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Factors Affecting Green Food Purchase Intention in Ho Chi Minh City, Vietnam

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Abstract:

This study was carried out with four basic objectives: Identification of factors influencing consumer's preference for safe vegetables; Measuring the impact of different factors on the consumer's intention to choose safe vegetables; Comparison of the impact of factors on consumers' buying intentions of safe vegetables in Ho Chi Minh City and Dong Nai and Give some suggestions and administrative implications. Through a two-stage preliminary study and formal research with sample data, 414 samples were collected from consumers who used safe vegetables in Ho Chi Minh City and Dong Nai for 3 years or more. The author used SPSS20 to test the scale using the Cronbach's Alpha coefficient, exploratory factor analysis (EFA), AMOS20 software for CFA, Linear Structural Analysis (SEM), Bootstrap Test, and Multivariate Analysis. Based on the results of the analysis, there are five factors that affect the consumer's buying intention in the selection of safe vegetables. They are: subjective norm, health consciousness, the masses media, concern over food safety, and trust in labeling. Among these five factors, the strongest influence is the masses media (Sig = 0.000, $\beta = 0.317$), second is health consciousness (Sig = 0.000, $\beta = 0.279$). At the same time, the impact of factors on the intention of buying vegetables safely between consumers in Dong Nai and Ho Chi Minh City is different. In Dong Nai, the factor of concern about food safety has no effect on intention. In Ho Chi Minh City, the factor of trust in labeling has no effect on the intention to buy safe vegetables. In addition, the multi-group analysis showed no difference in intention to purchase safe vegetables among gender groups, age, and income.

Keywords: Green food, purchase intention, SEM, Ho Chi Minh City, Vietnam

1. Introduction

Food is an essential contributor to body health. Today, with the development of the internet, and social networks, we daily access information quickly from everywhere. Customers can easily find and access sources of information related to dirty food in the market, causing consumers to lose trust and be wary while choosing and buying food for their families. Dirty food can initially cause immediate reactions such as poisoning, digestive disorders, and diarrhoea while going into the body. It can cause chronic diseases, genetic mutations, cancer, etc. Consumers are exposed to a wide range of health risks associated with food, for example, zoonotic or phytotoxic factors, pesticides, and other chemical residues (Röhr et al., 2005). Consumers are concerned about food safety today, believing that food is safe without pesticides, chemical fertilizer residues, and pollutants (Hsu et al., 2016). At the same time, based on precautionary principles choosing safe foods seems like a reasonable decision. As consumers have become highly concerned about the safety of the conventional food system, safe food has emerged as an on-demand product, the category that consumers have sought as an alternative (Kulikovski et al., 2011). According to Chen (2009), safe foods generally contain fewer harmful additives, have more primary and secondary nutrients than conventional foods, and do not carry additional risks of food poisoning. Vegetables and fruits are consumers' favorite foods in their daily meals; however, choosing safe and healthy vegetables and fruits is a problem that is especially important to consumers and businesses' special interests (Hai Ha, 2016). Currently, vegetables and fruits of poor quality with unclear origin are rampant on the market. At the same time, information about the status of dirty food on the market is quite common, and food poisoning occurs. Therefore, research on the safe food choices of consumers, particularly the choice of safe food, is selected for our research. In previous studies, most of the authors mentioned the safe food consumption behavior of the population in urban areas, such as Huong (2014), Tuan (2011), and Kulikovski et al. (2011). In addition, Dong Nai is known as the capital of safe vegetables, with many units granted safety certificates. However, the local production of safe vegetables is mainly exported to other provinces or abroad. At the same time, very few shops sell safe vegetables in the locality to serve local consumers and tourists. Dong Nai, where most of the population lives in the countryside, Ho Chi Minh City is an urban population; so it is necessary to study the behavior of choosing safe food in these two localities to contribute to the identification of safe food consumption behavior with different socio-economic conditions, cultural and lifestyle characteristics.

The main objective of this study is to find out the factors affecting the intention to choose safe food of consumers, comparing the market in Ho Chi Minh City (100% of the population lives in urban areas) and the market in Dong Nai province (2/3 of the population lives in rural areas) to help businesses and organizations make the right decisions about

marketing strategies for safe food. In addition, we also try to find out the difference in awareness of safe food among the markets of Ho Chi Minh City, a locality with a large consumption source of safe food, and Dong Nai province, which can supply and produce safe food. Our research is presented below:

Chapter 1 is 'Overview of the topic'. Chapter 2 is the 'Theoretical foundations and research models'. It presents related concepts, outlines the theory of safe food, and points out the factors affecting the intention of consumers to choose safe vegetables. Chapter 3 is 'Research methodology and design'. It presents the research process, designing the scale, evaluating the scale, and testing the appropriateness of the research model. Chapter 4, which is 'Research results', analyzes the data, discusses the results, and presents the research results of the topic in detail. Finally, chapter 5 is 'Conclusion and recommendation'.

2. Theoretical Background and Proposed Research Model

2.1. Theoretical Background

According to the Law on Food Safety dated June 17, 2010, safe food is guaranteed not to cause harm to human health and life. Safe food must ensure all standards of no residues of pesticides, banned or exceeded antibiotic chemicals, no impurities such as metal, glass, complex objects, agent biological pathogens, have a clear origin, and are tested and certified for food safety. Ritson and Mai (1998) proved that food safety can be defined as broader or narrower. In a narrow sense, food safety can be defined as the downside of food hazards, such as the possibility of not contracting a disease when a particular food is consumed. In a broader sense, safe food can also be seen as a food-based nutrient, and many concerns about the properties of foods are unfamiliar, such as many European consumers worry about genetically modified foods. According to Henson and Traill (1993), food safety is the inverse of the probabilities of food risks, free from some danger from food consumption. Safe vegetables and fruits are safe foods, so they must also ensure that they are not harmful to human health and life and meet standards such as no residues of pesticides, no impurities, the causative agent of the disease, and clear origin. VietGAP for safe, fresh vegetables and fruits based on ASEAN GAP, EUREPGAP/GLOBALGAP, and FRESHCARE to create favorable conditions for Vietnamese vegetables and fruits to participate in ASEAN and world market's agricultural production sustainability.

