health, and the Ministry of Industry and Trade, radio, national or local television. The program's communication messages should be clear to avoid misunderstandings and loss of trust. Additionally, coordination and integration with local authorities and organizations such as neighborhood health centers, women's unions, and residential groups are also reliable and effective channels for communication.

Communication from distributors is also a very important channel for consumers. It is also essential to involve distributors of safe food products along the value chain in the project's communication campaign. It is important to strengthen communication efforts regarding the production, inspection, and control process in farming practices to assure people of the product quality.

Consumer-based communication is an pivotal point for effective implementation. Communication campaigns should focus on individuals with low income, limited knowledge of food safety, and insufficient economic means to buy safe food.

# 1 INTRODUCTION

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## 1.1 Background

Foodborne diseases are a global public health concern, primarily caused by improper handling and processing of food, poor hygiene practices at home, food service establishments, or markets (World Health Organization, 2021) (Young, and Waddell, 2016). Particularly in low- and middle-income countries, most foodborne diseases originate from unsafe handling and preparation of fresh foods (animal source foods, fruits, and vegetables) (Grace, 2015).

Concerns regarding food safety have increased alongside factors such as globalization, urbanization, income levels, and changing consumer preferences (Liguori et al., 2022), as well as consumer behaviors towards food products in many developed and developing countries (Zhllima et al., 2015).

According to consumer perceptions, food of animal origin, fruits, and vegetables are often considered high-risk foods in terms of food safety, with animal-based foods such as milk and meat being the most commonly contaminated (GAIN, 2020; Isanovic et al., 2022a) (Jabbar and Admassu, 2010). Fish and other aquatic food are also highly perishable and pose risks to consumers (Mol and Cosansu, 2022). Most intervention studies to improve food safety focus on value chains related to livestock, poultry, pig, and aquatic food (Kwoba et al., 2023).

The end consumer is an important factor in the value chain, playing an important role in ensuring food safety. Consumers' food safety perception is an important driver in food choices, thus understanding the motivations, beliefs, and practices that shape their decisions is essential (Isanovic et al., 2022b) (Lee et al., 2022). Consumer demand for safe food is increasing. Barriers to safe food consumption are affordability, accessibility, food appeal, and availability (Yiga et al., 2021).

The food insecurity situation in Vietnam is alarming. The National Assembly's report on the results of monitoring the implementation of policies and laws on food safety in the period 2011-2016 shows that (WHO, n.d.) from 2011 to 2016, there were 7 foodborne diseases with 4,012,038 cases, including 123 deaths. From 2014-2015 (according to incomplete statistics), there were 370 food poisoning cases in Vietnam with more than 10,000 cases and 66 deaths, of which, up to 41% of food poisoning cases were caused by microorganisms, followed by biological toxins (28%), chemicals (4%), and the remaining 26% had no identifiable cause ("Vietnam food safety risks management," n.d.). In Vietnam, according to 11-month data from 2019 - 2020 from the General Statistics Office in 2020, there were 90 poisoning cases with 2,254 people poisoned and 22 deaths nationwide; The four main causes of food poisoning (according to monitoring from 2010 - 2020) were microorganisms (38.7%), natural toxins (28.4%), chemicals (4.2%), other causes (28.7%) (General Statistics Office, 2020).

According to statistics from various sources, 3,711 cases of food poisoning have been reported nationwide from March 2020 to August 2022, Hanoi and Ho Chi Minh City lead in the number of food poisoning cases (Thi et al., 2023).

## 1.2 Research areas



Bac Hong Commune – Dong Anh District  
Minh Khai Ward - Bac Tu Liem District



Ward 15 – Binh Thanh District  
Tan Quy Tay Commune - Binh Chanh District

### Hanoi

Hanoi is the capital city and a centrally governed municipality with an area of 3,359.82 km<sup>2</sup>, a population of 8.4 million people, and a population density of 2.5 thousand people/km<sup>2</sup>. Hanoi is a prime example of the impact of food security and nutrition due to rapid urban population growth and the transformation of the food system (Wertheim-Heck et al., 2014). Hanoi's average per capita income ranks second in the country with 6.423 million VND/person/month (General Statistics Office, 2023).

- Minh Khai Ward is a ward in Bac Tu Liem District, with an area of 4.86 km<sup>2</sup>, a population of 36,709 people in 2013, and a population density of 7,555 people/km<sup>2</sup>. Minh Khai is being developed as an "Urban Village" featuring urban agriculture with two specialty fruits, Canh oranges and Dien pomelos.
- Bac Hong Commune is a commune in Dong Anh District with an area of 7.20 km<sup>2</sup>, a population of 15,578 in 2022, and a population density of 2,163 people/km<sup>2</sup>. About 65% of the people in the commune make a living from agriculture, 35% from services, small industries, and other professions. Bac Hong commune has a cooperative for the production and consumption of safe vegetables.

### Ho Chi Minh City

Ho Chi Minh City is a centrally governed municipality and a special urban area in Vietnam, with 16 urban districts and 5 rural districts, covering an area of 2,095 km<sup>2</sup>. In 2023, the city's population is about 8.9 million people, with an average population density of 4,248 people/km<sup>2</sup> (the highest in the country). According to the results of the 2022 Population Living Standards Survey by the General Statistics Office, the average per capita income in Ho Chi Minh City is 6,392,000 VND/person/month, ranking third in the country after Binh Duong and Hanoi (General Statistics Office, 2023).

- Ward 15 is a ward in Binh Thanh District (urban area): there are 72 residential groups with an area of 0.52 km<sup>2</sup>, a population in 2021 of 22,597 people, and a population density of 43,455 people/km<sup>2</sup>.
- Tan Quy Tay Commune is a commune in Binh Chanh District, on the outskirts of Ho Chi Minh City, with 4 hamlets, each hamlet comprising 18 residential quarters, covering an area of 8.36 km<sup>2</sup>. The population in 2021 is 25,439 people, with a population density of 3,042 people/km<sup>2</sup>. There are approximately 3,000 households in the commune. Tan Quy Tay Commune is home to Phuoc An safe vegetable cooperative.

## 2 METHODOLOGY

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### 2.1 Objectives and Scope of survey

#### General objective

Assess the knowledge, attitudes, and behaviors on food safety of consumers to develop impactful food safety communication strategies for the SAFEGRO Project.

#### Specific Objectives

The survey has the following four specific objectives:

- (1). Assess consumers' knowledge, attitudes, and practices (KAP) regarding food safety;
- (2). Evaluate consumers' trust, affordability, and demand for hygienic and safe food at various price points;
- (3). Explore additional factors influencing consumer choices of hygienic and safe food;
- (4). Identify preferred communication channels of consumers in project areas to guide effective communication strategies.

#### Scope of survey

##### Research locations

The study was conducted in 04 communes/wards belonging to 04 districts in Hanoi and Ho Chi Minh City: Minh Khai Ward and Bac Hong Commune (Hanoi), Ward 15 and Tan Quy Tay Commune (Ho Chi Minh City).

The research locations were selected based on surveys of value chains in Hanoi and Ho Chi Minh City. Locations in Hanoi are communes/wards that have units providing designated safe value chains for vegetables and pork. Locations in Ho Chi Minh City are communes/wards that have units providing designated safe value chains for vegetables, pork, and aquatic food.

##### Research timeline: From July to November 2023

No.	Timeline	Location
1	August 22-23, 2023	Bac Hong Commune, Dong Anh District, Hanoi
2	August 25-26, 2023	Ward 15, Binh Thanh District, Ho Chi Minh City
3	August 27-28, 2023	Tan Quy Tay Commune, Binh Chanh District, Ho Chi Minh City
4	August 29, 2023	Minh Khai Ward, Bac Tu Liem District, Hanoi

### 2.2 Methodology

#### Design

Cross-sectional study

#### Sample size

The survey conducted structured interviews with 368 consumers aged 18 - 69 years old, organized 8 focus group discussions with the participation of 71 consumers (34 men and 37 women), and 9 in-depth interviews.

### Sample distribution according to collection method

Sample size	Minh Khai Ward		Bac Hong Commune		Ward 15		Tan Quy Tay Commune		Total	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Questionnaires	38	53	31	50	48	44	39	65	156	210
Focus Group Discussion	8	10	9	9	7	7	10	11	34	37

### Data collection methods

#### Collection of information on knowledge, attitudes , and practices of consumers about food safety

To gather information on consumers' knowledge, attitude, and practices regarding food safety, research participants answer pre-designed questionnaire, which is developed based on previous research in Vietnam and worldwide. The average duration of interview is 45 minutes.

#### Evaluation of willingness to pay

In this survey, we use two questions to evaluate consumers' willingness to pay for each food group (pork and vegetables in Hanoi; pork, vegetables, aquatic food in Ho Chi Minh City). The first Question asks about the consumer's willingness to pay on a 5-point scale: 1. Very Unwilling, 2. Unwilling, 3. Reluctant, 4. Willing, 5. Very Willing. Those who answer 4 and 5 (Willing and Very Willing) will be asked a follow-up question to assess how much more they are willing to pay in percentage compared to the regular price, using cards with 6 options: 1. <10% higher, 2. 10% - <20% higher, 3. 20% - <30% higher than the current price, 4. 30% - <40% higher, 5. 40% - <50% higher, 6. >=50% higher.

#### *Collect information about the factors affecting consumer choices for safe food.*

In the study, the questionnaires was used to assess the factors affecting consumer choices for safe food based on the theory of planned behavior and the results of several studies worldwide and in Vietnam on the factors affecting the choices of safe food (safe vegetables, safe pork, safe fruits, safe aquatic food) (Luc Manh Hien, 2023) (Nguyen Thi Thao, and Le Thi Thanh Thuong, 2021) (Tran Thi Thuy, 2013) (Pham Thi Thu Ha, 2018) (Nguyen Thi Minh Hoa, 2016) (Nguyen Ngoc Mai et al., 2022).

Participants in the study answer questions about the importance of factors in food choices on a 5-point Likert scale, from 1 (Strongly disagree), 2 (Disagree), 3 (Neutral), 4 (Agree), to 5 (Strongly agree).

#### Focus group discussion.

The group discussion guide is used to gather information on (1) the level of consumer trust in safe food at different prices, (2) Consumer affordability, (3) Consumer demand for safe food at different prices, (4) favorite communication channels to access information about food safety.

Number of group discussions: A total of 8 group discussions were conducted across 4

communes/wards. Each commune/ward organizes 2 separate group discussions to assess the gender perspectives.

### **In-depth interview**

A set of pre-established questions is used for in-depth interviews to gather more detailed information, special experiences, desires, and so on, related to the issue of food safety. Those selected for interviews are the consumers, representatives of medical stations, medical staff responsible for food safety, representatives of the authorities, and food safety managers.

The questions mainly focus on (1) Comments on food safety in general, (2) Sources of supply for vegetables, pork, and aquatic food, (3) Public concerns about food safety, (4) Level of trust in food safety, (5) Local propaganda channels, (6) Barriers to using safe food, (7) Actions needs to be done for people to trust, and be willing to pay for safe food, (8) Role of women in general in buying safe food, (9) Areas needing support.

### **Data processing**

Data is cleaned and processed using SPSS 22 software. Use statistics, Chi-square test is used to test the correlation between categorical variables, such as the correlation between gender, and assessment of knowledge, attitude, and practices. Independent-samples test is used to compare means between two independent samples such as comparing the average expenditure on vegetables, pork, and aquatic food between men, and women. One-way ANOVA test is used to compare means among multiple samples, such as comparing the average expenditure on vegetables, pork, and aquatic food among different occupational groups. Various analyses are used: testing the reliability of Cronbach's alpha, exploratory factor analysis, Correlation analysis, and multivariate regression analysis to analyze the model of influencing factors to the intention to use safe food. The test analyzes used in the model are statistically significant at the 5% significance level, equivalent to a 95% confidence level. Qualitative data from group discussions after collection will be transcribed, and processed using coding methods, and analyzed by theme. Valuable opinions are selected for quoting, and illustration, explaining quantitative results. Results from group discussions are coded by each issue, and entered into an Excel spreadsheet for each different group discussion. The data, after being cleaned, is compared, and aggregated among groups.

## **2.3 Limitations**

The results only represent the participants of the survey. The sample size collected for each commune/ward is indicative, and not calculated according to a formula, so it does not represent the research area, only the survey participants. On the other hand, the sample size of quantitative research is relatively modest, so some differences were found but not statistically significant. The research participants were mainly low and middle-income subjects, so it did not reflect the representative situation of the population in the research area.

The number of young subjects (18 - 30 years old), especially men, participating in group discussions is less than other subjects. Because the average group discussion time is about 90 - 120 minutes, inviting subjects, especially young male subjects (18 - 30 years old), is relatively complex because they do not arrange time.

According to the research design, communication activities are popular, and are mainly explored carefully in group discussions. However, selection criteria have been divided by age

group in reality. The participants in group discussions are mostly aged 30 years, and older; there is no balance according to the structure of the four age groups, so it is impossible to use much qualitative information to build a group communication strategy based on age groups. The research has four main objectives, so the quantitative questionnaires is relatively long, which can lead to errors due to impatient respondents. In addition, the time for group discussion to thoroughly explore the above four goals are relatively small (from 90 - 120 minutes), so a lot of the above information will be exploited if organized into two group discussions for four subjects. The above topic: group discussion 01 focused on exploring aspects of food safety, and safe food, and group discussion 02 concentrated on exploring willingness to pay, and communication activities.

## 3 LITERATURE REVIEW OF SOME STUDIES IN VIETNAM

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### 3.1 Consumer concerns about food safety in Hanoi and Ho Chi Minh City

**Food safety is the main factor affecting food choices of consumers in Hanoi and Ho Chi Minh City** according to the 2022 General Statistics Office Survey (General Statistics Office, 2023). **The increasing demand for safe, and high-quality food in Vietnam is not only due to the rising standard of living but also due to consumers' concerns about food safety.** Most consumers in Hanoi are concerned about the safety level of food (Mai et al., 2020) (Wertheim-Heck et al., 2014). The issue of adulterated food, which does not ensure quality, is a concerning issue for every household, especially for women who are the primary homemakers (Ha, 2018). Concerns about food safety are formed due to fears of food safety hazards, awareness of food risks such as protein-rich food, vegetables, and fruits, the collection of information on food risks, and geographical area (Wertheim-Heck et al., 2014). Educational level, occupation, and place of residence affect the perception of consumers in Ho Chi Minh City about the safety level, and importance of producing, and distributing clean food (Hoa et al., 2019).

**The residential area is the most important factor determining concerns about food safety** (Wertheim-Heck et al., 2014) (Mai et al., 2020). A study by the author Dang Le Hoa et al. on 431 consumers in Ho Chi Minh City shows that with different districts, consumer perceptions of the food safety level have a statistically significant difference. Consumers in Binh Thanh District are most concerned about food safety, with the highest rating of unsafe food on the market (accounting for 91%) compared to consumers in Thu Duc District (81%), District 1 (65%), and District 2 (Hoa et al., 2019).

**The level of concern about food safety is higher among consumers with better incomes.** Research on pork consumption behaviors among the people of Hanoi, in two urban areas with different living standards, level of consumer concern in Dang Xa urban area (very interested: 36.4%, interested: 46.4%) is much lower than that of the Ecopark urban area (very interested: 67.8%, interested: 32.2%), where the standard of living is better off (Pham Thi Thu Ha, 2018). Urban consumers, who are economically better off, have a higher level of concern about food safety (Mai et al., 2020).

### 3.2 High-risk foods

Vegetables, fruits, and meat are considered the least safe according to consumer perceptions in Hanoi (Wertheim-Heck et al., 2014), similarly in the assessment of consumers in Ho Chi Minh City, types of foods such as vegetables, fruits, and meats in Vietnam are not really safe for health (Hoa et al., 2019).

Concerns regarding hazards about pesticide residues, fertilizers, food preservatives, and hormones in farming during the cultivation process, as well as sanitation in/around food stores, unhygienic practices by sellers, and preservation/preparation methods at home (Wertheim-Heck et al., 2014) (Liguori et al., 2022) may reduce consumption of animal-source foods, fresh fruits, and vegetables; and increase consumption of starchy foods, and



processed/packaged food (Liguori et al., 2022).

A study on Hanoi consumers also shows that consumers have a high level of concern about food safety; according to them, pesticide residues, food preservatives, and hormones in livestock are three risks. top risks (T. M. Ha et al., 2019). Food is considered safe if purchased from vendors who have good personal hygiene practice, and food safety practice or with whom individuals have positive relationships, food is also considered safe if prepared at home (Isanovic et al., 2022b).

### 3.3 Knowledge, attitude, and practices on food safety of consumers in Hanoi and Ho Chi Minh City

In Vietnam, there have been some studies evaluating KAP (Knowledge, Attitudes, and Practices) of vendors and consumers regarding the safety of street food, and social evaluation of factors affecting consumer behavior on safe food, clean food, organic food in some major cities such as Hanoi, Ho Chi Minh City, Thua Thien Hue, and Binh Duong with specific types of food such as vegetables, pork, fruits, aquatic food. However, research on knowledge, attitude, and practices about food safety, and factors affecting the choice of safe food for consumers is still a gap in Vietnam.

A survey of 1,740 consumers in Hanoi from September to October 2015 showed that the highest average scores were in knowledge, and practice with raw, and cooked food. Higher knowledge scores were found among groups who are not single, have higher educational levels, and have specific criteria when choosing dining locations (A. T. L. Nguyen et al., 2018). A study by Dang Le Hoa et al. found that the majority of consumers in Ho Chi Minh City (over 70%) consider vegetables, fruits, and meat to be safe if their production process is assured from input to output. However, approximately 9% of consumers do not know how to identify safe food. The study also showed that educational level, occupation, and place of residence affect consumer perceptions of clean food (Hoa et al., 2019). A study on consumers in Vietnam shows that those who consider price to be the most important factor in choosing food often have lower knowledge than those who consider food safety to be the deciding factor (A. T. L. Nguyen et al., 2018).

Most studies show that consumers have a better food safety attitude than food safety knowledge. Besides, the knowledge level of consumers is still limited, vague, lacking deep insight, and mostly intuitive (Pham Thi Thu Ha, 2018).

On the other hand, the results of the National Nutrition Survey 2020 show a good sign that compared to 10 years ago, the proportion of people who know, and practice correctly about whole foods has clearly improved (National Institute of Nutrition, 2021).

### 3.4 Level of consumer trust in safe food

Beliefs, values, and sociocultural patterns are related to food safety in low-, and middle-income countries (Lee et al., 2022).

Perceived belief is a significant factor affecting on consumers' eating safe vegetables, however, consumers trust more in unverified factors such as "store reputation" or "brand", and trust less formal factors, for example "government certificates" (Le, and Nguyen, 2021).

Trust in the distributor brand is also a reason influencing pork purchase. In fact, the proportion of consumers using safe pork is not high partly because distributors have not created trust for consumers (Pham Thi Thu Ha, 2018).