2.2. Customer's Buying Behavior

Consumer behavior is the totality of actions consumers exhibit in exchanging products, including investigating, purchasing, using, evaluating, and spending on goods and services to satisfy their needs. To satisfy their needs, consumers can also consider consumer behavior as to how they will make decisions to use their assets (money, time, and effort related to purchasing and using goods and services to satisfy individual needs). "Factors affecting consumer behavior are grouped into four main groups: cultural, and intrinsic social factors, personal, and psychological factors" (Tran Minh Dao, 2014). In order to have a transaction, the buyer must go through a process of 5 stages: identifying needs, finding information search, evaluating alternatives, purchasing decision, and post-purchase behavior. Rezvani et al. (2012) argue that intention is the motivation of people to think to perform their behavior, and many factors impact consumers' purchase intention. According to Ajzen (1991), intentions are assumed to capture motivational factors influencing behavior. Intentions indicate how people have tried to be willing to try and have already tried and planned how much effort should be made to perform the behavior.

2.3. Consumer Behavior Research Models

2.3.1. Theory of Reasoned Action- TRA

Over the past several decades, other research has been conducted by Ajzen and Fishbein (1980; Fishbein & Ajzen, 1975) on rational action theory. Behavior is determined by the intention to perform the behavior. Two main factors that determine behavior are an individual or attitudinal factor and social factors. The first component is a person's attitude towards a particular behavior and the second component is subjective norms that include a person's perception of particular influential individuals or reference groups that they think they should be doing something. Subjective standards are the consumer's beliefs about what the reference thinks he or she should do and the incentive to comply with these references. The importance of attitudes and subjective norms for determining intention will vary with consumers' behavior, situation, and individual differences (Vallerand et al., 1992).

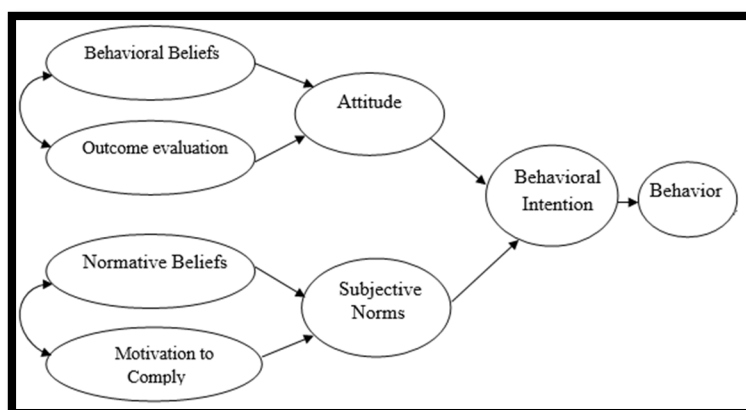


Figure 1: Theory of Reasoned Action (Vallerand et al., 1992)

2.3.2. Theory of Planned Behavior – TPB

The theory of planned behavior (TPB) is an extension of the theory of rational action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), which, like the original theory of rational action, is central to this theory. The theory of intended behavior is an individual's intention to perform a particular behavior. The intention is assumed to include motivation-related factors that can influence behavior; the stronger the intention to perform a behavior, the higher the likelihood that the behavior will be performed (Ajzen, 1991).

Intentions to perform different behaviors can be accurately predicted through attitudes toward behaviors, subjective norms, and perceived behavioral control. These intentions and perceived behavioral control would account for differences in actual behavior (Ajzen, 1991). Perceived behavioral control plays an essential role in the theory of intended behavior. The theory of intended behavior differs from the theory of rational action in the addition of perceived behavioral control; Perceived behavioral control relates to people's perception of the ease or difficulty of performing a behavior (Ajzen, 1991).

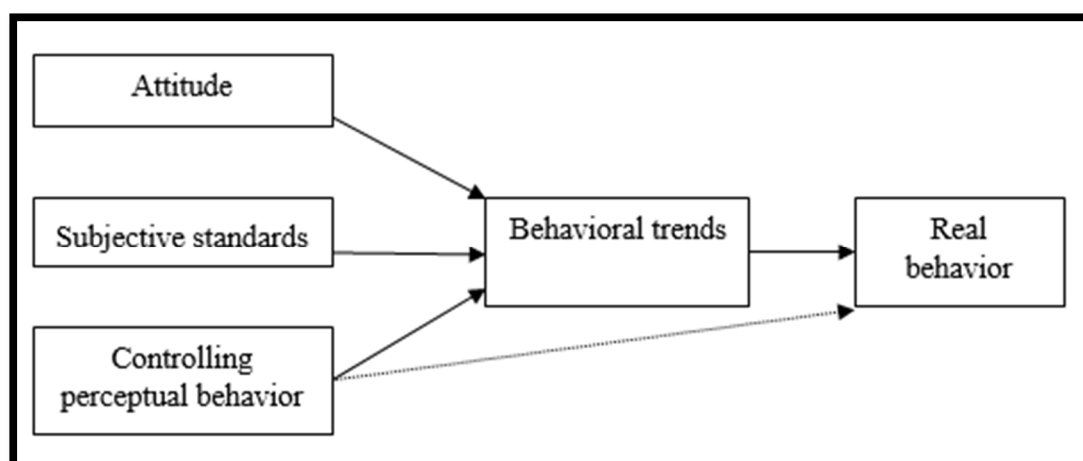


Figure 2: Theory of Planned Behavior (Ajzen, 1991)

2.4. Related Research of Factors Affecting the Trend of Safe Food Consumption

2.4.1. Purchase Intention for Organic Food in Taiwan Analysis Research

The study by Hsu et al. (2016) was conducted with 252 consumers in Taiwan to investigate the effects of natural content, food safety concerns, health consciousness, and subjective knowledge attitude towards organic food and purchase intention. Research results show that food safety concerns and subjective knowledge positively impact attitude and intention to buy organic food, and natural content positively impacts attitude towards organic food. Furthermore, health consciousness and attitudes towards organic food significantly and positively affect purchase intention. This study has found that subjective knowledge about organic food, health consciousness, and food safety concerns influence intention to buy organic food.

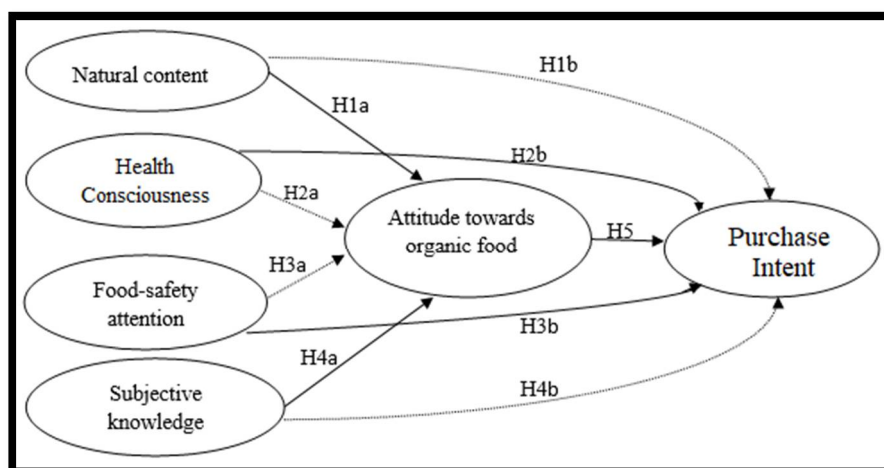


Figure 3: Research Model of Hsu Et Al (2016)

2.4.2. Research on Factors Affecting the Intention to Buy Safe Food of Urban Residents in Hanoi

The study was carried out by Le Thuy Huong (2014) for urban residential areas in Hanoi city by qualitative and quantitative research methods. The study results show that urban Vietnamese people are knowledgeable and care about their health. However, the official quantitative study results show that health concern is not the most decisive factor influencing the intention to buy safe food, but rather a subjective norm factor.