A study on 132 households in Gia Lam, and Long Bien found that 67.4% had bought safe vegetables, nevertheless, the daily use was only between 15 - 35%. High cost, and untrustworthy quality of safe vegetables are the main factors hindering consumers' purchasing decisions. 65.9% do not trust the current safe vegetable stores. There is also a limited knowledge of safe vegetables, and ability to differentiate between safe, and regular vegetables (Do Thi My Hanh et al., 2015).

According to consumer evaluations, food products such as vegetables, fruits, and meat are not really safe in Vietnam (practically 50% believe current food is unsafe, and 26% believe it is very unsafe). Roughly 17% are neutral, and only about 6% believe the current food is safe. Approximately 50% do not trust food safety certificates, and over 35% are neutral about this (Hoa et al., 2019).

When considering the supply sources, the level of consumer trust varies significantly. A study by Le Thi Huyen Trang et al. (Le et al., 2022) on 225 consumers from three different market types: modern urban, traditional urban, and traditional rural areas belonging to Cau Giay district, Hanoi, and Da Bac district, Hoa Binh, from November to December 2019 shows that consumers trust more in the safety of pork sourced from their pigs, neighbor's pigs, and modern retail stores such as supermarkets, and convenience stores. Mobile service providers, and street markets are the least trusted, significantly lower than all other sources. Traditional rural consumers trust less in convenience stores, and more in supermarkets compared to other groups. Modern urban consumers trust less in traditional markets, and street markets, and more in small stores compared to other groups. Traditional urban consumers trust more in street markets/wet markets.

### 3.5 Willingness to pay for safe food.

**Safe food costs more than regular food of the same kind.** A survey in Hanoi shows that specialty stores that disclose food safety are about 50% more expensive than supermarkets, and nearly double the price compared to traditional channels; 86% of that surveyed think that the price of safe food is too high, and the food must be affordable, and worth the money, however, for the majority, "cheap" is not an important selection criterion. The cost of vegetables purchased at supermarkets, and specialty stores account for 27%, and 37% of the food budget, higher than that of traditional markets (accounting for 19%) (Wertheim-Heck et al., 2019). A survey in Hanoi shows that pork is the most consumed in the daily meals of Vietnamese people. Each month, a household with about 4 members buys pork 20 times with a total weight of 7.35 kg, a budget of 659,000 VND/month (USD 31.0) (H. Nguyen et al., 2018). So, what is the willingness to pay of consumers in Hanoi and Ho Chi Minh City?

In a study on low-income people in Dong Da District, and Hai Ba Trung District, Hanoi, willingness to pay plays an insignificant role in vegetable consumption in Hanoi, but the important role of household production may reflect the issue of willingness to pay, especially for safe vegetables (De Filippo et al., 2021).

Data analysis on 498 consumers in Hanoi shows that the perception of organic vegetables, trust in organic labels, and household income have increased the willingness to pay for organic vegetables in both urban and rural areas. The perceived use values are an important determinant of willingness to pay in both regions. The perceived use values of organic food increase by one unit leading to higher willingness to pay respectively by 1,423 VND, and 774 VND in rural, and urban areas. Rural consumers as well as urban consumers with higher evaluations of safety, health, nutrition, and taste attributes of available organic vegetables have higher willingness to pay for organic vegetables (Mai et al., 2018).

The survey aims to estimate the willingness to pay of consumers and examine the determining factors affecting their willingness to pay for pork (pork ribs, and shoulders) was collected on 134 people in Hanoi. The results show that the percentage of consumers willing to pay extra to get cleaner pork ribs, and shoulders are respectively 81.75%, and 73.01%. The average willingness to pay is 129,000 VND (\$6.07 USD) for both safe ribs, and shoulders, higher than 48.7%, and 37.8% respectively compared to the regular market prices (Thi Nguyen et al., 2019).

The study by the author Mai Dinh Quy et al. also shows that consumers are willing to pay extra to consume safe pork (accounting for 70%); there are 30% of people surveyed who are not willing to pay because they are not sure whether the pork is safe or not. The extra amount consumers are willing to pay for 1 kg of safe pork according to Vietnamese Good Animal Husbandry Practices (VietGAHP) standards is 9,500 VND (Mai Dinh Quy et al., n.d.)

Consumer awareness of the hazards of unhealthy pork, household income, and expenditure are positive determinants to the level of willingness to pay; whereas the amount of pork consumed each month negatively affects the higher willingness to pay for pork ribs, and shoulders (Thi Nguyen et al., 2019).

### 3.6 Factors Affecting Consumer Choice of Safe Food

Despite concerns about food safety, consumers do not always ensure that they consume safe food; barriers include affordability, accessibility, and the appeal of the food (Liguori et al., 2022).

**Barriers for consumers to buy safe food** are scarcity of safe food sources, bad financial condition, high prices of safe food, and limited knowledge in choosing food, and lack of experience in buying, and identifying safe food (Pham Thi Thu Ha, 2018). A study by author Nguyen Ngoc Mai shows that the factors affecting the intention to buy imported beef of 388 consumers in Gia Lam District, Hanoi are (1) Perceived quality; (2) Availability; (3) Perceived price; (4) Subjective norms, and (5) Label, and origin information (Nguyen Ngoc Mai et al., 2021).

Besides not being widely distributed in the areas studied, safe vegetables are not affordable for low-income individuals (Wertheim-Heck et al., 2019). Further analysis of barriers among low-income residents in Dong Da, and Ha Dong districts, Hanoi shows that factors determining vegetable consumption in Hanoi include family preferences, and habits, home production, perceived benefits, and effective behavior to maintain good health (De Filippo et al., 2021).

**Availability:** Limited domestic vegetable production is a barrier to consuming these types of food in Hanoi. The importance of home production for vegetable consumption is particularly evident in suburban areas, where many people have large home gardens, fruit trees, and even fields for large-scale production. Home production can enable vegetable consumption by improving affordability, and material accessibility (De Filippo et al., 2021). Furthermore, in these areas where there are many concerns about food safety, home gardens can provide a better sense of control, and trust that one's food is clean, and safe (Kurfürst, 2019).

**Perception of food safety:** 93.2% of those surveyed in Gia Lam, and Long Bien are willing to pay extra if the vegetables are really safe, but the level of additional payment is below 20% (Do Thi My Hanh et al., 2015).

**Food safety concerns are an issue that is reflected in consumer choices.** 88% of consumers in a recent study said they avoid eating vegetables considered unsafe, and 33.5% said they eat fewer vegetables than before due to food safety concerns (Ha et al., 2020). Growing vegetables at home is a means of increasing fruit, and vegetable consumption among low-income people by improving affordability, and physical accessibility (De Filippo et al., 2021).

**Experience with purchasing safe food:** The willingness to pay of consumers depends on factors such as age and whether they have previously purchased safe vegetables. Research has shown that individuals who have previously purchased safe vegetables are seven times more likely to have a higher willingness to pay compared to those who have not (Do Thi My Hanh et al., 2015). Significant and direct determinants of customers' intention to purchase safe vegetables include health consciousness, subjective norms, and perception of availability. A study by author Le Thi Anh on the safe vegetable buying behavior of 521 urban consumers in Hanoi shows that **trust** plays a very important role in consumer purchase decisions; additionally, **risk perception, and some demographic factors** also affect the behavior of buying safe vegetables (Le Thi Anh et al., 2020).

**Clear origin of food:** In Dang Xa urban area, the main criteria that people use to choose pork include clear origin (91.8%), trust in the sellers (87.3%), and fresh, dry, non-wet red meat (50.0%). In the Ecopark urban area, the criteria of clear origin are rated highest by residents, with a rate of 95.5%, trust in the seller's accounts for 90.0%, and fresh, dry, non-wet red meat accounts for 65.5% (Pham Thi Thu Ha, 2018).

**Perception of food:** A study by author Dang Le Hoa et al. on consumer perceptions in Ho Chi Minh City (Hoa et al., 2019) shows that most consumers (53%) rely on the appearance of food to identify whether it is clean or not, think that "clean" means fresh vegetables, and fruits, not wilted or crushed, 40% believe that clean meat must have a dry outer membrane, bright color, firm texture, bright fat, and soft skin. Many consumers trust sales locations, such as clean food stores, safe food (48%), and supermarkets (43%), to evaluate whether the food is clean. Consumers also rely on labels on food such as "VietGAP" (Vietnamese Good Agricultural Practices) "GlobalGAP" (Global Good Agricultural Practice) "VietGAHP" (Vietnamese Good Animal Husbandry Practices), "Clean vegetables," "Clean fruits," "Clean meat," "Organic," "Produced by microbiological technology."

**Price:** A recent study in Hanoi on about 300 consumers shows that price is considered a signal of quality, and safety, the perception of food safety is often expressed through higher prices, however price is considered the least important in all food groups (Bell et al., 2021). Price is no longer important in the Vietnamese context which may be related to economic growth in recent decades, and the ability of consumers to purchase diverse foods increasingly (Bairagi et al., 2020) , along with the habit of shopping at traditional markets where prices are negotiable (Bell et al., 2021).

### 3.7 Communication about food safety

Hazard communication is one of the important factors in managing food safety. A major challenge in food safety is the dissemination of misleading information about food hazards to the public (Nguyen-Viet et al., 2017). According to the results of the National Nutrition Survey in 2020, the proportion of people who had access to reliable information on food safety and hygiene also doubled compared to the survey conducted in 2010 (National Institute of Nutrition, 2021).

Research on consumers in Cau Giay district, Hanoi, and Da Bac district, Hoa Binh province (Le et al., 2022) shows that most participants usually receive information about food safety concerning animal diseases (such as the recent African swine fever), chemical pollution, and untraceable foods rather than about food poisoning, and preventive measures. Messages about food safety from television, and professional experts are the most reliable sources, and consumers' preferences are information about the origin of food (traceability), and how to choose safe food. Participants are willing to receive information about food safety daily to weekly.

Consumers mainly learn about food information through family, friends, and television, the internet (Pham Thi Thu Ha, 2018). The information that consumers want to receive is the origin of food (food origin traceability information), and how to choose safe food (Le et al., 2022). The sources of information about clean food, the number, and location of supermarkets, clean food stores, types of items available at sales locations, and the standard of living of people affect the perception of residents in the area about the level of food safety (Hoa et al., 2019).

The study also shows that without credible engagement from the government, information from suppliers such as labeling is unreliable. Receiving trust is essential in consumers' decisions to buy safe vegetables. Improving trust is key to expanding demand for safe vegetables (Le, and Nguyen, 2021).

It is necessary to raise consumer awareness about food safety through communication about the hazards of using unsafe pork. The government needs to promote organizations to certify safe pork products, including a safe pork recognition system. In addition, it is necessary to pay attention to the strict penalty mechanism for individuals, and organizations that violate food hygiene, and safety regulations (H. Nguyen et al., 2018).

To facilitate consumers' access to safe pork, distributors or sellers should promote information about safe products to raise consumer awareness through communication

channels, posters, flyers, and so on. Safe food stores or retail stores will be convenient for consumers to access. Those activities can aim at target groups such as university officials, men who often consume safe food, and so forth. Finally, producers, and distributors should focus more on pork safety certification labels to enhance consumer trust, and attract new customers (H. Nguyen et al., 2018).

Better management of food safety, and better hazard communication to reduce consumer concerns about the welfare of both producers, and consumers (Ha et al., 2020).

## 4 KEY FINDINGS OF THE RESEARCH

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### 4.1 Demographic characteristics of research subjects

The questionnaire-based survey was conducted on 368 consumers aged 18 - 69 years old in 4 communes/wards of 4 districts in Hanoi, and Ho Chi Minh City in August 2023. The average age of the study participants is 42.9 years old, similar between the two cities (average age in Hanoi is 43.4 years old, and in Ho Chi Minh City is 42.4 years old) ( $p>0.05$ ). Besides, the age group distribution in Hanoi and Ho Chi Minh City is relatively equal, the difference in age groups between the two cities is not statistically significant ( $p>0.05$ ). In Hanoi, the age group with the highest percentage is from 45 - < 60 years old (accounting for 29.7%), and the age group from 18 - < 30 years old (27.9%). Similarly, in Ho Chi Minh City, nearly one-third of the participants are aged between 45 - < 60 years old (27.6%), and between 18 - < 30 years old (27.6%). With the above age structure, most research participants are married (66.6%), (in Hanoi: 68.6%; HCMC: 64.8%). Most households have children and teenagers (62.2%).

The gender distribution of the research participants is nearly equivalent (men account for 42.4%, women account for 57.6%,  $p>0.05$ ). When considering each city separately, Hanoi's male group accounts for 40.1%, female group accounts for 59.9%; in Ho Chi Minh City, the male group accounts for 44.4%, and the female group accounts for 56.6%, the difference between the two cities is not statistically significant ( $p>0.05$ ). The similarity in gender and age between the two cities helps to understand different perspectives on consumers' perceptions of food safety.

According to the survey results, the education level of the study participants in the two cities is mainly secondary school (28.3%), high school (24.5%), and university (23.9%). In Ho Chi Minh City, the educational level of the survey participants is higher than that of Hanoi, with the proportion of participants with university degrees in the two cities being 25.0% and 20.4% respectively. The difference is statistically significant ( $p<0.05$ ).

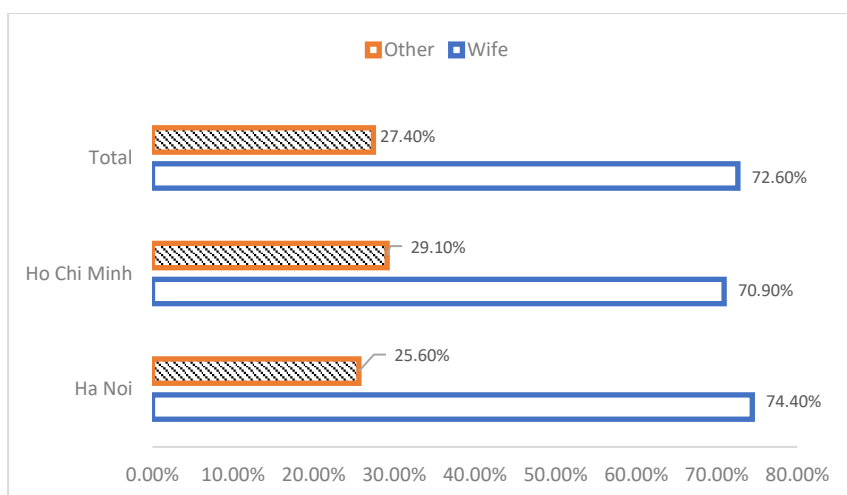
In Hanoi, the research participants are mainly freelancers <sup>2</sup>(35,5%), and students (23,3%), while in Ho Chi Minh City, their main occupations are civil officials (32.7%). The proportion of freelancers is smaller, at only 21.4%, and the difference is statistically significant ( $p<0.05$ ).

Nearly 100% of survey participants in Hanoi and Ho Chi Minh City said that using safe food is a human right. The wives are the primary family members responsible for choosing food for the whole family in all research areas (accounting for 72.6%).

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<sup>2</sup> Freelance workers are people who do not have a stable career, usually working for hire, or doing seasonal work.





**Figure 1.** The person responsible for choosing food for the whole family

The survey results show that the average number of members in each family in Hanoi is 4.40 people, and in Ho Chi Minh City is 4.46 people, which is higher than the results of the General Statistics Office's population living standards survey in 2022 (General Statistics Office of Vietnam, 2023) (with 3.5 people per household in urban areas, and 3.6 people/household in rural areas).

**Income and food expenditures:**

The average per capita income of research participants in the two areas is equivalent. In Hanoi, it is 4,220,027 VND/person, while in Ho Chi Minh City, it is 4,645,636 VND/person ( $p > 0.05$ ). This is lower than the results of the 2022 residential living standards survey (Hanoi: 6,423,000 VND/1 month, and Ho Chi Minh City: 6,392,000 VND/1 month) (General Statistics Office of Vietnam, 2023).

The survey results also show that consumers in Hanoi and Ho Chi Minh City spend 5 - 10% of their income on vegetables/pork/aquatic food:

**Spending on buying vegetables:** The majority (71.1%) of households in Hanoi and Ho Chi Minh City spend about 5% of their income to buy vegetables. This rate in Hanoi (83.2 %) is relatively higher than that in Ho Chi Minh City (60.1%), the difference is statistically significant ( $p < 0.05$ ).

**Spending on pork:** Consumers in Hanoi and Ho Chi Minh City spends 5% - 10% of their income on pork (36.9% in Hanoi and 32.8% in Ho Chi Minh City). In Ho Chi Minh City, those spending  $\leq$  5% of income on pork (30.5%) and those spending  $>$  5% - 10% of income (30.5%) account for the largest proportion. The difference between the two cities is statistically significant ( $p < 0.05$ ).

**Spending on aquatic food:** in Hanoi, the majority of research participants spent about 10% of their income on purchasing aquatic food (38.3% of participants spend less than  $\leq$  5% of their income, and 34.0% of the group spend  $>$  5% - 10% of income). Similarly, in Ho Chi Minh City, the amount spent on aquatic food accounts for approximately 10% of income (29.6% of participants spend  $\leq$  5% of income, 38.0% spend from  $>$  5% - 10% of income).

**Total amount of money spent on vegetables, pork, and aquatic food:** The majority of



households in both cities spend  $\leq 25\%$  of their income on the above 3 types of food (accounting for 65.2%). Specifically, in Hanoi and Ho Chi Minh City, the proportion of participants spending  $\leq 25\%$  of their income on purchasing all three foods is 69.9% and 61.0%, respectively. There is no clear difference between the two cities ( $p>0.05$ ).

## 4.2 Knowledge, attitude, and practices on food safety of consumers

### 4.2.1 Knowledge on food safety of consumers

**Most of the research participants (81.8%) have a medium level of knowledge about food safety**<sup>3</sup>. Those with a good level of knowledge account for 11.4%, and those with a poor level account for 6.8%. The results also show that most of both males and females have medium-level knowledge of food safety (83.3%, and 80.7%, respectively). The proportion of participants with good level knowledge is 9.0% in males, and 13.2% in females.

**Table 1.** General description of consumer knowledge in two cities by gender

Assessment of knowledge	Hanoi				Ho Chi Minh City				Total	
	Male		Female		Male		Female			
	n	%	n	%	n	%	n	%	n	%
Poor	4	5.8	5	4.9	8	9.2	8	7,3	25	6,8
Average	59	85.5	79	76.7	71	81.6	92	84,4	301	81,8
Good	6	8.7	19	18.4	8	9.2	9	8,3	42	11,4

Participants have a good level of knowledge in the Hanoi female group, accounting for 18.4%, while the figures of the other groups are below 10%.

**Perception about food safety:** Most participants in Hanoi, and Ho Chi Minh City (71.8%) believe that Food safety means to ensure that food does not cause harm to people’s health and lives. 52.4% of consumers think that food safety involves the processing, preservation, and storage of food safely. Most consumers in Hanoi (89.0%) believe that Food safety means the to ensure that food does not cause harm to people’s health and lives, while in Ho Chi Minh City, most consumers (68.2%) think that it mainly involves the processing, preservation, and storage of food safely.