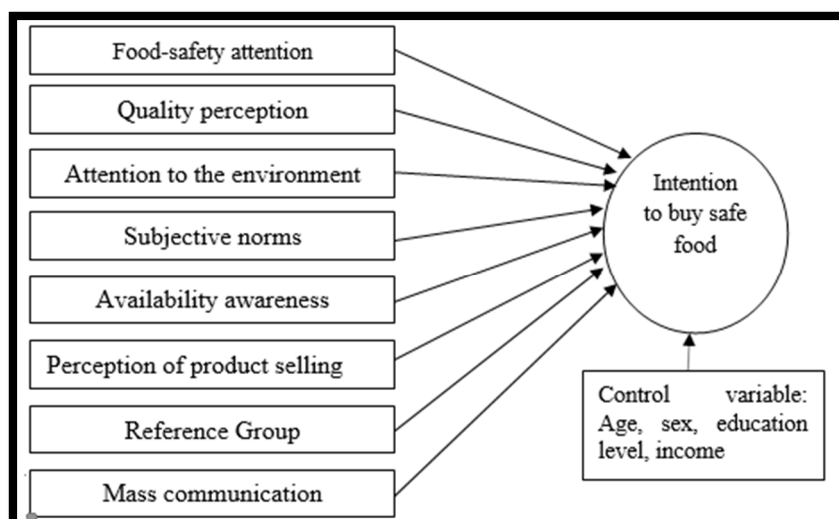


Figure 4: Research Model of Huong (2014)

2.4.3. Research on Some Factors Affecting Organic Food Consumption Behavior in Greece

Research by Kulikovski et al. (2011) measured the influence of several factors on the behavior of consumers buying organic food products in Greece. The study was carried out using a quantitative method with a sample of 190 consumers in the City of Thessaloniki, Greece. Behavior is influenced mainly by food quality, safety, and overall perceived value. Organic foods are often seen as an alternative to conventional foods when consumers are concerned about food safety and quality. The study identified 7 factors: Health concern, Quality perception, Value perception, Food safety concern, Ethical concern, Price, and Trust in food brands. Research has been able to find that health, quality, value, ethics, price, trust, and food safety- all play a role in influencing consumer behavior. Research indicates that food value, quality, and safety greatly influence consumer behavior towards organic food in the Greek market and will ultimately lead consumers to purchase. Consumers believe that organic foods are valuable to their lives and buy because they perceive an increased quality in organic foods.

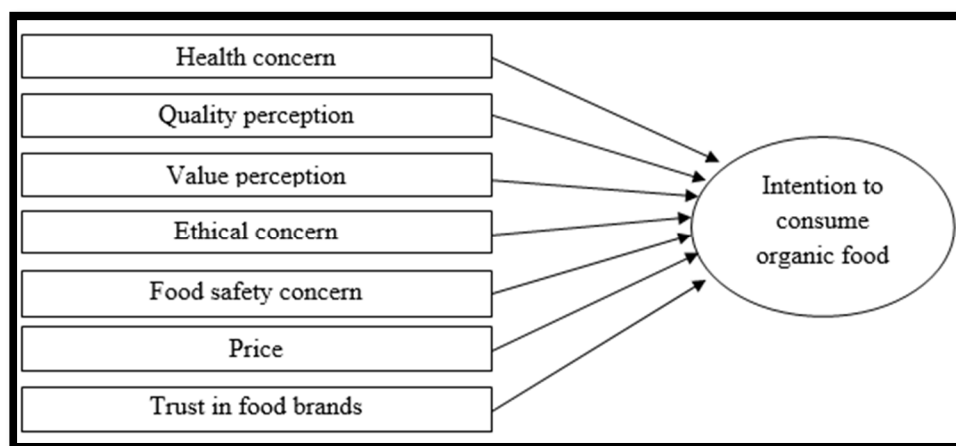


Figure 5: Research Model of Kulikovski Et Al. (2011)

2.4.4. Research on Consumer Motivations towards Organic Food Purchases by Australian University Students

Research by Smith & Paladino (2010) was carried out using a quantitative method with a survey sample of 157 Australian university students to assess the motivations of young consumers to buy organic food with the following variables: Health consciousness, Environmental Concerns, Quality, Price Perceptions, Subjective Norms, and Familiarity affecting attitudes, intentions, and buying behavior of organic food. The results strongly impact organic knowledge, subjective norms, and environmental concerns on organic food attitudes. While health awareness, quality, subjective norm, and familiarity influenced purchase intention. Besides that, familiarity alone was found to have a significant relationship with organic food purchasing behavior.