**Consumer perception of safe food is closely linked to the sensory perception of food.** The perception of fresh, alive food is associated with awareness of safe food, especially with aquatic food. Live, and fresh aquatic food is synonymous with safe aquatic food.

**The perception about safe food of people in the surveyed areas is mentioned relatively comprehensive.** Safe food must be grown from healthy varieties, cared for in a farming environment according to standard procedures, where soil conditions and barn hygiene are ensured. To have genuinely safe food, the growers do not use chemical fertilizers, and only use biological drugs instead (do not harm the environment). Food needs to meet standards without using bran to increase weight, and create lean substances (with pigs), no growth enhancers, and do not use banned substances such as Salbutamol. The finished product must

<sup>3</sup> Knowledge scores are evaluated on a 100-point scale. Below 50 points is poor knowledge, from 50 - 75 points is average knowledge, > 75 points is good knowledge



not contain any antibiotic residue. Sensory factors are mentioned when purchasing food at retail. Consumers use different senses to identify whether food is safe. People use their eyes to identify Safe vegetables that are not wormy or rotten, have no withered leaves, or white meat with seamless fibers (safe core); use their hands to touch (sticky hands); use their nose to smell (no smell). In addition, there is also a factor mentioned: having a certificate from the Ministry of Health, and having an explicit origin, having passed quarantine, and buying from a supermarket. Safe food also includes not causing harmful effects on health (no irritation such as vomiting or diarrhea...); these are short-term effects. According to the results of the group discussion, the practices of vendors, or hygiene at the place of sale, were not mentioned in the concept of safe food.

**The top 3 causes leading to food contamination** are: "spoilage due to inadequate processing, preservation, and transportation" accounting for 69.5% (in Hanoi: 63.1%, and Ho Chi Minh City: 75.3%); "natural toxins, organic compounds, heavy metals, and other chemicals" accounting for 56.2% (in Hanoi: 47.6%, and Ho Chi Minh City: 36.6%); and "bacteria, viruses, parasites, and fungi" accounting for 41.8% (in Hanoi: 58.3%, and Ho Chi Minh City: 54.3%). Similarly, when comparing by gender, both the men and women participating in the study believe that the above are the top 3 causes of food poisoning, with a rate of 68.9% in men and 60.0% in women; 50.7% in men and 60.2% in women; 41.9% in men and 41.7% in women respectively.

For consumers, **the primary harmful effects when consuming unsafe food** are short-term effects on the digestive tract: diarrhea (84.8%), vomiting (67.8%), and long-term effects (cancer: 44.9%). These top 3 harmful effects are mentioned similarly when analyzed by province, and gender. Specifically, the majority of consumers (86.5% in Hanoi, and 83.4% in Ho Chi Minh City) believe that diarrhea is a consequence of eating unsafe food. Similarly, these rates are respectively 58.2% for participants in Hanoi, and 76.2% for participants in Ho Chi Minh City for the consequence of "vomiting"; followed by "cancer" with 51.8% of participants in Hanoi, and 38.9% of participants in Ho Chi Minh City. Health consciousness is an important psychological factor that affects buyers' willingness to pay. In our study, consumers were largely aware of at least one health consequence of losing food safety.

**04 high-risk food groups for food safety:** In both Hanoi, and Ho Chi Minh City, the majority of interviewees believe that the 4 types of food: "Meat, and processed meat products" 70.5% (Hanoi: 71.6%, Ho Chi Minh City: 69.5%), "Fresh or processed aquatic food products" 66.0% (Hanoi: 63.3%, Ho Chi Minh City: 68.4%); "Frozen foods" 65.2% (Hanoi: 72.2%, Ho Chi Minh City: 58.9%) "Fresh fruits, and vegetables" 55.4% (Hanoi: 55.6%, Ho Chi Minh City: 55.3%) are high-risk foods for safety. The results of our study are consistent with a number of worldwide studies. Consumers often consider animal-source foods, such as milk, and meat, as the most frequently adulterated foods (Isanovic et al., 2022a) (Jabbar and Admassu, 2010). and vegetables are the foods most at risk of losing food safety, followed by fruit, meat, fish, milk and eggs according to a study in Hanoi (T. M. Ha et al., 2019).

**Knowledge of high-risk groups most susceptible to food poisoning:** In Hanoi, and Ho Chi Minh City, most respondents believe that the 3 following groups are most at risk of food poisoning: Children (Hanoi: 86.0%, Ho Chi Minh City: 84.6%), the elderly (Hanoi: 70.8%, Ho Chi Minh City:

81.0%), and those who often eat out (Hanoi: 67.8%, Ho Chi Minh City: 58.5%).

**Reason for separating raw/cooked food:** 100% of participants know that the reason for separating raw and cooked food is to prevent the spread of pathogens from raw food to cooked food.

**Signs to identify fully cooked food to ensure safety:** Consumers often use sensory perceptions such as softness of the food (48.8% in Hanoi, and 61.1% in Ho Chi Minh City), change in color of food (66.9% in Hanoi, 60.6% in HCM City), and time-related criteria (61.6% in Hanoi, and 60.1% in HCM City) to assess the degree of doneness of the dish to ensure food safety. The results in this study are consistent with the results from the study by author Young et al, which state that consumers often use sensory assessments (appearance, smell) to check the doneness when cooking, and the degree of food spoilage. These practices are known to be unreliable indicators of food safety due to microorganisms (Young, and Waddell, 2016). Similar to the study on 474 consumers in 2016 in Thua Thien Hue, the consumer's awareness level of food safety in meat consumption is higher in criteria that can be directly perceived from the appearance, such as color, smell, veterinary control marks, and lower in indirectly visible criteria, such as transportation and storage (Nguyen Thi Minh Hoa, 2016).

**Basically, survey participants have corrected knowledge related to the preparation of ready-to-eat vegetables, and fruits. The 3 practices that people often do before eating raw vegetables, and fruits** are: wash with salt, and clean water (83.1% in Hanoi, and 87.2% in Ho Chi Minh City), peel and wash with clean water (58.1% in Hanoi, and 44.4% in Ho Chi Minh City), and wash many times under running water (39.5% in Hanoi, and 52.6% in Ho Chi Minh City).

**People of different professions have different knowledge scores about food safety.** Most consumers have an average level of knowledge (the worker group has the highest average score of 92.0%). The groups engaged in trade and housekeeping have higher rates of having poor knowledge compared to other occupational groups (27.3%, and 16.2%, respectively). Freelance workers and retirees have a higher percentage of good knowledge than other groups (15.5%, and 14.3%, respectively).

**Consumers with lower income have poorer knowledge of food safety.** Specifically, people with income below 2 million VND have a higher rate of having poor knowledge than other groups (16.2%), while that rate of those with an average income of >5 million VND is only 2.5%. Those with a per capita income of >5 million VND have a higher rate of having good knowledge than other groups, at 14.8%.

**The older the age group, the higher the confidence level in their food safety knowledge.** The age group with the highest level of confidence is 60 and above, with a confidence ratio of 65.7%, while the lowest is the 18 - <30 age group, with a confidence ratio of 22.9%. The difference is statistically significant ( $p < 0.05$ ). The results also show that the age group of 60 years and older also has a higher frequency of searching for information about food safety than other age groups. Thus, confidence in one's own food safety knowledge is closely linked to consumer experience, and experience. The more experience you have, the greater your confidence level will be.

**In addition, the study also shows that more than two-thirds of study participants actively search for safe and affordable agricultural products** (71.5% in Hanoi and 67.9% in Ho Chi Minh City). By gender, 67.9% of males and 70.8% of females actively seek safe agricultural products. The difference according to the research area (city) and gender is not significant ( $p>0.05$ ). The study also shows that the highest ratio of those actively seeking clean agricultural products is the 45–60 age group (accounting for 81.0%), while other age groups fluctuate around 65%. The ratio of actively seeking clean agricultural products of the groups with poor knowledge is lower compared to that of other groups (accounting for 48.0%). The two groups of consumers with average and good knowledge have active search rates of 70.1% and 78.6%, respectively. The difference is statistically significant ( $p<0.05$ ) when considering the age group and level of knowledge about food safety.

**In our research, the majority of consumers have average knowledge, and women have better knowledge about food safety than men.** The results are similar to some previous studies in Vietnam. Housewives in Hue city have a significant proportion of people with knowledge and practice of food safety (Nguyen Thi Anh Chi et al., 2019). In Can Tho, consumers generally have average knowledge and attitudes about food safety, and their attitudes about food safety is higher than their knowledge (Tong Thi Anh Ngoc, 2020). The proportion of consumers with good knowledge is lower than the results of the 2020 Nutrition Census with 35.8% of respondents having good knowledge; 55.6% have average knowledge (Institute of Nutrition, 2021).

Factors such as residential area, education level, and occupation affect consumers' knowledge about food safety. People with higher levels of education have better knowledge, and economically well-off households have better knowledge than those with lower incomes. In the study by author Tong Thi Anh Ngoc et al., knowledge and attitudes are influenced by age, education level, income, food safety training, and marital status. However, survey area and gender are factors that have no influence (Tong Thi Anh Ngoc et al., n.d.). *Research also shows that education level, occupation, and place of residence affect consumer awareness of clean food (Hoa et al., 2019).* Similar to research on consumers in Hue city in 2017, people with higher education levels have better knowledge compared to the group; economically well-off households have better knowledge than economically poorer households. Meanwhile, practice also has a statistically significant correlation with education level, family economics, and knowledge of food safety (Nguyen Thi Anh Chi et al., 2019).

#### 4.2.2. Consumer attitudes towards food safety

**Most research participants have good self-awareness about health related to food consumption.** Among them, 88.6% are aware that they can get sick from eating spoiled food (86.6% in Hanoi and 90.3% in Ho Chi Minh City), and 96.5% recognize that eating spoiled food can severely impact health (95.3% in Hanoi and 97.4% in Ho Chi Minh City).

The result of the analysis found that 95.3% of Hanoi residents think that washing fruits and vegetables with clean water is good, while in Ho Chi Minh City, this ratio is 84.7% ( $p<0.05$ ).

When consumers of both genders are surveyed about **their evaluation of the benefits of storing cooked food in the refrigerator**, only 28.0% evaluate it as Good (Hanoi: 31.4%; Ho Chi Minh City: 26.5%), while 49.2% evaluate it as Not Good (Hanoi: 44.2%; Ho Chi Minh City:

53.6%). 39.1% of males and 56.5% of females think that storing cooked food in the refrigerator is Not Good (there is a statistically significant difference when comparing between the male, and female groups,  $p < 0.05$ ). Consumers think that storing cooked food in the refrigerator will spoil the food, and therefore will not be beneficial for health. In addition, storing cooked food in the refrigerator will cause the food to lose its deliciousness.

**The main people responsible for choosing food for the family have some more negative attitudes towards food safety.** The main people responsible for family food choices have a statistically significant difference with their attitudes about food safety. Those who are mainly responsible for choosing food for their family have lower positive attitudes toward food safety (52.8%) compared to those who are not responsible for choosing safe food (65.1%) ( $p < 0.05$ ).

#### 4.2.3. Consumer practices regarding food safety

**The majority of survey participants have correct practices in food processing and preservation to ensure safety at home.**

82.6% of consumers (85.5% in Hanoi and 80.1% in Ho Chi Minh City) **use separate cutting boards for preparing raw, and cooked foods.** Similarly, **most consumers (72.6%) use separate knives for preparing raw foods, and separate knives specifically** for preparing cooked foods or fruits/vegetables.

**The main method for cleaning surfaces, and cooking utensils** is to wash with dishwashing liquid (Hanoi: 90.1%; Ho Chi Minh City: 93.4%). The percentages of people washing with hot water and using specialized cleaning solutions are lower, specifically 39.8% in Hanoi and 25.0% in Ho Chi Minh City, and 35.1% in Hanoi and 28.6% in Ho Chi Minh City, respectively.

Nearly 100% of study participants store perishable, fresh, and easily spoiled foods in the refrigerator, with the actual ratio of 98.2% in Hanoi and 95.4% in Ho Chi Minh City.

The survey results indicate that the times for hand washing to ensure food safety are before preparing food (96.2%), after preparing food (76.3%), after using the bathroom (62.1%), and when switching to preparing different foods (55.6%).

**However, the difference regarding gender in using separate cutting boards for preparing raw, and cooked foods between the male, and female groups** (the rates are 74.4%, and 88.7% respectively) is statistically significant ( $p < 0.05$ ). We also found statistically significant difference in the habit of using separate knives for raw foods, and separate knives for cooked foods/fruits between the male group (65.4%), and the female group (77.8%), ( $p < 0.05$ ). In general, consumers in the study area have the habit of using separate knives, and cutting boards to prepare raw foods, cooked foods or ready-to-eat vegetables, however about 20% still use the same cutting board, and 30% use the same knife. This increases the risk of helminth, and microbial contamination from raw foods to cooked foods, and ready-to-eat vegetables, so there is a need to focus on educating consumers on this issue.

The results show that **the majority of participants in the study have acceptable practices**<sup>4</sup>

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<sup>4</sup> Practice scores are calculated on a scale of 100 points. Below 50 points means practice is not correct/reasonable. From 50 - 75 points is acceptable. From >75 points is correct/reasonable.

with the overall rate for both cities being 52.7% (in Hanoi, the proportion of male and female groups are 60.9 and 48.5% respectively; in Ho Chi Minh City, the proportion of male and female groups are 57.5% and 47.7% respectively). The overall rate of correct practice is 40.8%. Specifically in Hanoi, 33.3% of males, and 47.6% of females have correct practices, while in Ho Chi Minh City, the figures are 27.6% and 49.5% respectively. There are 14.9% of males in Ho Chi Minh City having incorrect practices concerning food safety, and hygiene, which is a higher rate than those in other groups. There is a statistically significant difference between the two genders regarding the level of correct practices in food safety ( $p < 0.05$ ).

**Table 2.** Description of consumer practices by province, and gender

Content	Hanoi				Ho Chi Minh City				Total	
	Male		Female		Male		Female			
	n	%	n	%	n	%	n	%	n	%
Incorrect / Unreasonable	4	5.8	4	3.9	13	14.9	3	2.8	24	6.5
Acceptable	42	60.9	50	48.5	50	57.5	52	47.7	194	52.7
Correct / Reasonable	23	33.3	49	47.6	24	27.6	54	49.5	150	40.8
Total	69	100	103	100	87	100	109	100	368	100.0

In Minh Khai Ward, Bac Tu Liem District, Hanoi, the highest rate of consumers having correct practices is 58.2%; in Tan Quy Tay Commune, Binh Chanh District, Ho Chi Minh City, it is 48.1%; and the lowest is in Bac Hong Commune, Dong Anh District, Hanoi, at 23.5% ( $p < 0,05$ ). The highest rate of consumers having incorrect practices is in Ward 15, Binh Thanh District, Ho Chi Minh City, at 14.1%.

The rate of men having correct practices is 30.1%, which is lower than that of women (48.6%). Those who are primarily responsible for food selection have a higher rate of having correct practices compared to those who are not (46.6% over 35.4%). In our study, 100% of the participants know that separating raw and cooked foods is to prevent pathogens from spreading from raw foods to cooked foods. Participants of both genders follow the correct practice of using separate knives and cutting boards for raw and cooked foods. This is also a food safety practice that consumers perform well in studies. In the research in Vietnam by author Nguyen Le Anh Tuan et al. on 1,740 consumers, the highest average score is in knowledge of practices with raw and cooked foods (A. T. L. Nguyen et al., 2018).

### 4.3 Level of consumer trust in the safety level of vegetables, pork, and aquatic food in Hanoi, and Ho Chi Minh City

#### 4.3.1 Level of consumer trust in the safety of vegetables in Hanoi, and Ho Chi Minh City

##### 4.3.1.1 Safety level

**Participants in Hanoi rate the safety of vegetables higher than those in Ho Chi Minh City.** Most consumers in Hanoi believe that the vegetables they are consuming are safe, with the ratio of 70.4% (of which 54.7% rate the vegetables as safe, and 15, 7% rate the vegetables as



very safe. This rate is higher than that in Ho Chi Minh City (58.7%) (53.1% rate the vegetables as safe, and 5.6% rate the vegetables as very safe). The difference is statistically significant ( $p < 0.05$ ).

**Table 3.** Assessment of the safety level of currently consumed vegetables by city

Characteristic	Hanoi		Ho Chi Minh City		Total		p
	n	%	n	%	n	%	
Very unsafe	2	1.2	0	0.0	2	0.5	0.002
Unsafe	12	7.0	26	13.3	38	10.3	
Average	37	21.5	55	28.1	92	25.0	
Safe	94	54.7	104	53.1	198	53.8	
Very safe	27	15.7	11	5.6	38	10.3	
<b>Total</b>	<b>172</b>	<b>100.0</b>	<b>196</b>	<b>100.0</b>	<b>368</b>	<b>100.0</b>	
<b>Mean ± SD</b>	<b>3.77 ± 0.84</b>		<b>3.51 ± 0.79</b>		<b>3.63 ± 0.82</b>		0.003

From a gender perspective, both genders believe that the vegetables they are consuming are safe (62.2% of men and 65.5% of women). The difference is not statistically significant between the two genders ( $p > 0.05$ ).

Group discussion reveals that **the level of trust in the safety of vegetables varies between commune/ward, depending on the availability of supply at the research areas.** Among the research areas in Hanoi and Ho Chi Minh City, Bac Hong commune (Hanoi) and Tan Quy Tay commune (HCMC) have vegetable safety cooperatives. In Bac Hong commune, the source of safe vegetables is mainly self-supply with an absolute trust level of 5/5 (very trustworthy). Although Bac Hong commune has Bac Hong vegetable safety cooperative, the cooperative's vegetables are not supplied to the local market. Therefore, local people do not have access to this vegetable source. (Male group, Bac Hong commune, Hanoi). The results are similar with the female group in Bac Hong commune, where home-grown vegetables have the highest trust level.

#### 4.3.1.2 Availability

Safe vegetables are available in the research areas in Hanoi and Ho Chi Minh City. In Hanoi, 58.1% of consumers think that safe vegetables are available in their residential areas, while this rate in Ho Chi Minh City is 62.2%. The percentage of consumers who believe that safe vegetables are not available in Hanoi and Ho Chi Minh City is 9.3% and 15.8%, respectively. The difference is statistically significant. **Although the consumers in Hanoi rated the vegetables they were using as safer, fewer of them believed in the availability of safe vegetables in Hanoi compared to those in Ho Chi Minh City.**

**Table 4.** Assessment of the availability of safe vegetables in the market in Hanoi, and Ho Chi Minh city

		City						p
		Hanoi		Ho Chi Minh City		Total		
		n	%	n	%	n	%	
Availability of safe vegetables in the market	Very rare	8	4.7	1	0.5	9	2.4	<b>0.021</b>
	Unavailable	16	9.3	31	15.8	47	12.8	
	Average	38	22.1	35	17.9	73	19.8	
	Available	100	58.1	122	62.2	222	60.3	
	Very available	10	5.8	7	3.6	17	4.6	
	<b>Total</b>	<b>172</b>	<b>100.0</b>	<b>196</b>	<b>100.0</b>	<b>368</b>	<b>100.0</b>	
	<b>Mean ± SD</b>	<b>3.51 ± 0.91</b>		<b>3.53 ± 0.82</b>		<b>3.52 ± 0.86</b>		<b>0.878</b>

The study results also show that 62.2% of males and 65.6% of females believe that safe vegetables are available, and the difference between the two gender is not statistically significant (p>0.05).

Group discussion results also show that most groups (3/4 of Hanoi groups) believe that the availability of safe vegetables is average (when rated on a scale from 1 to 3).

**Box 1.** Concerns about lack of safe vegetables in Hanoi

The availability of safe vegetables on the market is low because there is no assurance for the quality of vegetables. The main sources of vegetables on the market (supermarkets, local markets) are not 100% safe, and have unknown origins. Vegetables are possibly watered by water from contaminated ponds or stagnant water. Although home-grown vegetables are highly trusted by participants in Hanoi, the issue is that the quality of home-grown vegetables still depends on human consciousness. Pesticides might not be used, but the water source in the vegetable growing area may be contaminated for various reasons, including the effects of chemical packaging and pesticides from other households on the water source (Female group, Minh Khai ward).



Some households grow vegetables but "lack caring techniques. They do not know the harvest time after fertilizing, spraying pesticides, or often deliberately harvest early for profit. The vegetables they grow are only for selling purpose, not for self-consumption. They also sell according to market demand. When people need more vegetables, they will increase the price". (Male group, Bac Hong commune, Hanoi).



Although the 02 communes/wards in Hanoi in the survey all have land areas for growing vegetables, the availability of safe vegetables is still low, because although people believe that home-grown vegetables, and supermarket vegetables are safe, home-grown vegetables are often not enough, and are usually seasonal, so people still have to buy them from outside sources.

*Female FDG in Minh Khai ward, Bac Tu Liem district, Ha Noi*



Similarly, in Ho Chi Minh City, most groups rate the availability of safe vegetables, pork, and aquatic food as average, only the female group in Ward 15 believe that the availability of safe vegetables is low, mainly because “The supermarkets are far away, inconvenient, and offer limited types of vegetables. At local markets, it is more diverse and convenient, but food safety cannot be assured. Vegetables at Bach Hoa Xanh is cheaper than supermarkets”. “Vegetables are sprayed with pesticides a lot, their origin, and growing methods are unknown. People are profit-driven so vegetables are not safe.”

### 4.3.2 Level of consumer trust in safety level of pork in Hanoi and Ho Chi Minh City

#### 4.3.2.1 Safety level

**The level of trust in the safety<sup>5</sup> of pork among study participants in Hanoi was lower than that of Ho Chi Minh City.** More than 50% of consumers in Hanoi believe that the pork they are using is safe (with 47.1% rating it as safe, and 4.1% as very safe), while in Ho Chi Minh City, this rate is 63.8% (with 59.2% rating it as safe, and 4.6% as very safe). The difference is statistically significant (p<0.05). Participants in Hanoi rate the safety of pork lower than those in Ho Chi Minh City.

**Table 5.** Assessment of the level of trust in the safety of currently consumed pork by city

		City						p
		Hanoi		Ho Chi Minh City		Total		
		n	%	n	%	n	%	
Safety level of pork commonly used by families	Very unsafe	2	1,2	2	1,0	4	1,1	0.151
	Unsafe	20	11.6	13	6.6	33	9.0	
	Average	62	36.0	56	28.6	118	32.1	
	Safe	81	47.1	116	59.2	197	53.5	
	Very safe	7	4.1	9	4.6	16	4.3	
	<b>Total</b>	<b>172</b>	<b>100.0</b>	<b>196</b>	<b>100.0</b>	<b>368</b>	<b>100.0</b>	
	<b>Mean ± SD</b>	<b>3.41 ± 0.79</b>		<b>3.60 ± 0.73</b>		<b>3.51 ± 0.76</b>		0.021
Group the safety level of pork commonly used by families	Safe	88	51.2	125	63.8	213	57.9	0.014
	Unsafe	84	48.8	71	36.2	155	42.1	
	<b>Total</b>	<b>172</b>	<b>100.0</b>	<b>196</b>	<b>100.0</b>	<b>368</b>	<b>100.0</b>	

<sup>E</sup> evaluate the safety level of food based on the consumer's perspective, on a scale of 1 to 5, from 1\_very unsafe, 2\_Unsafe, 3\_Normal, 4\_Safe, 5\_Very safe.



The research results also show that 57.1% of men and 58.5% of women believe that the pork they are consuming is safe. The difference between the two genders is not statistically significant ( $p>0.05$ ).

**Box 2.** *Pork has a higher level of trust than vegetables and aquatic food in terms of safety due to the confidence in the "mark" of veterinary facilities.*

Unlike vegetables and aquatic food, pork has a higher level of trust regarding its safety. The reason is that in order to be slaughtered and sold on the market, pork must go through two rounds of inspection, one by the slaughterhouses, and another by veterinary facilities. Only when these conditions are met can the pork be slaughtered and brought to the market. Pork that passes these inspections will have a "mark" from the veterinary facilities. However, group discussions also reveal that a single pig only gets one "mark", so mixing other pork products during the sale process is possible.

*"Sellers may use pork from unknown sources, sell meat leftover from the previous day, or store the meat poorly. They can also sell stale meat together with fresh meat when there are many customers, making it difficult for customers to distinguish." (Male group, Bac Hong commune, Hanoi).*

Compared to Hanoi, the pork value chain in Ho Chi Minh City is theoretically more favorable in controlling food safety, since in the market, small-scale processing at resident's houses is almost replaced by slaughtering centers and facilities where monitoring, control, and inspection activities can be carried out more effectively and efficiently. The capacity of modern slaughterhouses can well meet the current needs. On the other hand, most pork is traded at wholesale markets under the supervision and evaluation of local authorities. More and more large companies are building their own value chains to ensure the traceability and quality of pork (The World bank, 2017). Specifically, in the research areas in Ho Chi Minh City, the formation of the VietGap standard pork supply chain of Vissan Company is also one of the factors that increases the supply of safe pork and leads to an increase in trust level of consumers in the food safety of pork.

#### 4.3.3 Availability

**According to consumer assessment, the availability of safe pork in Hanoi is lower than that of Ho Chi Minh City.** In Hanoi, 54.7% of consumers believe that safe pork is available in their residential areas (52.3% said it is available, and 2.3% said it is highly available), while this rate in Ho Chi Minh City is 69.4% (65.3% said it is available, and 4.1% said it is highly available). The percentages of consumers who believe that safe pork is not available in Hanoi and Ho Chi Minh City are 15.7% and 14.3%, respectively. The difference is statistically significant ( $p<0.05$ ).

**Table 6.** *Assess the availability of safe pork on the market in Hanoi, and Ho Chi Minh City*

Description		City						p
		Hanoi		Ho Chi Minh		Total		
		n	%	n	%	n	%	
Availability level of safe pork in the market	Very rare	8	4.7	5	2.6	13	3.5	0.018
	Unavailable	19	11.0	23	11.7	42	11.4	
	Average	51	29.7	32	16.3	83	22.6	
	Available	90	52.3	128	65.3	218	59.2	

	Very available	4	2.3	8	4.1	12	3.3	
	<b>Total</b>	<b>172</b>	<b>100.0</b>	<b>196</b>	<b>100.0</b>	<b>368</b>	<b>100.0</b>	
	<b>Mean ± SD</b>	<b>3.37 ± 0.88</b>		<b>3.57 ± 0.85</b>		<b>3.47 ± 0.87</b>		<b>0.028</b>

Research results also show that 63.5% of men and 61.8% of women believe that safe pork is available. The difference between the two genders is not statistically significant ( $p > 0.05$ ). Although over nearly 50% of consumers in Hanoi believe that safe pork is available in the market, when compared with the results of group discussions in Hanoi, 2 out of 4 groups rated the availability as low (*male group, and female group, Bac Hong commune, Hanoi*), and 2 out of 4 groups rated availability as average.

For safe pork, in Bac Hong commune, the supply comes from two main sources: farms/slaughterhouses, and small-scale, spontaneously raising businesses. Among these, the supply from farms/slaughterhouses has a level of trust (4 points: trustworthy) higher than that of small – scale businesses (3 points: average).

**Box 3.** *Barriers to safe food consumption in Hanoi, media intervention to increase buyers' trust in sellers*

*Bac Hong commune, Dong Anh district, Hanoi.*  
*At slaughterhouses, before proceeding with slaughtering and distributing food to the market, pigs need to have a veterinary mark. However, the veterinary mark is very small and only placed on one part of the pig. When the pig is cut into pieces, there are parts that don't have a mark. This creates a loophole that allows sellers to mix in other products that are not safe pork.*  
*Is the consciousness of sellers a significant barrier - media intervention?*  
*Additionally, concerning about buying leftover meat from the previous day is also a point that makes consumers not rate their trust at level 5 "Very trustworthy". Consumers may not be able to distinguish which food is new and which food is from the day before. They also do not know how the leftover food from the previous day's sale will be stored by the sellers. Therefore, from the seller's perspective, it is necessary to share information about how to preserve food for consumers. If done well, it will increase the buyer' trust in the sellers. It is crucial to strengthen communication interventions with sellers about processing, and display methods at the place of sale to ensure food safety, and food preservation if there is leftover food. In addition, it is also essential to strengthen the voice of sellers in media events to create consumer trust.*

4.3.4 Level of consumer trust in the safety level of aquatic food in Ho Chi Minh City

4.3.4.1 Safety level

The results show that consumers in Ho Chi Minh City **believe the aquatic food they are consuming is safe**<sup>6</sup>, with 64.3% of them considering it safe and very safe, respectively at 58.6% and 3.4%. Meanwhile, 10.2% of research participants in Ho Chi Minh City consider aquatic food to be unsafe.

**Table 7.** *Assess the level of trust in the safety of currently consumed aquatic food by gender*

<sup>6</sup> Assess the safety level of food based on the consumer's perspective, on a scale of 1 to 5, from 1\_very unsafe, 2\_Unsafe, 3\_Average, 4\_Safe, 5\_Very safe.

	Gender				Total		p
	Male		Female				
	n	%	n	%	n	%	
Very unsafe	0	0.0	0	0.0	0	0.0	0.736
Unsafe	8	9.2	12	11.0	20	10.2	
Average	25	28.7	25	22.9	50	25.5	
Safe	51	58.6	66	60.6	117	59.7	
Very safe	3	3.4	6	5.5	9	4.6	
<b>Total</b>	<b>87</b>	<b>100.0</b>	<b>109</b>	<b>100.0</b>	<b>196</b>	<b>100.0</b>	
<b>Mean ± SD</b>	<b>3.56 ± 0.71</b>		<b>3.61 ± 0.76</b>		<b>3.59 ± 0.74</b>		<b>0.690</b>

The research results also reveal that 62.1% of men and 66.1% of women believe that the aquatic food they are consuming is safe, the difference between the two genders is not statistically significant ( $p > 0.05$ ). However, results from group discussions show that among the participants of the female group from Tan Quy Tay commune, 8 out of 11 participants believe that aquatic food is not safe because preservatives could be used during the breeding process, as well as residual substances from feed. **These are factors that consumers cannot control, and recognize.**

#### 4.3.5 Availability

**58.2% of consumers in Ho Chi Minh City believe that safe aquatic food is available** (the respective rates are 55.2% for male consumers, and 58.2% for women consumers). Only 15.3% of consumers believe that safe aquatic food is not available in their residential area, and the difference is not statistically significant ( $p > 0.05$ ).

**Table 8.** Assess the availability of safe aquatic food in the market in Hanoi, and Ho Chi Minh city

Description		Gender				Total		p
		Male		Female				
		n	%	n	%	n	%	
Availability level of safe aquatic food on the market	Very rare	3	3.4	2	1.8	5	2.6	0.659
	Unavailable	16	18.4	14	12.8	30	15.3	
	Average	18	20.7	22	20.2	40	20.4	
	Available	48	55.2	66	60.6	114	58.2	
	Very available	2	2.3	5	4.6	7	3.6	
	<b>Total</b>	<b>87</b>	<b>100.0</b>	<b>109</b>	<b>100.0</b>	<b>196</b>	<b>100.0</b>	
	<b>Mean ± SD</b>	<b>3.34 ± 0.93</b>		<b>3.53 ± 0.85</b>		<b>3.45 ± 0.88</b>		<b>0.141</b>

The questionnaire-based survey results also show that 57.5% of men and 65.1% of women think that safe aquatic food is available. The difference between the two genders not statistically significant ( $p > 0.05$ ).

#### 4.4 Sources of supply for vegetables, pork, and aquatic food in Hanoi, and Ho Chi Minh City

##### 4.4.1 Vegetables supply sources

**In Hanoi, the main sources of vegetables for consumers are home-grown vegetables (about 60%) and traditional markets (over 50%), while in Ho Chi Minh City, the primary places to purchase are traditional markets (over 70%) and supermarkets (68%).** Bac Hong commune and Minh Khai ward are both areas where people can be self-sufficient in vegetables, while in Ho Chi Minh City, only Tan Quy Tay commune is a peri-urban area where households have an area to grow vegetables. Home gardens only provide 35% of the vegetable supply for consumers in Ho Chi Minh City, only nearly half of that in Hanoi. Vegetables from home garden is considered safer than other vegetable sources (Kurfürst, 2019), therefore, the safety assessment level of vegetables in Hanoi is higher than that of Ho Chi Minh City.

##### 4.4.2 Places to buy safe vegetables

**When asked about the safest places to buy vegetables, consumers in both cities mostly mentioned home-grown sources and supermarkets.** In Hanoi, consumers trust home-grown vegetables (75.9%), vegetables at supermarkets (52.4%), and vegetables from their acquaintances (41.8%). In Ho Chi Minh City, the three most trusted sources for consumers are supermarkets (82.1%), specialized stores selling clean vegetables (68.3%), and home-grown vegetables (59.3%)

**Box 4. Safe food supply situation in Tan Quy Tay commune**

*In Tan Quy Tay commune, Phuoc An Agricultural Commercial Production and Service Cooperative provides safe vegetables. In addition, the cooperative has five types of vegetables that meet the OCOOP standard. However, similar Bac Hong Safe Vegetables Cooperative, the products of this cooperative are not provided for local consumers, but only supplied in large quantities to supermarket chains such as Big C, Co.op Food, and specialized stores providing vegetables for kindergartens, including two kindergartens in Tan Quy Tay commune.*



*Members of the safe vegetable's cooperative strictly follow with the production process. If they are caught violating multiple times, they will be expelled from the cooperative. Cooperative members are trained twice a year in growing clean vegetables, and are reminded of what pesticides they can use and what pesticides are banned. There is a list of usable pesticides, and microbiological ones are frequently used. Each type of vegetable has a different isolation period that all cooperative members must comply. (Mr. V, member of safe vegetable cooperative)*

*Vegetables in the market contain pesticides, and growth stimulants that have many toxic substances. Prices in cooperatives are usually stable so people comply with the isolation period, while outsiders often harvest early, spray the vegetables today but harvest tomorrow if there is a profit or the market price suddenly increases. People are usually profit-driven. (Mr. V, member of safe vegetable cooperative)*





*Bach Hoa Xanh stores provide a variety of items, including vegetables, pork, and aquatic food. Typically, the sources of safe vegetables in Bach Hoa Xanh are their partners who have clear origin traceability, and meet Viet Gap standards. Bach Hoa Xanh has various price incentive programs and is running a price stabilization program. The prices of safe vegetables sold in the supermarket are equivalent to the prices of vegetables in regular markets. In addition, there is a 70% discount program after 7 PM, and they can also run a flat-rate pricing program for various types of vegetables. (Mr T, manager of Bach Hoa Xanh, Tan Quy Tay commune).*

#### 4.4.3 Pork supply sources

**Traditional markets are the main source of pork supply in the survey in Hanoi (more than 60%) and Ho Chi Minh City (nearly 65%).** Especially in Hanoi, buying from acquaintances is still the main source of supply (accounting for nearly 60%), while in Ho Chi Minh City, supermarkets (more than 65%) account for a high proportion equivalent to traditional markets.

The research results on residents in Hanoi and Ho Chi Minh City in 2017 also show that the largest portion of food spending by urban Vietnamese households was still made at traditional food retail stores (“The Vietnam urban food consumption & expenditure study,” 2017).

#### 4.4.4 Places to buy safe pork

**Supermarkets are considered safe places to buy pork in Hanoi and Ho Chi Minh City.** Similarly, when asked about the safest places to buy pork, consumers in both cities predominantly answered supermarkets. Specifically, in Hanoi, the places considered safe for buying pork are supermarkets (70.5%), acquaintances (47.6%), stores with food safety certificates (37.3%), and clean meat stores (37.3%); traditional markets are not considered safe (only 12.0% trust their safety). In Ho Chi Minh City, the study participants believe that supermarkets (82.7%), clean meat stores (45.0%), and stores with food safety certificates (23.0%) are safe places to buy pork, with only 12.0% considering buying from acquaintances as a safe pork supply, lower than that of Hanoi.

**The biggest concern for consumers in both Hanoi and Ho Chi Minh City when consuming safe food is food adulteration.** While there is absolute trust in the safe pork supply from slaughterhouses (5/5 points)<sup>7</sup> there is still a lack of complete trust in the consciousness of sellers, which is a major barrier for consumers.