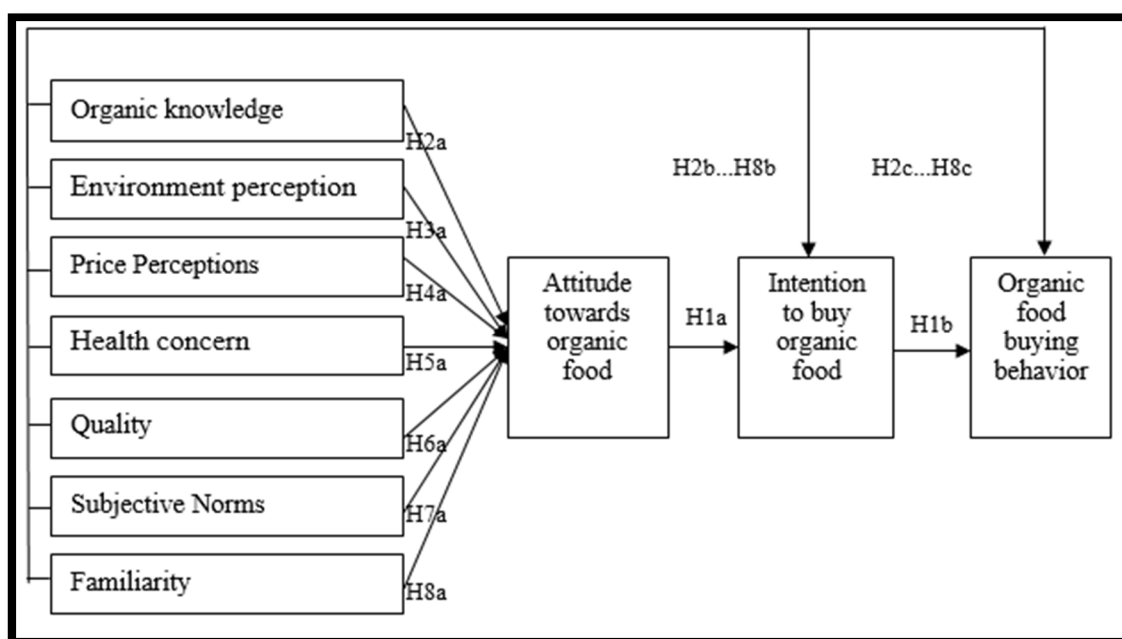


Figure 6: Research Model of Smith and Paladino (2010)

2.5. Proposal Research Model and Proposed Hypotheses

2.5.1. Proposal Research Model

After studying related models and based on the mentioned theory, the topic is based on the theory of planned behavior (TPB) to explain consumer behaviors related to safe food use in terms of Attitudes, subjective norms, and perceived behavioral control. According to Smith & Paladino (2010), regarding organic products, price and availability are behavioral control factors, as they have the potential to limit consumer purchase. The topic is expected to introduce a research model consisting of eight independent variables based on research by Kulikovski et al. (2011). They are Health concerns, Quality perception, Product selling price perception, Attention to food safety, and Brand trust. Additional variables are Subjective norms, Reference groups, and Mass communication because these variables were identified in Huang's study (2014), which are factors affecting the intention to buy safe food. The dependent variable is the intention to buy safe vegetables.

The proposed research model, based on the theory of planned behavior (TPB), explains consumer behaviors through: Attitudes towards behaviors include variables of Health concern, Food safety concern, Quality perception, and

Brand trust; Subjective standards include variables of Mass Media, Subjective Norms, and Reference Groups; Control perceived behavior include variable Perception of the selling price.

The study was carried out in two different geographical areas, so the adjusted variable is the place of residence (Dong Nai and Ho Chi Minh City), which is also included in the research model. The proposed research model is presented in Figure 7.

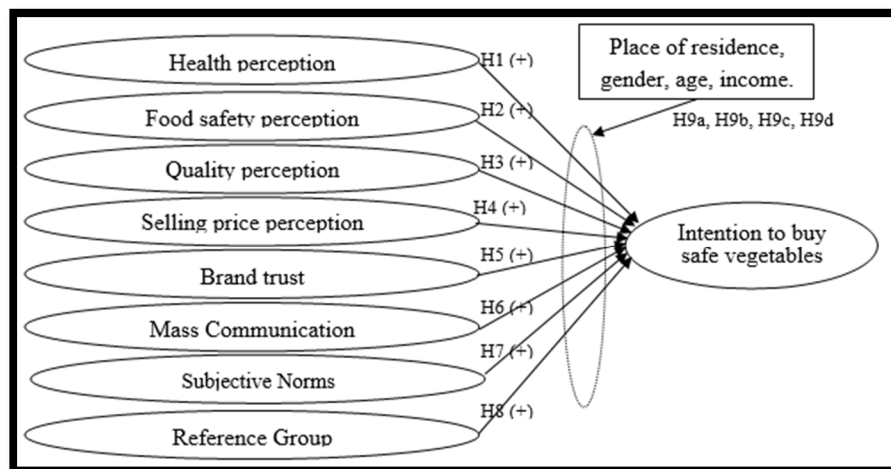


Figure 7: Proposed Research Model

2.5.2. Research Hypothesis

2.5.2.1. Health Perception

Consumers express interest in issues related to healthy foods (Fagerli & Wandel, 1999). According to Kraft and Goodel (1993), health consciousness best describes consumers who are aware and concerned about their condition and are motivated to improve or maintain health and quality of life. Consumers tend to stave off illness by engaging in healthy behaviors. Health is one of the reasons consumers buy and consume safe food. According to Chen (2009), consumers' concerns about health and environmental degradation are decisive factors for forming a positive attitude towards safe foods. According to Yiridoe et al. (2005), concern for human health and safety, which is an important factor influencing consumer preference for safe food, is consistent with the decline observed in human health over time and thus motivates consumers to purchase safe food as insurance and investment in health. Consumers buy safe foods because of the perception that such products are safer, healthier, and more environmentally friendly than conventional foods. Therefore, hypothesis H1 can be stated as follows:

- Hypothesis H1: The more health-conscious consumers are, the more likely they purchase safe fruits and vegetables.

2.5.2.2. Food Safety Perception

Food safety perceptions influence consumer choices in different ways. According to Kulikovski et al. (2011), research shows that food safety concerns such as Concerns about pesticides, residues, artificial additives, and food safety modified food systems Genes are one of the most influential factors influencing consumer buying behavior. Consumer choices indicate a fear of their food products containing chemicals. According to Hsu et al. (2016), concern about food safety positively affects attitude and intention to buy safe food. Therefore, hypothesis H2 is stated as follows:

- Hypothesis H2: The more consumers care about food safety, the more they intend to buy safe fruits and vegetables.

2.5.2.3. Quality Perception

According to Grunert (2005), Quality is the quality perceived by consumers. Safe food is a part of quality food. Perceived quality and safety to buy only when perceived quality is high enough for consumers to be willing to pay in stores. Consumers' perception of safe food quality influences customer behavior; people buy safe food because they perceive safe products to be of higher quality than conventional food items. Hypothesis H3 is stated as follows:

- Hypothesis H3: Perception of safe food with high quality positively affects the intention to buy fruits and vegetables.

2.5.2.4. Selling Price Perception

According to Tse (1997), there is an association between high price and product safety. According to Kulikovski et al. (2011), High price is not a barrier to purchasing safe food. Although most consider safe food expensive, the data shows that most consumers will not mind paying more for safe products. According to Röhr et al. (2005), consumers are willing to pay increased prices for safe food and their safety-related purchasing criteria. Hypothesis H4 is stated as follows:

- Hypothesis H4: The higher the price of food, the greater the influence on the intention to buy safe fruits and vegetables.

2.5.2.5. Brand Trust

Brands play an important role in consumers' purchasing decisions, but brands can mean very different things to different products and between different groups of consumers. (Vu The Dung, 2015). Hypothesis H5 can be stated as follows:

- Hypothesis H5: Food brands are perceived as having a higher level of fruit and vegetable safety.