**People in Ho Chi Minh City believe that supermarkets are the places that sell clean food (specifically vegetables and pork).** Research also shows that food safety is also one of the reasons consumers buy food at modern markets, including hypermarkets/supermarkets, mini

<sup>7</sup> 5-point scale to evaluate the level of trust: 1. Very untrustworthy, 2. Untrustworthy, 3. Average, 4. Trustworthy, 5. Very trustworthy

supermarkets, and specialty stores. (“The Vietnam urban food consumption & expenditure study,” 2017)

**Box 5.** Food supply situation in Bac Hong commune

*Bac Hong commune*

*Supply situation: In Bac Hong commune, there is no slaughterhouse, but there is one in the neighbouring commune (Nam Hong). Various small-scale family businesses usually buy from the slaughterhouse or purchase pigs from local residents to slaughter. However, raising pigs at home is less common due to the shrinking land area for housing, as pig farming can affect the surrounding environmental sanitation. Concerns related to raising pigs in residential area are the limited scale and the sporadically sale of pork without following any standard process. It’s suggested that these small-scale farmers may not use vaccine or administer antibiotics properly. Others argue that vaccination and disease prevention are mandatory because otherwise the pigs will get sick. Therefore, a concern that needs attention is that pigs might be vaccinated but not isolated long enough before they are sold, leading to antibiotic residues in the pork. Hence, it is necessary to intervene in communication for small-scale pig raising households in Bac Hong commune about the dangers of using antibiotics and vaccinations without regulations, and the necessary conditions to ensure environmental safety and hygiene when raising pigs in residential areas.*

**Box 6.** Food supply situation in Ward 15, District, Binh Thanh, Ho Chi Minh City

*Ward 15, Binh Thanh District, Ho Chi Minh City*

*Pork supply sources in Ward 15, Binh Thanh District, Ho Chi Minh City: There are almost no markets, food stores, and safe food in Ward 15 (except for a few small retail stores). Residents of Ward 15 typically buy their groceries at Binh Chieu Market (located in Ward 1, Binh Thanh District), which is about 1 km away from the center of the ward.*

*Among the pork stalls at Ba Chieu market, people trust the Vissan pork wholesale and retail chain. The stall of stores under the Vissan system has been expanded as per the policy of Vissan Company since 2017, selling wholesale pork alongside the traditional market. The stalls have clearly numbered. These pork stalls have contracts with Vissan and are supplied directly by the Company. A retailer said that it can sell 100 kg of pork in a day on average.*



*VietGAP Vissan meat counter at Ba Chieu market*

**4.4.5 Aquatic food supply sources**

**Similar to foods such as vegetables, and pork, the places where research participants buy aquatic food in Ho Chi Minh City are mainly traditional markets (72.9%).** However, according to the results of structured interviews, although traditional market is the main source of seafood supply, it is not the most trusted place among consumers in terms of food safety (accounting for only 23.2 %). Meanwhile, like other foods, supermarkets are considered safe places to buy aquatic food by most of the research participants (accounting for 68.4%, 71.1% of men and 66.4% of women). In particular, although many business establishments have food safety certificate, only 16.3% of the research participants (13.3% of men and 18.7% of women)

trust aquatic food stores to have good quality products. Thus, it is clear that for consumers participating in the research in Ho Chi Minh City, the fact that a store has a food safety certificate is not the main criterion to build trust in the safety level of aquatic food. Consumers do not have strong confidence in stores with food safety certificates, possibly worrying about the lack of transparency and honesty of certified business establishments. *“Some stores that initially sold safe food and had good reputation later mixed in unsafe foods, including poor-quality meat and vegetables, thereby losing their credibility among the public” (Female respondent, Ward 15).*

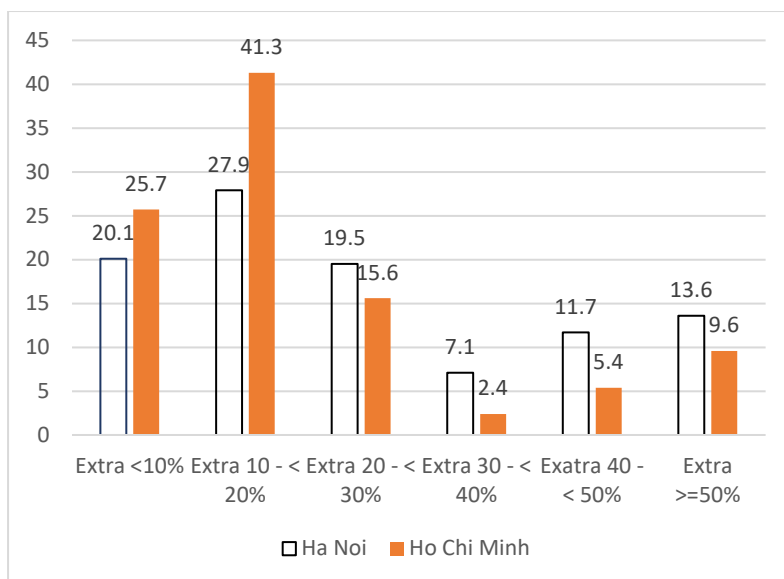
## 4.5 Willingness to pay for vegetables, pork, and aquatic food

### 4.5.1 Willingness to pay for safe vegetables

The survey results show that **the majority of participants in the two cities are willing to pay for safe vegetables** (76.9% willing, and 10.6% very willing). These rates in Hanoi (77.9% willing, and 12.2% very willing) are higher than those in Ho Chi Minh City (76.0% willing, and 9.0% very willing). The difference is not statistically significant ( $p>0.05$ ). The study also shows that the proportions of consumers who are willing and very willing to pay for safe vegetables are higher among women (76.9% and 11.8%) than among men (76.9% and 9.0%); and the difference is not statistically significant. When considering factors such as marital status, occupation, and knowledge about food safety, the difference is statistically significant ( $p<0.05$ ). **Those who are married are more willing to pay for safe vegetables than those who are single, and people with better knowledge about food safety are more willing to pay than people with poorer knowledge ( $p<0.05$ ).**

**The additional payment level to buy safe vegetables of consumers in Ho Chi Minh City is higher than that of consumers in Hanoi.** The rates of consumers in Hanoi are willing to pay an additional 10-20%, <10%, and 20-30% over the current price are 27.9%, 20.1%, and 19.5% respectively. In Ho Chi Minh City, most consumers (41.3%) agreed to pay an additional 10-20% for safe vegetables, 25.7% of consumers agreed to pay <10%, and 15.5% said they can pay an additional 20-30%. The difference is statistically significant ( $p<0.05$ ) between the two cities. The proportion of study participants in Hanoi agreed to pay an additional 0-20% more is higher than that of Ho Chi Minh City, and conversely, with a price increase from 20 to over 50%, consumers in Hanoi are less willing to pay compared to those in Ho Chi Minh City (Figure 2).





**Figure 2.** The percentage of additional cost customers are willing to pay for safe vegetables compared to the current price by city.

The results also show that **consumers in Hanoi and Ho Chi Minh City encounter almost no difficulties in choosing and buying safe vegetables** (approximately 50% of study participants). The difficulties faced by consumers in choosing and buying safe vegetables are poor financial situation (10%), the price of safe vegetables being too high compared to regular vegetables (over 15%), limited knowledge about safe vegetables (around 20%), difficulties in accessing safe vegetables (20%), and the inability to distinguish between safe and unsafe vegetables (about around 30%).

#### 4.5.2 Willingness to pay for safe pork

**The majority of consumers in the two cities in the survey are willing to pay for safe pork.**

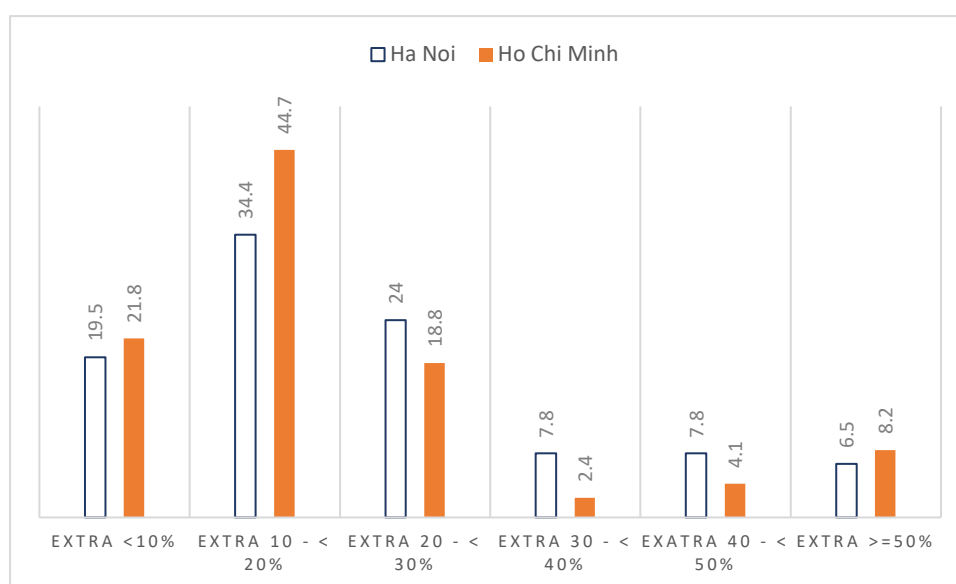
Similar to safe vegetables, the study shows that 89.5% of consumers in Hanoi are willing, and very willing to pay for safe pork. This rate in Ho Chi Minh City is 86.7%. When considering gender, 84.6% men and 90.5% women are willing to pay for safe pork.

Families with children are more willing to pay for safe pork than families without children ( $p < 0.05$ ), with respective rates of 92.1%, and 81.3%. In this study, more than 60% of participants have children under 18 years old, which is also the reason why in this survey the proportion of consumers willing to pay for safe pork is relatively high. Educational level is also a factor that affects the willingness to pay for safe pork. Those with higher educational levels including college (97.7%), and university (91.5%) are more willing to pay compared to those with high school education or lower (84.8%) ( $p < 0.05$ ). The analysis also shows that there is a significant correlation between willingness to pay for safe pork, and knowledge about food safety ( $p < 0.05$ ). Those with poor knowledge about food safety are less willing to pay compared to those with average and good knowledge.

#### Factors affecting the willingness to pay for safe pork

**Most consumers in Hanoi (34.4%), and Ho Chi Minh City (44.7%) are willing to pay an extra 10-20% compared to regular price for safe pork;** followed by less than 10% (19.5% in Hanoi and 21.8% in Ho Chi Minh City); and 20-30% (24% and 18.8% respectively). This figure is lower than that of the study on Hanoi consumers with the extra payment at 48.7% for pork

shoulders, and 37.8% for ribs when compared to normal prices (Thi Nguyen et al., 2019). In another study, consumers' willingness to pay 9.500 VND more for 1 kg of safe pork that meets VietGAHP standards (Mai Dinh Quy et al., n.d.).



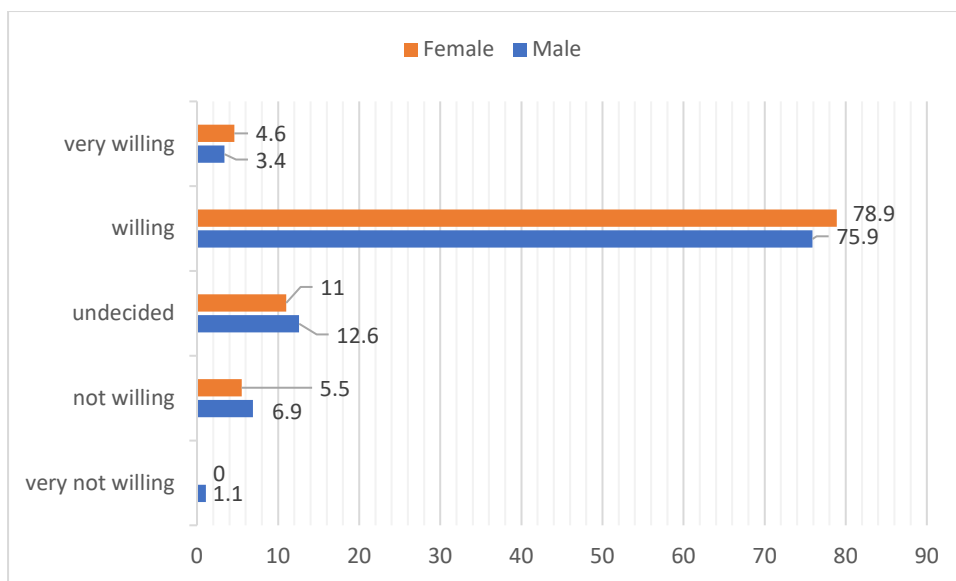
**Figure 3.** Percentage of extra cost that consumers are willing to pay buy safe pork compared to current price by income

**People with higher income has a higher level of additional payment.** Specifically, in the income group above 5,000,000 VND, up to 18.6% of respondents are willing to spend 1.5 times more to buy safe pork, while in lower income groups, this percentage is only about 4%. The study's results are similar to previous research, which has confirmed that household income and expenditure are positive determinants of willingness to pay. Meanwhile, monthly pork consumption negatively affects higher willingness to pay (Thi Nguyen et al., 2019). Lack of financial resources, high prices for safe food, limited knowledge of food selection, and lack of experience in buying and recognizing safe food are also barriers to consuming safe food in the study by author Pham Thi Thu Ha et al. (Pham Thi Thu Ha, 2018).

**About 50% of male consumers and 39.6% of female consumers in Hanoi have no difficulty in choosing and buying safe pork.** In Ho Chi Minh City, more than 50% of consumers have almost no difficulty in choosing and buying safe pork. The main difficulties for consumers in choosing and buying safe pork are poor financial situation (about more than 15%), the price of safe pork being too high, limited knowledge about safe pork, difficulties in accessing safe pork (about 20%), and the inability to distinguish between safe and unsafe pork (about more than 15%).

#### 4.5.3 Willingness to pay for safe aquatic food

The majority of consumers in Ho Chi Minh City (81.7%) are willing to pay for safe aquatic food (78.9% are willing, and 4.6% are very willing). This ratio is 79.3% for men (75.9% willing, and 3.4% very willing), and 83.5% for women (78.9% willing, and 4.6% very willing). The difference between the two genders is not statistically significant ( $p > 0.05$ ). At the same time, when considering other factors such as age, educational level, marital status, occupation, and some other factors, there is no statistically significant difference ( $p > 0.05$ ).



**Figure 4.** Level of willingness to pay for safe aquatic food in Ho Chi Minh city by gender

The majority of consumers participating in the study in Ho Chi Minh City (40.6%) agreed to pay a higher price ranging from 10-20%, compared to the original price. In particular, the higher the income, the higher the level of additional payment. Specifically, the group with per capita income over 5,000,000 VND has an additional spending rate of 20 - 30%, which is 31% higher than the other two groups. In addition, 14.3% of this group are willing to spend more than 1.5 times to buy clean aquatic food.

**Similarly, to safe vegetables, and pork, the results show that over 50% of consumers in Ho Chi Minh City have no difficulty in choosing and buying safe aquatic food.** The difficulties consumers face when buying safe aquatic food are *lack of experience in choosing safe aquatic food* (20.4%); *inability to distinguish between safe, and unsafe aquatic food* (14.8%); *unaffordability* (15.7%); *high price of safe aquatic food* (13.9%); and *limited knowledge about safe aquatic food* (12%). Difficulties or barriers in buying safe aquatic food relate to experience in choosing safe aquatic food, concerns about the safety level of aquatic food; *perception about the price of safe aquatic food*; *insufficient knowledge about safe aquatic food*.

#### Willingness to pay of participants in Hanoi

**Participants in Hanoi all have a demand for safe vegetables and pork, mainly due to their awareness of the health value that safe food provides, the risks associated with unsafe food, and perception about safe food.**

*“Safe food helps ensure the health of ourselves and those around us”* (Male group, Bac Hong commune). Safe vegetables bring good effects to health and prevent foodborne diseases. However, a very important factor mentioned is the need to ensure that safe food *“ensures our health only if it is truly clean”* (Male group, Minh Khai ward). *“If you eat unsafe pork, it will cause intestinal diseases or even worse, cancer”* (Male group, Minh Khai ward).

**Buying safe vegetables is also related to the perception of safe food.** *“Safe vegetables taste better than unsafe vegetables”*. Another study in Hanoi also showed that, according to consumers' perceptions, food safety is considered a prerequisite, and nutritious food must first be safe (Bell et al., 2021).

**Perceived price is not an important factor influencing the purchase of safe vegetables and safe pork**, because *“according to market price, 15 - 20% is acceptable, if it is too high, no one will buy”*. For safe vegetables, it seems that the price factor does not have as much effect as safe pork, as people can grow vegetables themselves, buy from acquaintances, and the amount of additional purchases is very small, *“We only buy the vegetables we do not have”, “we buy when we need large quantities”*. When buying in large quantities on special occasions, it is even more important to buy safe vegetables. People are willing to pay more because *“the price of vegetables is not too expensive, clean vegetables ensure health, and in meals, the amount of vegetables consumed is more than other foods.” “An 10-20% increased price compared to the normal is acceptable”* (female group, Bac Hong commune).

Regarding safe pork, according to people and workers who have poor financial situation, when the price increases, it will be difficult for them as their income is low, while most other people will not be affected much. (Male group, Bac Hong commune). Similar to the results of the questionnaires interview, it shows that the ability to pay more for safe pork depends on the consumer's income. For safe pork, people are willing to pay, however *“The price should only increase by 10-20% compared to the market price, it is the most reasonable level”* (female group, Bac Hong commune). *“I really want to eat safe pork that is inspected and guaranteed to be safe, and does not affect my health.”*

*“If the price is high, we will eat less, so price is not a problem”, and “if the vegetables are safe, we accept an increase of lower than 30%”* (Male group, Minh Khai ward).

**Consumers' concerns about the "standard" level of safe food are a factor that leads to their willingness to pay.** Transparency in information and origin is a key point to focus on to increase consumers' willingness to pay for safe food.

#### Willingness to pay of participants in Ho Chi Minh

Similar to the people in Hanoi, for the people in Ho Chi Minh City, the main reason to buy safe food is related to **its effects on health and perception about food.**

*“It is to protect the health of ourselves, and our family, avoid cancer, food poisoning, and diarrhoea.” “Safe vegetables are tastier and more secure”* (Female respondent, Ward 15). *“I want to have products that are good for health and taste better”* (Female respondent, Tan Quy Tay commune).

**Reasonable price is also a factor that increases the willingness to pay for survey participants in Ho Chi Minh City.** 100% of group discussion participants in Ward 15 are very willing to pay for safe food: *“If it is affordable, we are willing to buy to protect our health.”* However, *the price needs to be reasonable. “If the price is reasonable and does not vary too much, it is acceptable. For example, if it costs 8,000 VND at the market, and 10,000 VND in the supermarket, we can buy from the supermarket. But if it's twice as expensive, we cannot afford”*. For consumers in Tan Quy Tay commune: Pork *“It can be a little expensive but is still acceptable if it is safe for our health.”* For vegetables: *“What if you get food poisoning for wishing to save some pennies”* (in-depth interview with female, Tan Quy Tay commune).

In general, in the 02 research communes in Ho Chi Minh City, for all 3 food groups of safe vegetables, pork, and aquatic food, the additional amount is mostly from 10 - 20% of the normal price, similar to the results from the questionnaire-based interviews.