2.5.2.6. Mass Communication

According to Whaley and Tucker (2004), mass communication can be a major source of information about food safety. Media, such as newspapers and television news, are perceived to be the most useful among the media. According to Fleming et al. (2006), the relationship between local media and public perception of safe, well-processed food reflects a more positive influence on people's learning from news media. Attention to local television has an independent influence after the demographics, food safety awareness, and perceived safety of the local food supply are statistically controlled. Media exposure can enhance, but not reduce, concerns about food safety on an individual level. Hypothesis H6 is stated as follows:

- Hypothesis H6: Mass communication has a positive influence on the intention to buy safe vegetables

2.5.2.7. Subjective Norms

According to O'Neal (2007), subjective norm is the pressure that society puts on each person while considering whether to perform or not to perform a behavior. Individuals' subjective norms reflect their beliefs that their significant other can observe and evaluate their behaviors. According to Ajzen (2002b), cited by Sudiyanti (2009), the subjective norm is defined as the degree of social pressure people feel regarding behavior. According to Sudiyanti (2009), they investigate the application of the Theory of Planned Behavior in predicting Indonesian female consumers' intention to purchase safe foods. Subjective norms were found to be the most significant factor in predicting purchase intention. Hypothesis H7 can be stated as follows:

- Hypothesis H7: Subjective norms positively affect the intention to buy safe fruit and vegetables.

2.5.2.8. Reference Group

Reference groups play as reference points directly or indirectly in forming a person's opinion or behavior. People are often influenced by reference groups to which they do not belong. Reference groups expose a person to new behaviors and lifestyles, influence one's self-perception, and create pressure to adapt, influencing what products and brands that person chooses (Tho, 2015). According to Bearden and Etzel (1982), reference groups influence the decision on luxury products more than necessities. Thus, Hypothesis H8 can be stated as follows:

- Hypothesis H8: Referring people to safe food positively influences the intention to buy safe fruit and vegetables.

2.5.2.9. Independent Variables

At the same time, through reference to several research models on safe food, such as according to Wilcock et al. (2004), the diversity of consumers is based on many factors, including demographics and the economic status of society. Therefore, consumer attitudes towards food safety are not an independent issue. Instead, it concerns individual consumers, socio-economic status, culture, personal preferences, and experiences. Since the survey compares two different locations, the group referenced the intention to buy safe vegetables and fruits among consumers in Dong Nai and Ho Chi Minh City, thereby giving false statements. Therefore, it is necessary to consider the relationship of 8 factors to buy safe food based on the adjusted variables: age, gender, and income. Age affects the acquisition and consumption of goods, and different generations exhibit different consumption behavior (Lan et al., 2014). Therefore, to examine whether there is a difference in the intention to buy safe vegetables between men and women, Hypothesis H9b is stated as follows: Theories H9 are as follows:

- Hypothesis H9a: There is a difference in the impact of factors on the intention to buy safe vegetables between consumers in Ho Chi Minh City and Dong Nai.
- Hypothesis H9b: There is a difference in the impact of factors on the intention to buy safe vegetables by gender.
- Hypothesis H9c: There is a difference in the impact of factors on the intention to buy safe vegetables by age.
- Hypothesis H9d: There is a difference in the impact of factors on the intention to buy safe vegetables and fruits by income.

3. Research Methodology

The research process is carried out through two stages: preliminary research by qualitative method and formal research by quantitative method. The object is consumers who have been using safe vegetables and fruits in two areas: Ho Chi Minh City and Dong Nai province. To ensure that the survey and assessment are specific to people who live in these two regions, the research subjects will be people residing in the locality for three years or more. Due to time and resource limitations, the scale used in the official study includes 34 observed variables, and the number of samples to be collected for this study ranges from 200 to 300. The survey was conducted on two separate sites: Ho Chi Minh City and Dong Nai. Therefore, to ensure that the sample size was large enough and reliable, the questionnaire was distributed with 500 samples to prevent 'no response' and 'invalid'. Out of 500 samples, 300 were from Ho Chi Minh City, and the remaining 200 were from Dong Nai.

4. Data Analysis

4.1. Sample Descriptive Statistics

This study was conducted with the object of consumers who have been using safe vegetables and fruits in Ho Chi Minh City and Dong Nai province. The total number of votes distributed was 600 online surveys, collected 492 pounds. After removing the unsatisfactory tables, filtering, and cleaning the data, the author obtained the remaining 414 tables with complete information and used them as data for analysis. Detailed information is presented in Table 1.

Particular	Code	Frequency	Percentage
Place of living		414	100%
Dong Nai	1	201	48.6
Ho Chi Minh City	2	213	51.4
Time to live locally		414	100%
Over 3 years	3	414	100
Gender		414	100%
Male	1	160	38.6
Female	1	254	61.4
Age		414	100%
18-25	1	84	20.3
26-35	2	179	43.2
36-45	3	96	23.2
Over 46	4	55	13.3
Income per month		414	100%
Below 5 million	1	114	27.5
From 5 to 10 million	2	183	44.2
From 10 to 20 million	3	93	22.5
Over 20 million	4	24	5.8
Education level		414	100%
High school	1	54	13
Colleges	2	113	27.3
University	3	190	45.9
Post Graduate	4	57	13.8
Marital Status		414	100%
Unmarried	1	149	36
Married	2	265	64
Places usually buy safe food		414	100%
Safe fruit and vegetable store	1	111	26.8
Supermarket	2	136	32.9
Traditional markets	3	152	36.7
On the Internet	4	15	3.6
The latest time to use safe food		414	100%
Below 1 week	1	183	44.2
1 week to 1 month	2	112	27.1
From 1 to 3 months	3	50	12.1
Over 3 months	4	69	16.7
Frequency of buying safe food		414	100%
Everyday	1	98	23.7
Over 3 times/week	2	80	19.3
1-2 times/week	3	126	30.4
Below 1 time/week	4	110	26.6

Table 1: Descriptive Statistics

4.2. Testing for Reliability of the Scales

In the study, there are nine scales for nine research concepts: Health concern, Food safety concern, Quality perception, Price perception, Brand trust, Mass communication, Subjective norms, Reference groups, and Intention to buy safe vegetables. The scales of these concepts are preliminarily evaluated through Cronbach's Alpha reliability coefficient and EFA exploratory factor analysis method with data obtained from official research. In Table 2, the Cronbach's alphas of all scales are relatively high. The Cronbach's Alpha coefficient of the Quality Perception scale is 0.452 (<0.6). The correlation coefficients of total variables ranged from 0.359 to 0.365 (>0.3), except for two variables: CL10 and CL12. If the variables CL10 and CL12 are excluded, this scale will be 0.604 > 0.6. Though the scale after this type of variable is larger than 0.6, there are only two observed variables; the author uses this scale. The observed variables of this scale were not included in the exploratory factor analysis.

Construct	Cronbach's Alpha
Health perception scale	0.836
Food safety perception scale	0.730
Quality perception scale	0.452
Selling price perception scale	0.781
Brand trust scale	0.763
Mass communication scale	0.777
Subjective Norms scale	0.817
Reference group scale	0.758
Intention to buy safe food scale	0.794

Table 2: Cronbach's Alpha Results of Measurement Items

4.3. Exploratory Factor Analysis (EFA)

After analyzing the reliability coefficient of Cronbach's Alpha, 31 observed variables that achieved reliability (except for the scales: AT8, CL9, CL10, CL11, CL12, CM27, TK32, YD1) were included in the factor analysis to evaluate convergent and discriminant validity. EFA factor analysis was performed for all conceptual scales (including 31 observed variables) with Principal Axis Factoring extraction and Promax rotation. All Observable Variables have factor loading coefficients greater than 0.5, and the difference between factor loading coefficients is greater than 0.3; so, they are satisfactory, as shown in Table 3 below.

	Component							
	1	2	3	4	5	6	7	8
CM25	0.719							
CM26	0.583							
CM28	0.998							
CM29	0.888							
SK1		0.651						
SK2		0.875						
SK3		0.778						
SK4		0.691						
TK30			0.766					
TK31			0.571					
TK33			0.858					
TK34			0.626					
YD2				0.712				
YD3				0.812				
YD4				0.708				
YD5				0.669				
TT21					0.703			
TT22					0.642			
TT23					0.527			
TT24					0.752			
GB13						0.889		
GB15						0.654		
GB16						0.728		
AT5							0.789	
AT6							0.769	
AT7							0.626	
NH17								0.757
NH18								0.615
NH19								0.747
Variance quoted	57.834							
Eigenvalue levels	1.141							
Coefficient KMO	0.868							
Sig	0							

Table 3: Second Exploratory Factor Analysis

4.4. Confirmatory Factor Analysis (CFA)

Measuring the model's fit with market information, the CFA analysis results show that the model is statistically valid with the following indicators:

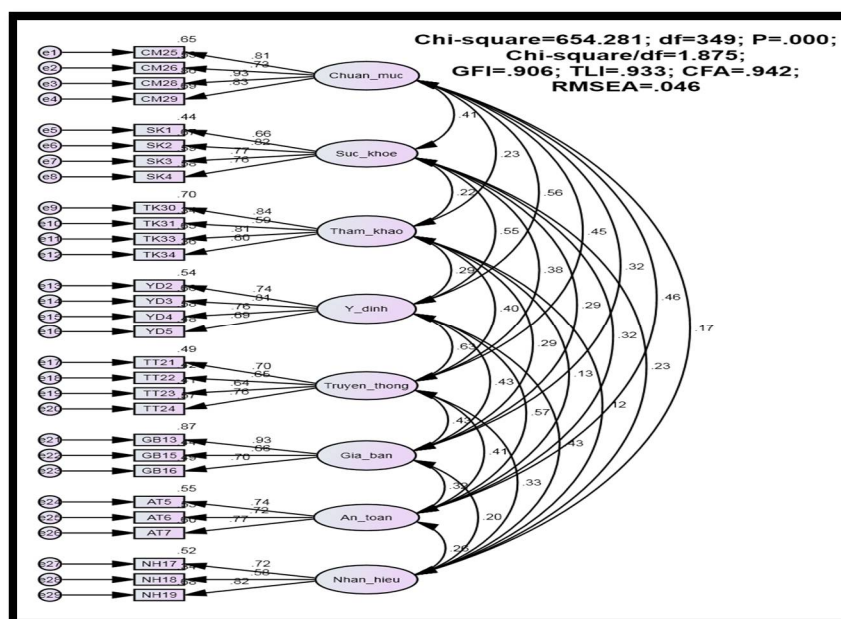


Figure 8: Confirmatory Factor Analysis Results of the Model

The results of Table 4 show that the criteria, such as GFI = 0.906, which is greater than 0.9, meet the requirements, CMIN/df = 1.875 < 2, RMSEA = 0.046 < 0.08. TLI = 0.933, CFI = 0.942 meet the requirements of greater than 0.9. This shows that the model is suitable for the data collected from the market.

Indicators	Cmin	Degree of Freedom	Cmin/df	GFI	TLI	CFI	RMSEA
Results	654.281	349	1.875	.906	.933	.942	.046
Target			< 2	> 0.9	> 0.9	> 0.9	< 0.08

Table 4: The Results of the Indicators of Confirmatory Factor Analysis

Scale	Reliability			p _{vc}	Value
	Observed variables	Cronbach's Alpha	p _c		
Subjective Norms	4	0.890	0.870	0.692	Qualified
Health perception	4	0.836	0.840	0.569	Qualified
Reference group	4	0.798	0.804	0.514	Qualified
Intention	4	0.837	0.838	0.564	Qualified
Mass communication	4	0.777	0.782	0.474	Qualified
Selling price perception	3	0.803	0.813	0.598	Qualified
Safety food perception	3	0.789	0.791	0.558	Qualified
Brand trust	3	0.745	0.753	0.509	Qualified

Table 5: Summary of Results of Scale Testing

We can see from the above results that there are 8 scales with Cronbach's Alpha coefficients > 0.6; aggregate reliability > 0.7; total extracted variance > 0.5. So, all are satisfactory except for Mass Communication factor, which has low extracted variance (pvc = 0.474). However, they are still within acceptable values (Tho & Trang, 2009) and still have value in terms of content that should be accepted.

From the results of testing the reliability coefficient of Cronbach's Alpha on the scales, examination factor analysis (EFA), and confirmatory factor analysis (CFA), there is one factor that is excluded, and the factor is Perception of quality. Other factors with observed variables that measure it are excluded but still ensure the properties of each factor.

4.5. Testing the Research Model via Structural Equation Modeling – SEM

The results of SEM, with Chi-square = 301.078, GFI = 0.882 (>0.8); TLI = 0.916, CFI = 0.934 (>0.9), RMSEA = 0.069 (<0.8) and Chi-square/df = 2.002, indicate that the model fits the data well in this case study. Measurement quality of the hypothesis is shown in Table 6.