*"However, the reasonable price should only increase by 10-20% compared to the market price" (Female group, Tan Quy Tay commune).*

*"However, the reasonable price should only increase by less than 25% compared to the market price" (Male group, Ward 15).*

## 4.6 Factors affecting choices and intention to buy hygienic and safe food of consumers.

### 4.6.1 Factors affecting consumer choice for hygienic, and safe food

The survey was conducted to gather information on the factors affecting the choices of safe food for consumers via a questionnaire. When choosing food, **most of the respondents mainly rely on factors such as sensory perception about the products** (76.2% in Hanoi, in which: male 76.8%, female 75.7%; 81.1% in Ho Chi Minh City, in which: male 82.8%, female 79.8%). Next is *information about the product written on the label* (54.1% in Hanoi, in which: male 58.0%, female 51.5%; 64.8% in Ho Chi Minh City, in which: male 55.2%, female 72.5%), and *prior experience with the product* also affects the food choices of consumers (52.3% in Hanoi, in which: male 49.3%, female 54.4%, 61.2% in Ho Chi Minh city, in which: male 55.2%, female 61.1%). *Product brand, recommendation from relatives/friends* are also factors that significantly influence consumers' food choices (approximately 45% in Hanoi). In Ho Chi Minh City, *referrals from relatives/friends* only account for 29.1%, lower when compared to Hanoi (45.9%). In particular, *advertisements on mass media* are not a significant factor influencing consumers' food choices, only accounting for approximately 10% in the survey (10.5% in Hanoi, and 9.7% in Ho Chi Minh City. However, communication on mass media is a communication channel that people trust, and recommend a lot in the survey.

Individuals construct concepts about food safety through personal experiences and social influences (Isanovic et al., 2022a). The results of the group discussion shows that consumers' experience about food has been mentioned as an important factor in consumers' food choices. A bad experience with unsafe food makes consumers decide not to buy safe food at the previous place of purchase. **Consumer experience with the food in question is an important factor in consumer food choices.** A bad experience with unsafe food makes consumers decide not to buy safe food at the previous place of purchase. *There is a correlation between perceived food safety risks and food risk communication; the more respondents heard about food safety incidents, the higher the level of risk associated with fruits and vegetables* (T. Ha et al., 2019).

Research by author Dang Xuan Sinh et al. shows that ([Dang-Xuan et al., 2016](#)), the color and smell of pork were identified as the most important selection criteria when purchasing pork, while price was the least important. Perceptions of pork freshness, along with trust in the seller, and the pork production process, are strong indicators of consumer preferences.

### Trust is also a barrier to safe food consumption

Although a significant proportion of people evaluate that safe food is available on the market and evaluate the food they are consuming as safe (60% approximately), group discussion

results show that worries about the safety of food on the market are still a constant concern. The main worry is *not being able to consume "standard food" due to food adulteration. "There are a lot of untraceable foods"*. Food adulteration here is not only mixing foods of unclear origin with foods of known origin, but also mixing old foods and new foods, safe and unsafe foods. The issue of origin is a prominent food safety issue in Vietnam, so it is necessary to make the origin transparent by providing people with information about the origin of food products. In this survey, food originating from China was not mentioned in interviews and group discussions. Similar to Isanovic's study, perceptions of lack of food safety have increased due to concerns about adulteration of vendors and contamination in the physical environment with poor hygiene or handling practices (Isanovic et al., 2022b).

Research results show that, **in Hanoi, factors limiting safe food consumption include factors of trust, availability, affordability, promotions, advertising, and information about food.** Concerns about the safety of vegetables and pork are also mentioned as one of the limitations. Although in this study, the majority of people said they are willing to pay for safe food, the level of willingness to pay more was mostly only 10 - 20% higher than the normal price (based on results of the KAP survey). However, the men's group discussion in Bac Hong commune also shows that people are quite optimistic about the increase in prices of safe foods, they think that price should only increase according to the market price, and cannot increase too much. The survey also shows that price influences the purchase of safe pork more than safe vegetables.

**Thus, research participants in Hanoi and Ho Chi Minh City are willing to pay for safe food if the level of extra payment is reasonable, 10 - 20% to be specific.**

**The unavailability of safe food is a barrier factor for research participants in Ho Chi Minh City, mainly mentioned by residents of Ward 15.** All existing supermarkets, Bach Hoa Xanh stores, or clean food stores are not in the residential area but concentrated in the Ba Chieu market area, *"making it inconvenient due to the distance"*. In Tan Quy Tay commune, people can partially self-supply vegetables and fish for daily consumption due to the availability of agricultural land. Therefore, unavailability is not a significant barrier.

With the widely distributed characteristics of the Bach Hoa Xanh system in Ho Chi Minh City (in Tan Quy Tay commune and neighbouring wards of Ward 15, Ba Chieu market), cheap and subsidized prices for safe vegetables are a supporting factor for consumers to reach safe food. The solution to increase the availability from research participants in Ho Chi Minh City is to redistribute supermarkets and clean food stores in Ward 15 to meet people's need to buy clean goods. *"Because currently there are no supermarkets or Bach Hoa Xanh stores around Ward 15, it is difficult for people to access clean food sources." "If not, companies and supermarkets should organize sales through mobile vehicles so that people can conveniently buy clean products and reduce travel time."* (Female group, Ward 15).

#### 4.6.2 Intention to buy safe food

In this research, four main factors found to play a positive role in promoting consumers' intention to buy safe food in the survey are: "Perceived social norms", "Perceptions of food safety", "Perceptions of the price of safe food", and "Availability of safe food".



*“Perceived social norms”*

Perceived social norms factor belongs to cognitive and cultural factors, including the desires of oneself and family members, social trends on dietary supplement consumption, encouragement from family and friends, propaganda from the media, and advice from medical workers. Similar to the research of author Tran Thi Van Anh et al. on 423 consumers in Hanoi (Tran and Nguyen, 2021), it shows that subjective and social norms have the highest positive impact on purchasing organic food of households in Hanoi.

Sensory perception of safe food factor belongs to factors within the food, including visual sensations such as freshness, nice appearance, and characteristics of the food (more delicious, higher nutritional value than other products). Food perception is also the main perception of consumers when asked about the definition of safe food and is also the main factor affecting their choice of safe food. Our research also confirms that consumers' perception on food safety is an important driving force in their food choices (Isanovic et al., 2022b).

*“Perception of price of safe food”*

The perception of price of safe food factor includes the following: the amount of extra money paid to buy safe food is acceptable, the price of safe food is commensurate with the quality, safe food is not priced too much higher than other foods.

In group discussions in Hanoi, only one group mentioned "Price is not a big problem with safe vegetables" (male group, Bac Hong). Some studies have also demonstrated that affordability is an insignificant factor in vegetable purchases by low-income people in Hanoi (De Filippo et al., 2021; Wertheim-Heck et al., 2019). A consumer study in the 04 cities of Hanoi, Ho Chi Minh City, Lao Cai, and Son La in 2017 also shows that other factors affect people's decisions to buy food at different stores are price, quality, and safety.

*“Availability of safe food”*

The availability factor of safe food includes geographical availability, and accessibility (convenience, and ease). Low availability is also a factor affecting food consumption [60]. Home production has been proven to enable fruit, and vegetable consumption by improving affordability, and physical access (De Filippo et al., 2021).

*Most favorite communication channels about food safety of consumers*

**Participants heard governmental educational campaign about food safety:** 94.2% of consumers in Hanoi, and 91.8% of consumers in Ho Chi Minh City have heard about food safety information, with the rate being 90.3% for men, and 94.8% for women. There is no statistically significant difference by city or by gender ( $p > 0.05$ ).

**Frequency of Information Search:** In Hanoi, only 32.0% of the study participants regularly search for food safety information; similarly, in Ho Chi Minh City, this rate is 35.7%. These rates are 26.3% for men and 39.6% for women. When looking at age groups, consumers aged 45 - <60, and  $\geq 60$  years have a regular search rate of 43.8% and 48.0% respectively, which is higher than other age groups (the difference is statistically significant). This study shows that the older people are, the more often they search for information about food safety.

**Sources of Information:** In Hanoi, consumers primarily learn about food safety from television, radio; internet, social media, and healthcare professionals (television, radio: 80.9% men and 70.9% women; internet, social media: 63.2% men and 52.4% women; healthcare professionals: 30.9% men and 41.7% women). In Ho Chi Minh City, the sources of information are similar to those in Hanoi: Television, radio; Internet, social media, and healthcare professionals; specifically: 64.3% men and 80.2% women learn from television, radio sources; 64.3% men and 63.2% women learn from internet, social media; and 52.2% men and 57.5% women learn from healthcare professionals.

Among the sources of information, in Hanoi, consumers trust the information from mass media (television, radio) the most (over 50%), whereas in Ho Chi Minh City, they trust information from healthcare professionals the most (over 60%).

In general, consumers wish to receive information such as knowledge and skills in choosing safe food, knowledge and skills in safe food processing, ways to prevent food poisoning, and information about the origin of the food.

**Promotions, advertisements, and information on safe food are also “not widely available for traditional buyers”,** which is also a very notable factor in the process of low supply of information, and communication to consumers. Most research participants do not use modern shopping channels (online, websites), therefore, communication activities in the research area to directly reach people need to focus on traditional channel buyers (direct buyers). Communication activities should be held at places where people often buy food, such as markets (Ba Chieu market, Binh Thanh district, or Binh Dien market, Binh Chanh district) and supermarkets. Besides, the survey results also show that the use of residential Zalo groups is relatively common in Ward 15 and Tan Quy Tay commune. In addition, the scope of activities of residential groups is relatively narrow, leading to greater accessibility. We can take advantage of the communication channel via Zalo to reach the residential group leaders, who will later communicate directly with the people.

**Communication channels through residential groups are effective for consumers in Ho Chi Minh City.** Survey results also found that using residential Zalo groups is relatively common in Ward 15 and Tan Quy Tay commune. In addition, the scope of activities of residential groups is relatively narrow, leading to higher accessibility. In Ho Chi Minh City, Ward 15 has 72 residential groups, Tan Quy Tay commune has 73 residential groups (divided into four hamlets), and each residential group is in charge of 30 - 40 households, while in Hanoi, there is a residential group with a size of about 400 - 500 households. Thus, to transmit information about food safety, messages can be sent via Zalo groups to neighborhood leaders, who then communicate directly with people in Ho Chi Minh City. In addition, communication work requires coordination between the medical organization, the Neighborhood Front, the Head of the Neighborhood Group, and the Women's Union to disseminate during activities; then, the group leader will disseminate to each person.



**Box 7. Communication channels through residential groups, and women's union are effective channels for consumers in Ho Chi Minh City**

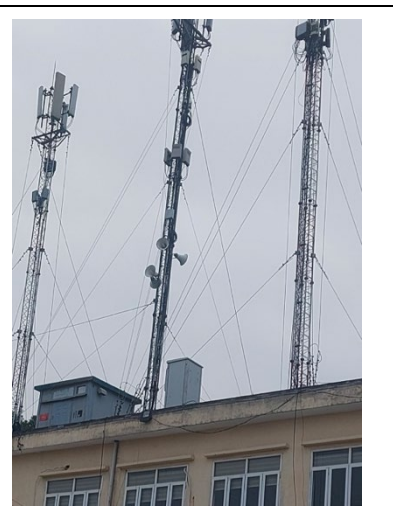
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For the women's union, it is divided into 4 residential groups with 30 members in each group. The core Zalo group has 30 people who are not leaders or vice leaders, but those who actively participate. Ward 15 zalo group: 399 people.

**To choose safe foods, consumers need to be provided with more information related to food safety.** For safe vegetables, consumers in both cities wish to receive information about the farm/location where the vegetables are grown, methods of cultivation, and information on packaging. For safe pork, consumers in Hanoi wish to receive information on the farm/location of pig farming, methods of pig farming, and whether the pork has antibiotic residues. In Ho Chi Minh City, consumers wish to receive information on the farm/location of pig farming, information about the manufacturer/brand, and expiration date. Regarding safe aquatic food, consumers wish to receive information on the farm/location where the aquatic food is farmed, information about the manufacturer/brand, and farming methods.

**Box 8. Desired communication channels in Bac Hong commune**

Regarding communication activities, especially for Bac Hong commune (Hanoi), communication through loudspeakers is mentioned as an effective communication channel because every village has loudspeakers that can broadcast with very loud sound. Currently, there is a main speaker cluster near the commune health station that is still in good working condition. In addition, communication channels such as the internet and social networks are encouraged because they are used more often by young people, and television is suggested for the elderly. In terms of Health channel, Health officials are still the official source of information that people trust. In terms of taking care of people's health, the health agencies often organize topical talks. In addition, the media channel through The Women's Union is also a good communication channel as it can be integrated into the Women's Union's activities, "it is organized twice a year, easy to integrate and implement" (female group in Bac Hong commune). In particular, food safety communication through school is a very good communication channel aimed at teachers and students. After receiving information, students can disseminate it to their parents and family members.



Survey results show that supervision, and inspection of food products sold on the market are being overloaded due to a lack of market management human resources while the number of small business households is enormous, thus the self-awareness of the importance of food safety and selling food with clear origin are very important. Food safety communication for vendors should be included in the project along with distributors, manufacturers, consumers, and parties related to the value chain.

#### 4.7 Gender elements in food safety

In the survey, the gender structure of consumers in Hanoi and Ho Chi Minh City is nearly equivalent, with women accounting for nearly 60%, and men accounting for more than 40%. Assessment of knowledge, attitudes about food safety, and level of confidence in self-knowledge of men and women is relatively similar. Both male and women consumers have a good understanding of the causes of food poisoning, health effects, and high-risk groups. At the same time, nearly 100% of women and men heard about food safety.

**The difference between the genders is clearly shown in food safety practices, women have a higher rate of correct practices than men in processing, and preserving food at home.** The survey results also show that **in more than 70% of households, the wives are primarily responsible for choosing food.** The results are like analytical research focusing on gender, and opportunities for upgrading in Vietnam's small-scale pig value chain, which also shows that 75% of pork buyers are women, and women also play a main role in deciding to buy pork for family consumption. They are responsible for processing and cooking at home. In addition, the tasks of buying and transporting pork from the market or preparing, processing, and cooking pork at home are sometimes shared between men and women in the family (Nguyen-Thi-Duong et al., 2022).

**Women's rich experiences are the main reason for the unoptimistic attitudes towards food safety.**

Our survey results also show that women, **who are also mainly responsible for choosing food for the family, have a negative attitude about food safety,** possibly because they have more experience related to unsafe food.

Nearly 60% of women think that preserving cooked food in the refrigerator is not good, this ratio is higher than for men. Consumers believe that keeping cooked food in the refrigerator will cause the food to deteriorate, which is not beneficial to health. In addition, cooked food stored in refrigerator will lose its delicious taste, and consumers do not often have the habit of storing food in the refrigerator for a long time.

When considering the gender aspect, according to the results of questionnaire-based survey, there is no difference in awareness of food safety risk factors. Both genders believe that the vegetables, pork, and aquatic food they are eating are safe, meaning their awareness of risk factors for food safety is equivalent. However, when exploring deeper data in group discussions about the level of trust and availability of safe foods on the market, differences were found between male and female groups.

The female group in Ward 15 believes that the availability of safe vegetables is low, mainly because *"The supermarket is far away, inconvenient, and offers just a few types of vegetables. It is more diverse and convenient at the market but does not ensure food safety. Bach Hoa Xanh is cheaper than supermarkets."* *"Vegetables are sprayed with pesticides a lot; their origin and growing methods are unknown. People are profit-driven so vegetables are not safe."*

Women not only participate in the growing and production process but also play a major role in going to the market, choosing, processing food, and taking care of family meals. Therefore, women have experience and a deeper understanding of food-related issues such as food

safety, safe food, and nutritious food than men do. In group discussions, female groups tend to raise concerns about food safety risks in the market more than male groups. Even with a supply of home-grown vegetables, doubts about safety were still mentioned in women's group discussions. *"The availability of safe vegetables in the market is only low because the quality of vegetables is not guaranteed, the main sources of vegetables in the market such as supermarkets are not 100% safe vegetables. At the market, there are vegetables from unknown origin, planted with stagnant water or contaminated ponds. Although home-grown vegetables are highly trusted by participants in Hanoi, the issue is that the quality of home-grown vegetables still depends on human consciousness, surrounding soil, and water environment. Pesticides might not be used, but the water source in the vegetable growing area is contaminated for various reasons (including the chemical packaging, pesticides from other households affecting the water source). (Female group, Minh Khai ward)*

The wives play an important role in buying and choosing food. Men participating in the group discussion all agreed that women have an important role in the family, especially buying food. "The women in the family are very important, they often go to the market to pick meat" (Male group, Ward 15).

*Women also realize that they feel responsible for preparing family meals, choosing, and buying food (Female group, Bac Hong commune). Personally, they see that women have a very important role to play, "picky eaters", "a heavy responsibility", "I just feel like that" "men have to take care of other things", "Each person has one role" (Female group, Ward 15).*

**Box 9.** *Gender-related differences between women, and men when shopping at traditional markets*

*In many contexts, women, and men play different roles in the food system. Gender-related differences are a fundamental aspect of shopping in traditional markets. Women often spend more time shopping than men. In addition, women are said to be more discerning about food quality and price negotiation (GAIN, 2021). At the same time, in traditional markets, the expectations that women have towards the vendors differ from those that men have. Women's expectations include strict food handling practices and evaluation of food quality ("Shaping Gender-Sensitive Approaches to Food Safety in Traditional Markets," n.d.).*

#### 4.8 Sociocultural factors in food safety

**Going to the traditional market is a joy of housewives.** Buying food also depends on the habits, experience, and culture level of the housewife. What's special for women in Ward 15 is that going to the market is considered a habit and a joy. "Specifically, Southern women are housewives, who like to go to the market every day. Going to the market every day is a joy." (Mrs. H, civil officer of Ward 15). In addition, traditional markets are places where prices are negotiable (Bell et al., 2021). Author Wertheim-Heck's research in Vietnam also confirms (Wertheim-Heck et al., 2014) price negotiation is an important interaction. Although the idea of bargaining is to reduce prices, it is also popular as an interactive, habitual, and social game. This may be the reason for Vietnamese women's habit of shopping at markets.

**Box 10.** *Going to the market is joy for middle-aged women on weekends*

Mr. N is a 24-year-old freelancer (repairing motorbikes, selling coffee) living in Tan Quy Tay commune. There are 2 generations in his family, including 4 people: his parents, his wife, and himself. His family income is relatively high. Mr. N's father is a small construction contractor. On weekdays, Mr. N, and his wife are responsible for buying food for the whole family. They often buy it at Bach Hoa Xanh store. The house has a vegetable garden and a fishpond, so Mr. N, and his wife often buy vegetables they don't have, pork, and shrimp at the supermarket. For Mr. N, pork at the supermarket is clean, and the price is not much different. He also buys shrimp from the shrimp farm with trucks transporting to traders, selling fresh and affordable shrimp. He also said that dead seafood is easier to detect than pork (for example, bloated shrimp).

On weekends, Mr. N's mother is in charge of buying food. According to Mr. N, she likes to buy food at Binh Dien wholesale market because she likes going to the market. There are many choices there, and she can buy food in large quantities to save a certain amount of money (*Interview with Mr. N, 24 years old, Tan Quy Tay commune*).

**Live aquatic products are safe aquatic products**

For people in Tan Quy Tay commune, according to the results of focus group discussions the safe place to buy aquatic products is the traditional markets, not the supermarkets, because people believe that live aquatic products are safe, so traditional markets with counters selling fresh aquatic food ensure high safety. This argument has been mentioned in author Saidi's research, when choosing to buy fish, the main attributes guiding consumer choice seem to be freshness and fish species, which are used to represent quality and sensory attributes (Saidi et al., 2022).

Consuming safe food is a legitimate need of everyone. While the price of safe food is often significantly higher than other foods, trading products of unknown origin will bring a large profit. *Foods produced for profit are with growth enhancers to help manufacturers harvest faster. Red tilapia only needs to be raised for 1 month to harvest; Watermelon is harvested after about 1 month and 5 days. Bitter melon and okra are often sprayed to stimulate growth. (Female, Ward 15). "Some foods left over from the previous day, such as vegetables, will be dipped in Urea the next day and then covered to become as fresh as new. Old meat and vegetables are often sold to industrial zones, so many people get cancer." (Female, ward 15).* However, the above information is mostly word of mouth, with no evidence to prove its authenticity. *This information provides quantitative evidence supporting many of the "word-of-mouth" suggestions that food safety and nutrition concerns are increasingly influencing consumer decision-making in Vietnam, and the role of risk communication is oriented towards word-of-mouth information.*

*The perception of food is how people define safe food, and is also the basis for choosing food. Experienced shoppers often rely on sensory factors to find safe food. Therefore, food safety from the consumer's perspective is closely linked to experience.*

***“Hot” pork is safe pork***

People choose pork mainly based on their senses. We use different senses to choose food, including looking at its color and texture, touching the pork to see if it is still hot (cold means frozen pork), whether it is still elastic or not, and smelling it to see if there is strange smell. In addition, we often choose to go to the market in the morning with the belief that this is the time to choose fresh, delicious foods. People believe that food left for a long time will easily spoil. The concept of "hot" pork is referred to as newly slaughtered pork, still hot and fresh. Consumers will touch it. Therefore, with some remaining pork parts from the previous day, the seller will pour the blood of the newly slaughtered pig on to make the pork hot.

## 5 CONCLUSION, AND RECOMMENDATIONS

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### 5.1 Conclusion

#### Knowledge, attitude, and practices on food safety of consumers in Hanoi and Ho Chi Minh City

- 04 food groups at high risk of food safety are: "Meat and processed meat products"; "Fresh or processed aquatic food", "Frozen foods", "Fresh fruits and vegetables".
- Most research participants in Hanoi and Ho Chi Minh City are correctly aware of the concept of food safety<sup>8</sup>.
- The leading causes of food contamination are unsafe processing, storage, and transportation, natural toxins, organic compounds, heavy metals and other chemicals, and microorganisms.
- People who are primarily responsible for choosing food for their families have more a negative attitude towards food safety than people who are not responsible for choosing safe food.
- Women consumers have a higher rate of correct practices than male consumers. Most research participants of both genders have the correct practice of using separate knives and cutting boards for raw and cooked foods.
- Consumers' level of trust, ability to pay, and demand for safe food.

#### Level of trust

- Participants in Hanoi and Ho Chi Minh City both believe that the vegetables and pork they are consuming are safe.
- Participants in Hanoi rate the safety level of vegetables higher but rate the safety level of pork lower than participants in Ho Chi Minh City.
- The majority of participants in Ho Chi Minh City believe that the aquatic food they are consuming is safe.
- For people in Ho Chi Minh City, supermarkets mean places that sell clean food (vegetables, and pork).
- Vegetables, pork, and aquatic food are often purchased at traditional markets by participants in Ho Chi Minh City.

#### Availability

- In Hanoi, 58.1% of consumers think that safe vegetables are available in their residential areas, while this rate in Ho Chi Minh City is 62.2% ( $p < 0.05$ ).
- In Hanoi, 54.7% of consumers think that safe pork is available, while this rate in Ho Chi Minh City is 69.4% ( $p < 0.05$ ).
- 58.2% of consumers in Ho Chi Minh City think that safe seafood is available ( $p > 0.05$ ).

#### Willingness to pay.

- Consumers are willing to pay 10-20% higher than current prices for safe vegetables, pork, and aquatic food.

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<sup>8</sup> Food safety means the assurance that food does not cause harm to human health, and life.

- Families with children, highly educated people, people with average and good knowledge about food safety, and people with higher incomes, are willing to pay more to buy safe pork than the other groups.
- Participants in Hanoi agreed to pay for safe pork at a smaller price increase level than those of Ho Chi Minh City.
- **Willingness to pay for safe aquatic food** is not affected by factors such as age, gender, education level, marital status, occupation, or having children in the family. The higher the income, the higher the willingness to pay more.

#### Safe food choices

- The 3 main factors that influence consumers' food choices from high to low are (1) perception of the product, (2) product information written on the packaging label, and (3) product experience.
- Product brands, and recommendations from relatives/friends are also factors that significantly influence the food choices of consumers in Hanoi. This rate is higher in Hanoi than in Ho Chi Minh City.
- Worrying about food adulteration is the biggest concern of consumers in Hanoi and Ho Chi Minh City when consuming safe foods.
- Advertising on mass media is not a factor that significantly influences consumers' food choices.

#### Intention to buy safe food.

Four main factors found to play a positive role in promoting consumers' intention to buy safe food in the survey are: "Perceived social norms", "Perceptions of food safety", "Perceptions of the price of safe food", and "Availability of safe food".

#### Most favorite communication channels about food safety of consumers in the study areas.

In Hanoi and Ho Chi Minh City, consumers know of information about food safety mainly from television, and radio, internet, social networks, and medical professionals. However, medical professionals, official mass media from the Government and the Ministry of Health are still the most trusted sources of information for participants in both areas according to the results of questionnaire-based interviews and group discussions.

## 5.2 Recommendations

"Assessing knowledge, attitudes, and behaviors on food safety of consumers in Hanoi, and Ho Chi Minh City" has three recommendation groups as follows:

#### **Recommendation 1. Improve food quality management at traditional markets.**

Although the participants do not trust the food provided from traditional markets, most research participants choose traditional markets as their main place to buy food. Therefore, to increase people's consumption of safe food, it is necessary to control food safety issues at traditional markets.

Proposed solutions:

- Strengthen inspection, control, and punishment activities towards the production, distribution, storage, transportation, and sellers to help food reach people truly safely.
- Strengthen inspection and examination of foods sold at traditional markets.



- Post prices publicly at food stalls, food needs to have documents proving origin or clear stamps/labels.

With this recommendation, the project can organize technical workshops and collect opinions from relevant parties, especially the Hanoi Food Safety Authority, Ho Chi Minh City Food Safety Authority, and the health Centers together with the interdisciplinary inspection teams on food safety at the commune/ward, Market Surveillance, along with businesses, farmers, distribution units, and retailers in the value chain. The workshop contents are about inspection and control activities with foods sold at traditional markets.

In addition, the project can support training activities to improve the capacity of relevant parties and deploy standard stall models at traditional markets. In addition, the project can support training activities to improve the capacity of relevant parties and deploy "standard stall" models at traditional markets, helping to position consumers to access safe food. "Standard stalls" include standards from the origin of the food, and standards in food safety practices of the seller, with certificates from the government, food safety board, or medical center.

The communication activities in this recommendation will be part of the project's overall communication campaigns. In addition, there should be a separate component for intervention to change food safety behavior for sellers, including market surveys, analyzing the current situation, organizing co-creation workshops, and implementing training classes. Training to improve the capacity of sellers, combining technical support, tools, if necessary, communication activities, and brand positioning of the campaign. In addition, SAFEGRO needs to support and organize connection activities, and create networks with retailers in the intervention area along with manufacturers and safe food suppliers.

#### **Recommendation 2. Increase the availability of safe food.**

Interventions to increase the availability of safe food include two aspects: *(1) increasing the availability of food in residential areas by developing a network of retail systems, (2) improve services to help safe food reach consumers conveniently, and easily.*

- Increase direct access between manufacturers, and distributors through developing level I, and level II networks in residential areas, and traditional markets. Through the women's association channel, it is important to link with businesses to support women starting businesses as level I, and level II agents, creating additional income.
- Place stalls selling clean food at, or around traditional markets is an excellent solution to help people have easier access to safe food. The Viet GAP meat counter model of the Vissan brand is a great model that can be replicated, requiring coordination of suppliers, communication, and advocacy for clean food suppliers, and towards the social responsibilities, which are to focus on increasing consumer trust, helping manufacturers increase revenue by improving consumer trust, and giving people the opportunity to consume safe food at more reasonable prices.
- Encourage businesses, and cooperatives that produce safe food to have booths to introduce, and sell products locally, especially at traditional markets.



In this recommendation, the project can organize connection activities and collect opinions from businesses and manufacturers with the consent of the Department of Agriculture and Rural Development and local authorities to support local people in participating in the agent network and encourage businesses to deploy clean food stall models at traditional markets. Specifically, we can mobilize the participation of Bac Hong safe vegetable cooperative and slaughterhouse in Bac Hong commune; or Phuoc An safe vegetable cooperative (Ho Chi Minh City), Vissan Company (Ho Chi Minh City); chains of clean food distribution stores such as Co.op Mart, Bach Hoa Xanh (Ho Chi Minh City), Winmart (Hanoi), and units of the value chain (according to the results of other components of the project). Specific activities may include organizing a connecting day between producers and consumers, a food safety contest with the support of local authorities, professional staff from the food safety department, the health centers, and clinics at the local.

### **Recommendation 3. Enhance consumer trust in safe food through communication campaigns.**

- Disseminate food safety information through reliable information channels such as the Ministry of Health, the government, the Ministry of Industry, and Trade. The information should be posted on national or local television programs. The program's communication messages sent to the mass media need to be clear to avoid misunderstandings, and loss of trust that can lead to serious consequences.
- Disseminate information through coordinated, and integrated activities with local departments, and organizations such as Ward Medical Station, Women's Union, residential group, and so on.
- Propagate information through traditional radio channels suitable for some localities that already have loudspeaker systems preferred by the residents, such as Bac Hong Commune, and Tan Quy Tay Commune.
- Disseminate information through modern channels such as sending to Zalo groups, Facebook. In addition, consumers want to have a website that will update all information about useful knowledge related to food safety, with videos about technical processes to produce safe food as well as information about places to buy safe food, safe food prices.
- In addition to improving consumer knowledge, it is necessary to improve the knowledge, responsibility, and conscience of producers, and food suppliers. It is necessary to strengthen communication interventions with sellers about processing, and display methods at the place of sale to ensure food safety, and food preservation if there is leftover food. Special focus is on communicating with traditional market sellers in the research area, because traditional markets are the main place where consumers buy food.
- Communication from food manufacturers, and distributors is also a very important channel for consumers. It is necessary to involve from food manufacturers, and distributors of safe food products along the value chain in the project's communication campaign. It is also essential to encourage the role of suppliers, distributors, and retailers in contributing to social responsibility, and long-term profits throughout the value chain.
- Strengthen communication activities about production, inspection process, and control the farming process so that people can feel secure about product quality.

### Recommended communication strategy by age group.

All subjects in the value chain have an important role in ensuring food safety, thus a communication strategy needs to be built to influence many parties, from those involved in production, transportation, processing, sellers, and consumers.

On the other hand, consumer-based communication is very important to deploy effective activities. Based on the results of this survey, it is necessary to organize co-creation workshops with audiences such as consumers, sellers, distributors, and manufacturers along the value chain to understand people's needs deeply and empower them to design their own communication strategies that suit them. The content of co-creation workshops may include developing campaign themes, identifying logos, key messages, and expected activities. These workshops will be tailored to each subject and ensure a gender-sensitive approach.

The information that is essential to be transmitted needs to be developed in a variety of document formats, and disseminated through numerous different channels, especially focusing on official ones of the government. It is also necessary to increase coverage, and diversity of content on food safety, especially prices, and places to buy safe food on existing programs.

Communication campaigns should focus on low-income people, who have insufficient knowledge about food safety, and do not have enough money to buy safe food.

Supervision, and inspection of food products sold on the market are overloaded due to lack of market surveillance personnel while the amount of small business households is numerous, therefore self-awareness of the importance of food safety, and selling safe food with clear origin is very important. Food safety communication for vendors should be included in the project along with distributors, manufacturers, consumers, and related parties of the value chain.

The project can coordinate with many related parties to organize a communication campaign on food safety. The communication campaign should coordinate wide-scale communication (mass communication) with the channels proposed in the results of the survey, and narrow-range communication localized in the project implementation areas. Combining both communication methods will bring greater efficiency due to the consensus of related parties in the food system. The issue of food safety is an issue that needs to be controlled from "farm to table", hence participation from all stages in the value chain is needed. For local media, the permission, and coordination of local authorities, and the participation of food safety experts are especially important. Consumer-based communication campaigns need to be applied from the campaign design step, by organizing co-creation workshops in each intervention area. Thus, people will be able to participate in all stages of campaign design, from developing main messages, logos, and slogans, to preferred materials, and communication activities. This ensures trust, participation, inspiration, and will the intervention effective. The participants are the core people to disseminate the messages, helping to spread, and maintain the project's activities.

In general, the results of the survey show that to increase safe food consumption, intervention programs need to focus on four main components: (1) Component 1: Strengthening social

mobilization to increase consumer demand for safe food (including enhancing communication about the benefits of safe food, creating demand for safe food; focused campaigns in many stages with the Participation of reputable experts from relevant ministries/sectors, and influential individuals leading public opinion (Key Opinion Leader - KOL) to create consumer trends on mass media channels); (2) Component 2 - Enhance communication about the characteristics, and prices of safe foods (higher nutritional value, more delicious, fresher, more beautiful; reasonable prices) (as recommendation 3 ); (3) Component 3 – Price stabilization intervention (coordination with authorities, and manufacturers); (4) Increase the availability of safe food (as recommended 1, and 2).

SAFEGRO needs to have a unified intervention strategy based on results from different surveys. At the same time, the project's intervention strategy should refer to or accompany activities at the national, and provincial/city levels towards implementing the National Action Plan to transform a transparent, responsible, and sustainable food system in Vietnam by 2030. From the results of the survey, it shows that when comparing the characteristics of information reception, needs, and communication channels about food safety commonly used as well as trust of consumers in Hanoi, and Ho Chi Minh City, there is a difference between the 18 - 45-year-old group and the 45 - 60-year-old group. Therefore, the research team proposes to build communication activities according to these two age groups instead of dividing them into 4 age groups as originally designed.

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## ANNEX 1 MESSAGES AND CHANNELS FOR COMMUNICATION STRATEGY

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### *Messages*

- Ensure that information about knowledge, and skills for choosing safe food preservation is widely propagated through the mass media, and local television stations; pay special attention to communication via the internet, and social networks (aged 18 - 45 years old).
- Ensure that information about knowledge, and skills for choosing safe food preservation is widely propagated through the mass media, and local television stations; pay special attention to radio channels, and radio systems in communes/wards; Newspapers/magazines that are widely popular or distributed for free in communes (People Newspaper, Tuoi Tre Newspaper, Health, and Life Newspaper, Vietnam Agriculture Newspaper) (aged above 45 years old).
- Strengthen communication about the origin of food, especially information channels about farms, vegetable growing locations, pork, and aquatic food farming.
- Communicate about antibiotic use in pig, and aquatic food farming.
- Communicate about the responsibility, and conscience of manufacturers.
- Strengthen communication about the transparency of food sources - a necessary condition to increase safe food consumption for consumers.
- Strengthen communication about safe food that meets "standards"
- Transparency in information, and origin is a key point to focus on to increase consumers' willingness to pay for safe food.

### *Media channels*

- Communicate through health, and agriculture programs on mass media: Vietnam Television (Đài truyền hình Việt Nam), and Voice of Viet Nam (Đài Tiếng nói Việt Nam).
  - Ho Chi Minh City: 24h or 60s program announcing prices of foods each day (HTV television) similar to Vinh Long television.
  - Hanoi City: VTV2 (Khoa học đời sống; Ngon và lành), VTC 14, VTC16, News, giờ vàng sức khỏe (broadcasted after news; giờ vàng giải trí).
  - Build additional categories: safe vegetables, safe food. How to have safe vegetables. In the program, there will be experts sharing information.
  - Develop media reports on livestock farming processes, and techniques, market prices of clean foods, and reputable selling locations.
- Organize communication sessions for medical staff, which can be coordinated with communication activities of residential groups, women's unions, and youth unions.
- Build a separate channel on food safety. Design communication materials in the form of flyers or short videos, post on Facebook/You tube/Tiktok. Advertising can be done on social networks to increase accessibility. Introduce safe vegetable, and pork production processes, slaughtering, and packaging processes (in conjunction with the manufacturers).
- Develop segments on radio programs about food safety: Coordinated propaganda program on food safety in the agricultural sector. Communicate on the programs Thực khách thông thái, Sức khỏe cộng đồng với Cùng bạn sống khỏe trên VOV2- Đài Tiếng nói Việt Nam.

- Communicate to the person primarily responsible for food choices in the family (wife/mother, main homemaker) – these are good communicators – continue to communicate to others in the family.
- Develop software to automatically notify food safety information on the phone: The software displays information about food safety, and safe food such as messages automatically displayed on Zalo, provided daily information about safe food items, daily prices, and places of sale; knowledge about choosing safe food, and practicing food safety.
- Collaborate with manufacturers to create widely disseminated information channels on how to grow vegetables, pork, and aquatic food.
- Provide information about manufacturers, and trusted brands that provide safe vegetables, pork, and aquatic food.
- In particular, food safety communication through school channels is a very good communication channel aimed at teachers, and students. After receiving information, students can propagate to their parents, and family members.

## APPENDIX 2: CASE INTERVIEWS

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**Case 1:** *“Other people, and I are willing to pay 20-30% more for vegetables, and 20% more to buy pork than the market price, but it must be immaculate food”.*

My name is Nguyen Thi Loc, 63 years old, completed grade 6/10, working as a farmer. Currently, my family lives in Bac Hong commune, Dong Anh, Hanoi. My family has six people, including three children. My daughter-in-law, and I often go to the market. The current food safety situation is not safe; pigs eat stork bran, which is a growth, and weight gain substance. Vegetables that have just been sprayed, and fertilized with nitrogen have not been quarantined for enough time, and are already cut, and sold. I am apprehensive because eating unsafe food will cause many diseases. Vegetables, and pork are currently unavailable; however, vegetables are more available because a part of them is self-grown, a claim is bought from neighbors, and pork is not in the same situation. Our family needs to use clean vegetables, and clean meat, but only trust 50% because we don't see with our own eyes how people grow it; we don't know how harmful it can be. Places that sell safe vegetables, and pork are often supermarkets, but those are far from where we live, so it's difficult, and inconvenient for us to go to buy them. Besides, I don't know if that item is clean or not. Other people, and I are willing to pay 20-30% more for vegetables, and 20% more to buy pork than the market price, but it must be immaculate food. In my opinion, for us to believe in safe food, the product needs to have a test certificate to be a safe product. In addition, it is necessary to communicate information about food safety to people so that we can understand the importance of safe food.