Relationship			Estimate	S.E.	C.R.	P	Results
Y_dinh	<---	Chuan_muc	.197	.051	3.884	***	Accept
Y_dinh	<---	Suc_khoe	.346	.074	4.678	***	Accept
Y_dinh	<---	Tham_khao	.011	.036	.301	.764	Reject
Y_dinh	<---	Truyen_thong	.262	.053	4.937	***	Accept
Y_dinh	<---	Gia_ban	.066	.035	1.880	.060	Reject
Y_dinh	<---	An_toan	.197	.051	3.884	***	Accept
Y_dinh	<---	Nhan_hieu	.346	.074	4.678	***	Accept

Table 6: Results of Testing the Relationship among Hypotheses in the Research Model (Normalized)

Hypothesis H1 is stated that Subjective norms have a positive influence on the intention to buy safe vegetables. The estimated results show that the relationship between the factor Subjective norm and the intention to buy safe vegetables is 0.197 with a standard deviation of SE = 0.051. This estimate has statistical significance level of $P = 0.000 < 0.05$ (95% confidence level); so hypothesis H1 is accepted. The estimated results show that the relationship between the factor Health concern and the intention to buy safe vegetables is 0.346 with a standard deviation of SE = 0.074. This estimate has statistical significance level of $P = 0.000 < 0.05$ (95% confidence level); so hypothesis H2 is accepted. Hypothesis H3 states that the reference group positively influences the intention to buy safe vegetables. The estimated results show that the relationship between the Reference group factor and the intention to buy safe vegetables is minimal (0.011) with a standard deviation of SE = 0.036. This estimate has a statistical significance level $P = 0.764 > 0.05$ (90% confidence level); so hypothesis H3 is not accepted. With the collected data, it is not possible to conclude that the Reference Group factor positively influences the intention to buy safe vegetables.

Hypothesis H4 is stated that Mass communication has a positive influence on the intention to buy safe vegetables. The estimated results show that the relationship between the factor of Mass Communication and the intention to buy safe vegetables is 0.262 with a standard deviation of SE = 0.053. This estimate has statistical significance level of $P = 0.000 < 0.05$ (95% confidence level); so hypothesis H4 is accepted. This shows that Mass Communication positively influences the intention to buy safe vegetables. Hypothesis H5 states that Selling price perception positively influences the intention to buy safe vegetables. The estimated results show that the relationship between the factor Perception of selling price and the intention to buy safe vegetables is very small (0.066) with a standard deviation of SE = 0.035. This estimate has statistical significance at $P = 0.060 > 0.05$ (90% confidence level); so hypothesis H5 is not accepted. With the collected data, it is not possible to conclude that perception of selling price positively influences the intention to buy safe vegetables. This is also consistent with the study of Kulikovski et al. (2011). When finding price is a statistically insignificant factor, price is a factor to shape consumers' quality and other benefits. This result also contributes to confirming the results of Smith & Paladino (2010). Hypothesis H6 states that Interest in food safety positively affects the intention to buy safe vegetables. The estimated results show that the relationship between the factors 'Interest in food safety' and 'the intention to buy safe vegetables' is 0.197 with a standard deviation of SE = 0.051. This estimate has statistical significance level of $P = 0.000 < 0.05$ (95% confidence level); so hypothesis H6 is accepted. This shows that the factor 'Interest in food safety' positively influences the intention to buy safe vegetables. Hypothesis H7 is stated that brand trust has a positive influence on the intention to buy safe vegetables. The estimated results show that the relationship between the brand trust factor and the intention to buy safe vegetables is 0.346, with a standard deviation of SE = 0.074. This estimate has a statistical significance level of $P = 0.000 < 0.05$ (95% confidence level); so hypothesis H7 is accepted. This shows that the brand trust factor positively affects the intention to buy safe vegetables.

The results of theoretical estimation by Bootstrap are used to evaluate the sustainability of the theoretical model; from the initial sample of $n = 414$ samples, the number of repeated sampling times in the selected study is 1000 times, presented in detail in Table 7. Accordingly, the estimation results show that the bias appears with a small value compared with 2. Therefore, it can be said that the estimates in the model can be trusted.

Relationship			SE	SE-SE	Mean	Bias	SE-Bias	CR
Y_dinh	<---	Chuan_muc	0.063	0.001	0.222	0.001	0.002	0.500
Y_dinh	<---	Suc_khoe	0.068	0.002	0.267	0	0.002	0.000
Y_dinh	<---	Tham_khao	0.054	0.001	0.019	0.003	0.002	1.500
Y_dinh	<---	Truyen_thong	0.08	0.002	0.31	-0.007	0.003	-2.333
Y_dinh	<---	Gia_ban	0.052	0.001	0.1	0	0.002	0.000
Y_dinh	<---	An_toan	0.065	0.001	0.279	0	0.002	0.000
Y_dinh	<---	Nhan_hieu	0.053	0.001	0.231	-0.005	0.002	-2.500

Table 7: Bootstrap Estimation Statistics Table (N=1000)

After analyzing the linear structural model, only 5 hypotheses were accepted. Compared with the original model and hypothesis, 3 hypotheses cannot be confirmed to affect the intention to buy safe vegetables: Quality Perception, Reference group, and Selling price Perception.

4.6. Multi-Group Structural Analysis

In this study, four variables were used to categorize groups: (1) Place of residence, (2) Gender, (3) age (4) Income. Each of these subgroup variables divides the sample into two groups. Specifically, there are two groups of places to live (Dong Nai and Ho Chi Minh City), two sex groups (Male and Female), two age groups (Under 35 and over 35 years old), two income groups (Under 10 million/month and over 10 million/month).

4.6.1. Testing Differences by Group of Places of Residence

This section examines the differences in the relationship between Subjective Norms, Health perception, Mass Communication, Food Safety perception, Brand Trust, and Intention to Buy Safe food entirely due to the difference in living places. The multi-group analysis method by variable and invariant models was used with Dong Nai area with 201 observations and Ho Chi Minh City area with 213 observations. Comparing the difference of the compatibility criteria in the two wholly invariant and variable models by place of residence shows that: The Chi-square difference between the two models is 13,513 with 5 degrees of freedom. Thus, the difference between these two models is statistically significant due to the significance level of $P\text{-value} = 0.019 < 0.05$. Therefore, the variable model is chosen.

This means hypothesis H9a is accepted. To be precise, there is a difference in the level of impact of the following factors: (1) Subjective norms, (2) Health perception, (3) Mass communication, (4) Safety food perception, (5) Brand trust in the intention to buy safe vegetables between Dong Nai and Ho Chi Minh City.

4.6.2. Testing Differences by Group of Gender

This section will test the difference while analyzing two invariant and partially variable models for the adjusted variable, male or female, of which 160 were men (accounting for 38.6%) and 254 were women (accounting for 61.4%). The Chi-square difference between the two models (variable and partially invariant) is 3,535 with 5 degrees of freedom. Thus, the difference between these two models is not statistically significant because the invariant model is chosen for the $P\text{-value} = 0.618 > 0.05$.

4.6.3. Testing Differences by Group of Age

This section will test the difference while analyzing two invariant and partially variable models for the adjusted variable, which is the age group: From 35 years old and under and From 36 years old and above. The age group from 35 years old and under comprises 263 people (accounting for 63.5%), and the group from 36 years old and above comprises 151 people (accounting for 36.5%). The Chi-square difference between the two models (variable and partially invariant) is 10,879 with 5 degrees of freedom. Thus, the difference between these two models is not statistically significant because the significance level of $P\text{-value} = 0.054 > 0.05$; hence, the invariant model is chosen.

4.6.4. Testing Differences by Group of Income

This section will test the difference while analyzing two invariant and partially variable models for the adjusted variable income: From 10 million/month or less and over 10 million/month. Income of 10 million/month or less consists of 297 people (71.7%), and over 10 million/month comprises 117 people (28.3%). The Chi-square difference between the two models (variable and partially invariant) is 9,151 with 5 degrees of freedom. Thus, the difference between these two models is not statistically significant because the significance level of $P\text{-value} = 0.103 > 0.05$; hence, the invariant model is chosen.

5. Results and Discussion

Based on the TPB theoretical model and previous research models, the thesis builds a research model with 8 independent variables that affect consumers' intention to buy safe vegetables and fruits and an adjusted variable to evaluate the difference in impact level between factors in Dong Nai and Ho Chi Minh City. The research was carried out through two phases: preliminary research by qualitative method and formal research by quantitative method. Results after preliminary research show that the scale for 9 concepts includes 39 observed variables to prepare for official research. Formal research was carried out by quantitative method through a survey table with the number of survey samples being 500. Samples were taken by non-probability sampling method - convenient sampling. Data collected from reality is cleaned and coded to serve the next data analysis steps, including 414 samples. The scale is tested for reliability and validity (convergent and discriminant values) by Cronbach's Alpha coefficient and EFA exploratory factor analysis. After exploratory factor analysis EFA and confirmatory factor analysis CFA, the formal model includes 8 concepts and 29 observed variables with 7 hypotheses. The scale model has ensured the requirement of general conformity. Chi-square = 654,281, $df = 349$, $p = 0.000$, Chi-square/ $df = 1.875$, GFI = 0.906, TLI = 0.933, CFA = 0.942, RMSEA = 0.046. The results of structural model analysis (SEM) with ML estimation method show that the model has 364 degrees of freedom. Chi-square criteria = 819,412, $df = 364$, $p = 0.000$, Chi-square/ $df = 2.251$, GFI = 0.884, TLI = 0.904, CFA = 0.914, RMSEA = 0.055 are all satisfactory. Hypothesis H3 ($\beta = 0.016$, $p = 0.764$) and hypothesis H5 ($\beta = 0.100$, $p = 0.060$) were not accepted. Accept the hypothesis H1 ($\beta = 0.221$, $p = 0.000$), hypothesis H2 ($\beta = 0.267$, $p = 0.000$), hypothesis H4 ($\beta = 0.317$, $p = 0.000$), hypothesis H6 ($\beta = 0.279$, $p = 0.000$) and hypothesis H7 ($\beta = 0.236$, $p = 0.000$). Testing the theoretical model estimate using Bootstrap with 1000 sampling times also determines whether the model estimate can be trusted. Through multi-group structural analysis, hypothesis H9a is accepted. There is a difference in the impact level of factors between consumers in Dong Nai and Ho Chi Minh City with $P = 0.019$. In addition, the multi-group structural analysis also showed that there was no difference in the level of impact of factors on the intention to buy safe vegetables between gender, age, and income groups.

By analyzing the above results, this study provides some important information. Firstly, this study found that Price Perception was not proven to affect consumers' intention to buy safe vegetables. This result is similar to the previous study by Smith and Paladino. (2010). While researching safe vegetables in particular and safe foods in general, the factor Perception of selling price does not influence the intention to buy safe vegetables. Since safe vegetables are generally non-luxury common goods, their availability and ease of purchase do not directly affect the propensity to perform the behavior. Secondly, the mass communication factor has the most decisive impact on the intention to buy safe vegetables. It is found that, with the increasing role of mass communication, management agencies should develop practical programs. Content ensures truthfulness to propagate and mobilize people to consume safe vegetables and fruits and ways to recognize and check the safety of vegetables and food. Thirdly, attitude-related factors such as Health care, Food safety concern, and Brand trust are the factors that affect the intention to buy safe vegetables and fruits. It is also one of the variables of marketers to build appropriate programs and strategies while trading safe vegetables. In order to stimulate consumers while doing business in the field of safe vegetables and fruits, there should be specific evidence, authentic health benefits when used, signs to ensure safety, and build a trustworthy brand with reliable, clear origin. Fourthly, actor Subjective norms also play an essential role in consumers' intention to buy safe vegetables and fruits because people are social people who live in and depend on society. When their products are accepted by society, trust is also a success for businessmen and managers. Fifthly, there is a difference in the impact of factors on consumers' intention to buy safe vegetables and fruits between Ho Chi Minh City and Dong Nai province. For Dong Nai area, the factor 'Concern about food safety' does not affect the intention to buy safe vegetables and fruits; for Ho Chi Minh City area, the factor 'Trust in brand' does not affect the intention to buy safe vegetables. At the same time, the factor 'Trust in the brand' has the most impact on consumers' intention in Dong Nai, while the factor 'Concern about health' has the most impact on the intention of consumers in Ho Chi Minh City. Therefore, while trading safe vegetables, it is necessary to grasp the psychology and characteristics of each region to make reasonable policies. In addition, the factors: Subjective standards, Health perception, and Mass communication are not affected by the place of residence. So in order to increase consumers' intention to buy safe vegetables, they need to run campaigns to raise awareness about safe food with appropriate types of social marketing. Businesses in Dong Nai should build strong brands of agricultural products because brands associated with quality enhancement will help consumers feel more confident, and in the process, they will gain more prestige. Not only that, businesses should also do branding for safe vegetables and fruits in the region with packaging and labels and publicize information on safe vegetables and fruits on the mass media. In Ho Chi Minh City, it is difficult to distinguish between safe and unsafe vegetables, so mainly safe vegetables and fruits must have clear labels and origins. Safe Vegetables and fruits should have information about the origin and production method. There should be a transparent exchange of information about safe vegetables and a policy to strictly control the safety of vegetables and fruits.

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