**Case 2:** *There should be quality-assured mobile vehicles specializing in selling clean foods, such as clean vegetables, and clean meat, sold in residential areas hourly to help people quickly access clean, safe food.*

My name is Le Thi Dieu, 67 years old, living in Ward 15, Binh Thanh District, Ho Chi Minh City. My current occupation is participating in the Front, Women's Union, Population, Policy, Education Promotion, and People's Group of Ward 15. I live with my children, including four children, and five adults. The locations selling safe vegetables, and pork are far from where I live, all the way to Ba Chieu market, and safe seafood is near my house. I'm very concerned about the food safety situation. Some foods sold poorly, like vegetables, will be dipped in Urea the next day, and then covered; the vegetables will be as fresh as new. Old meat, and old vegetables are often sold to industrial zones, so many people get cancer. For-profit foods are produced with growth, and weight gain substances to help manufacturers harvest faster; for example, according to close traders, red tilapia only needs to be raised for one month to harvest; Watermelon is harvested after about one month, and five days. Bitter melon, and okra are often sprayed to stimulate growth. Some stores selling clean food were very reputable initially, but after a while, they mixed unsafe food, such as poor-quality meat, and vegetables, thereby losing credibility with the public. In the past, vegetables at Metro supermarket were kept for 7-10 days, and were still good, but now they are rotten after two days. Regarding communication activities, I think the following are necessary:

- Integrate with the Front of the neighborhood, the leader of the Neighborhood Group, and the Women's Union to propagate in activities. From those meetings, the group leader will propagate to each citizen.
- Safety inspection board officers must be trained to inspect, and punish establishments that violate food safety laws. These officials must strengthen inspection, and control from production, distribution, storage, transportation, and sellers.
- Departments, and organizations should coordinate with manufacturers, and distributors to create favorable conditions for people to access safe food easily. The solution is to have quality-assured mobile vehicles specializing in selling clean foods, such as clean vegetables, and clean meat, sold in residential areas on an hourly basis to help people quickly access clean, safe food. Mobile vehicles will help create jobs. Because they are portable, they do not cost money, and reduce staff costs, so the selling price of food from mobile vehicles is better, and the food quality is guaranteed.
- The propaganda content I want is how to choose safe vegetables, meat, and seafood, and the origin of safe vegetables.

**Case 3:** *Organize members to go on field trips to farms that grow safe food*

**Interview with Ms. Chu Thi Nguyet Hang, 48 years old. Vice Chairman of the Women's Union of Minh Khai Ward, Chairman of the Ward Red Cross Association.**

**What needs to be done so that people in the area can access, and consume more safe food?**

"Price is the main issue for people to buy safe food: buying on promotion (people's psychology). The state supports prices. The original import price is not high. High prices due to taxes: reduce taxes to 0%, no taxes."

**Solution:** include annual emulation standards, encourage relatives, and members - continue to campaign - understand - then trust, and practice. Suppliers have a close relationship with the association: posting information to the group, prices, promotions. Residents, and registered members - the women's association is responsible for purchasing - receive a 10% discount.

Organize members to go on field trips to farms that grow safe food

**Case 4:** *"I have to take a risk because I don't know how to buy it. I mainly look at the stamp, and certificate."*

Interview with Mr. Nguyen Van Vinh, male, 67 years old, Bac Hong commune.

The average income of Mr. Vinh's family is 8 million/month. He spends 200,000 VND/month on buying vegetables because he can grow them at home. His family eat an average of 200 grams of pork a day, spending 600,000 VND a month. According to Mr. Vinh, the current spending on vegetables, and pork is reasonable.

His wife is the main person responsible for going to the market, and buying food for the whole family. She is the main housewife, grows, and buys vegetables. Mr. Vinh believes in the ability of his wife, she has time, and experience in choosing food.

According to Mr. Vinh, safe vegetables are vegetables without pesticides, not rancid, not wilted, tasty, not too big, not too small. Safe pork is pork that must be fresh to the touch, freshly slaughtered, and bought immediately, not left out for a long time - causing loss of quality.

Mr. Vinh rates 30% of food in general as unsafe. Because in reality, there are fraudulent sales, the sellers can buy from unsafe, and unclear sources to sell.

Vegetables: 40% are unsafe: when home-grown vegetables run out, they can buy unsafe foods outside. To buy safe vegetables: buy from acquaintances, be self-supplied, ask the sellers if the medicine is sprayed periodically or not.

Meat: 40% is unsafe: the pork part is marked or unmarked, has a veterinary mark, is bought freely outside, no one can determine whether it has a mark or not. When you go directly to the slaughterhouse to buy, the seller must tell the truth, and the pork must be fresh, and delicious. It is relatively difficult, because consumers will not be able to go to the market to buy. They must accept, and ask for inspection, and veterinary. His wish: When bringing pork to the market to sell, they must have a veterinarian check them again: ask about the markings, ask about the origin.

He wants to buy safe food because it ensures health, health comes first, and ensures long-term daily work. To buy safe food, he needs to find someone he knows to buy it, ask about the correct planting time for spraying, and fertilizing it. He also wonders, "I don't know - I'm not sure if it's safe or not."

He said, "I have to take a risk because I don't know how to buy it. I mainly look at the stamp, and certificate."

Willingness to pay: Safe pork: general price, if it goes up, it all goes up on the market. For rural, and low-income people, they cannot accept the high price. For workers, it is normal. About 10 - 20% higher is fine. Similar to vegetables: 10 - 20% higher than usual.

According to him, safe food has higher nutritional value than other foods.

**Case 5: "Safe foods should be sold in wet markets. If safe foods are only sold in supermarkets, it will be difficult to access. For Vietnamese people, convenience is key."**

Interview with Ms. Nguyen Thi Hoa, female, 53 years old, secretary of Ward 15.

Secretary of Ward 15 from 2021 - 2023, previously Secretary of Ward 13.

**Assessment of food safety in general:** good, recently at schools, there have been no incidents of poisoning. There are inspection, and storage according to regulations.

**Local sources of food supply:** There is no market in the ward: only retail sales. – No guarantee of food safety. People often buy at Ba Chieu market (in Ward 1, center of Binh Thanh district, about 1.1 km from Ward 15's Medical Station).

**Concerned about food safety:** People are concerned about food safety, focusing on health - a diet of food safety, and clean food.

Government's policy, and management: there are inspections, and reminders, but not been able to manage small businesses.

**Wish for safe food:**

Consumers: hope that they will have foods with clear origins in the market. Have knowledge, and desire to have widespread propaganda content... should have information about reputable establishments, and enterprises.

Management from input to output: strengthen coordination, and inspection work.

Educate people about the best food choices.

**Propaganda through which channels:** mainly medical advice, district level with economic department, Ward's present management. The ward communicates through Zalo groups of residential groups, Ward's Facebook pages, health stations, youth unions - many sources... neighborhood group meetings.

**Difficulties:** Official information, and documents are lacking: leaflets, flyers... Difficulties in the current period, according to local authorities - superior estimates - proposals... lack of

initiative. Construction plan from September last year. From 2021. – urban government pilot, there are many slow, and inadequacy problems.

**Budget:** Only approved about 50% of the plan. There is little food safety propaganda, mainly general propaganda? Propaganda spending is large, the only focus is on spending on rapporteurs. Normally, there is no budget, but it is still done. There are regulations, but if the spending is too much, it will affect other items.

**Difficulties:** There are few safe products on the market: mainly in supermarkets, not many in the market. Supermarkets: There was only one before, but it didn't last long.

**Area, economy:** small area, the majority of the working population has little ability to buy clean food, and ensure food hygiene, and safety. Most people have difficulty in an economic situation... "People know it, but their economy situation doesn't allow it." "For now, you'll be full, but your health will come later."

"Small, poor, many immigrants, most of them buy, and sell on the street... Mainly the frontage, canals,...". In the past, rent was cheap,...

**Short-term interventions:** manufacturers have policies to support, and create favorable conditions... Open more food safety stores, closer, more convenient to buy...

Ba Chieu Market - many stores - many products in a residential community.

There are 1 - 2 stores at Ba Chieu market: Ward 1, 12, 14, 15. Meeting the needs... Around the market, there is a Coop Food supermarket - private... Ha Hien (Meat).

Deep roots with state management from production to consumption to give people peace of mind, with competitive prices, people will make better choices. Everyone wants to eat clean, maintain their health, they have to make choices - there should be policies to support people in need to get safe food. Many policies - synchronized with propaganda, and state work.

People are concerned about food safety. "That is my life now. When I have money, I'll figure it out."

Clean products are few, and cannot meet people's needs.

It should not be difficult at the market or supermarket - convenience is key for Vietnamese people.

Southern women are typically housewives, and like to go to the market every day because it is fun.

**Case 6:** *"Linking safe food consumption with income increase, increasing the availability of safe food on the local market"*

Interview with Ms. Nguyen Thi Thanh Truc, female, 37 years old, president of the Women's Union of Ward 15

President of the Women's Union: 4 years.

**Comments on food safety in general::**

**Sources of supply of vegetables, pork, seafood:** Buy at supermarkets with a food safety inspection, some people buy at spontaneous markets. Buy at larger supermarkets. There is a Coop store, Circle K: selling household appliances, dumplings, and convenience foods. The ward is divided into 4 areas: area 1, area 2, area 3, area 4. In different areas, people will often shop at different locations, usually near their homes. There is spontaneous trade: the main source. People in Areas 3, and 4 are usually bought from supermarkets (near supermarkets). Coopmark supermarket Van Khanh (Ward 25), Chu Van An (Ward 12), and Ha Hien food store (outside Ba Chieu market).



**The association's activities related to food safety issues:** propaganda about food safety periodically 2 propaganda events/year; If there is an unexpected event on food safety, propaganda based on information from infographics made by higher-level organizations or there is reasonable information online will be sent for inquiry.

**People's concerns about food safety:** People are worried about food safety with food purchased from spontaneous markets, and roadside markets. People are concerned about food safety issues, and want food safety inspection, pay attention to the additives, and banned substances that will cause illness. Is the meat, and fish stored in the market marinated with anything to keep it fresh for a long time? People's wishes: more people will use safe, clean products. Desire to check, and announce guaranteed food safety establishments – people can choose.

**Local propaganda channels:**

Which channel will it be announced on: TV, social networks, Face book (Ward 15 Women's Association), has 1.2k friends.

Each Zalo group has an association: 4 neighborhoods: each neighborhood has 30 members, core Zalo group: 30 people, not leaders or vice leaders, but those who actively participate. Ward 15's Zalo group: 399 people.

Media content: distinguishing between clean food, and dirty food, how to choose food to ensure freshness...

**Barriers to using safe food:** Difficulties to use safe food, unaware of which establishments ensure food safety. When advertising on social networks, every establishment saying good things about themselves. Wishes to announce the list, and publicly listed prices. Prices are difficult, the state intervenes to stabilize market prices, because recently the state increased the base salary, prices have already gone up. Are willing to buy safe foods.

**People's level of trust in food safety:** 50/50 trust should be overcome by soaking in salt water, and removing toxic substances as additional support.

**Increasing trust:** how to educate people about safe, and unsafe food.

**The role of the Women's Union in propagating food safety:** introducing a list of safe foods, and propagating food safety.

**Points that need support:** contact an in-depth food safety reporter - widely propagate, go deeper, often presently the reporter is introduced by the ward level, placed in contact, and holds many jobs. There are promotions, and stimulus programs to increase people's consumption, regularly contacting Saigon coop food to sell products at stable prices, clean, high quality - bringing access to people - need to open more.

Compared to the current activities of the Women's Union, **solutions to increase people's use of safe food:** Food safety, safe food: linking safe food consumption with income increase, increasing the availability of safe food on the market: linking with existing businesses, women startups - level I, and level II agents - who need to do more business, and create more income. Currently, there is a program linking Ba Huan clean eggs (from 2022 - Binh Thanh District Women's Union, 3 females registered...).

**Case 7:** *At supermarkets, pork has a moderate trust level, and the price of pork is not much different compared to the wet markets.*

Interview with Pham Hoang Nghia, male, 24 years old, Tan Quy Tay commune.

Married: still living with parents. 4 persons

Male. Occupation: motorbike repair, selling coffee, milk tea, fruit tea.

Income: 70,000,000 VND/month. Dad: works as a small construction contractor.

Household spending: eat together, collectively buy groceries. Usually, Mr. Nghia, and his wife do the shopping. Spending money on food: eat dinner together, (parents eat breakfast + dinner at home, eat lunch outside).

Seafood: Shrimp: 150,000 VND/day.

Vegetables: buy little, grow some at home. Weekly grocery shopping at supermarkets: nearby, seemingly safe; not very trustful (worked at BigC supermarket for over half a year), mini supermarkets: Bach Hoa Xanh, Coopmart, Satra food. Vegetables sold daily, not guaranteed quality. More variety in types than growing at home.

Grow at home: water spinach, Malabar spinach, okra, eggplant, ... (15-20 types, the garden is about 4,000 m<sup>2</sup>).

Weekend: His mom usually goes to the market. She often buys from Binh Dien wholesale market (6 km away): for those free on weekends, budget-conscious, buy a large amount of vegetables...

At supermarkets, pork has a moderate trust level, and the price of pork is not much different compared to the wet markets.

Many retail locations: Binh Chanh market, Hung Long market.

Seafood: Fish raised in ponds. Still buy in supermarket, have shrimp ponds, trucks bypass middlemen, one truck stays to sell: fresh, cheap. Dead seafood: shrimp are bloated - easier to detect than pork.

**Public concern about food safety:**

Difficulties: Knowledge to recognize safe food. The food market is not safe, too many "real, and fake". Due to lack of strict management. High prices.

Solution: Authorities should tighten up - they need strict, and strong control. "Only learn from experience if something happens."

Should disseminate, and communicate to local people about food safety: weeks, holidays, festivals. It needs to be widely disseminated 1-2 times/year for enough understanding. Fanpage of the Commune Committee (not updated). Official channels: reputable newspapers (electronic newspapers: workers, youth, law, people's newspapers, national defense, and security).

Mid-Autumn Festival: organize games, before organizing - combine communication. Children, youth, adults.

Media: commune cultural committee, radio broadcasting, running banners. Youth Union: Many departments.

**Case 8: Safety control in the food value chain in Binh Chanh district, Ho Chi Minh City**

Ms. Nguyen Thi Thuy Nga, 40 years old, is a food safety department officer at Binh Chanh District Medical Center.

She has participated in many different jobs, including food safety activities. Currently, food safety activities often do not have funding to implement.

For communication activities, a plan will be developed, and the district health center will be asked for funding. Currently, there is no communication plan planned for 2023. In 2022, the district medical center will organize several communication classes, and hang banners. The program is held twice a year with a budget of about 15-20 million/program.

**Regular activities on food safety control are as follows:**

Inspect food service units: periodically inspect once a year or unexpectedly if there is a lawsuit or case report. The inspection team will check the sanitary conditions of both people, and facilities. Reality shows that the failure rate to meet standards is not much, mainly due to a lack of some tools.

**Training on food safety in schools:** The Department of Public Health, Department of Disease Control, and Food Safety provides training for school health officials at schools at the beginning of the school year for a duration of 1 morning. At the midpoint of the school year, we will grade whether food safety work is done well or not. Communication content includes nutrition, and handling of food poisoning cases. Organizing communication for parents, and students, this training is supported by the school because this is one of the criteria for grading competitions.

**Training street food vendors on food safety.**

**Training consumers on food safety knowledge:** this activity will be transferred to the commune level. Commune officials invite consumers to listen, and the commune will pay for a reporter. The content proposed by the health center district includes hazards, and toxins in food, and recommends not using banned substances. They have difficulty absorbing knowledge, and only communicate through images. Slides from the food safety department, knowledge from the Ministry of Health, and the Department.

**Food safety management system**

The city's food safety department (including industry, agriculture, and trade) under the city committee will train the specialized food safety centers that the department, and the committee will manage. If there is a complaint, the board will check it out. The medical center will inspect food service facilities. At the commune level, establishments providing less than supplier 50 meals will be managed; The district will handle suppliers less than <200 places; The Food Safety Committee will manage over 200 meals. Provinces, districts, and communes have management lists: each commune has 20 units. If there is a violation, the commune will be fined <5 million for a second inspection or warning; district > 5 million.

**The board manages the value chain of vegetables, and pork, often applied to schools.** Chain activities including raw materials for production - distribution - consumers. Products from the chain have high prices, so they are for people with high income, and education levels, while low-income consumers will have few conditions.

People's concerns about food safety: 1. People know that they care about their health, so they have enough money to use it. In contrast, low-income people do not have the conditions to use safe food because of awareness, and economics.

Forms of communication for people to access safe food: Training, and communication in coordination with sales establishments such as Bach Hoa Xanh so that they understand clean, delicious, certified, and reasonably priced vegetable food. Let people spread the word about the health effects of clean vegetables. Communication programs must be widespread, noting that changing the word discount to hourly subsidy will attract people's participation. It is possible to organize sales during happy hours with values so that people will get used to the supermarket's communication activities, thus creating shopping habits.

Safe food reaches people more deeply: sellers do not have low prices; meat passes veterinary testing. The supermarket has Vissan. KFC fried chicken is entirely imported. Production facilities such as vermicelli will register, and commit to traceability, and sanctions.

Media target: Meal service quality is closely monitored by the education department, and media instructions should be followed. So they choose better quality for these units.

Schools have nutrition software that calculates student meals, which are then transferred to suppliers. Public schools will be more severe in quantity, and quality of foods. Private schools will not be as strict about food choices, and food safety as public schools.

Preschools have group, and group classes for parents, and workers, and the quality of meals is often poor. Binh Chanh district has 16 communes, including two new economic communes of Vinh Loc A, B, and Binh Hung, with many industrial parks, and a population of 28,000.

**Case 9: Scope of food safety control in Tan Quy Tay commune, Binh Chanh District, Ho Chi Minh City**

Mr. Vo Quoc Huy, born in 1977, is an officer in charge of food safety at the Tan Quy Tay commune health station.

The station has ten people, including nine people performing professional work.

**Food safety status:**

In the commune, there is an interdisciplinary food safety inspection team (about ten people), including two health station officials, and meetings are held quarterly.

Regarding decentralization, the station manages 73 shops, street foods, and ten collective kitchens. The frequency of inspection of restaurants is once a year. If there is a food safety violation, a warning is usually issued. Inspection participants are trained annually.

**Food origin:** he advises shopkeepers to keep a diary of purchases.

**School kitchens:** Food in schools is often more controlled for food safety, has standard ingredients, and has a traceable origin. Food safety communication activities for people: integrated communication, according to the meeting schedule of hamlet leaders. Propaganda for about 15 minutes about food safety. 73 residential groups (each residential group will manage 30 households), and 43 hamlet residents.

**Food poisoning:** There has been no case of food poisoning for 6 years.

**Safe food:** there is a local market, and people know how to choose. The meat originates mainly from the Binh Dien market, managed by the city veterinarian.