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To Study Consumers' Use of Information on Food Labels in Vietnam

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ABSTRACT

The information on food labels is an important source to guide consumers in making choices of food. The objective of this study is to analyze factors affecting consumers' awareness of food labeling information. The survey was conducted among 375 people with age of above 18-year-old in Vietnam. Using the method of descriptive statistical analysis, testing the reliability of scale (Cronbach's alpha), exploratory factor analysis, and multivariate regression analysis, the results showed that there are 04 factors affecting consumers' intention of using the information on food labels: Attitudes toward information on food labels, effect of society, perceived behavioral control, and concern about diet-health. In addition, the customers' intention of using the information on food labels has a positive impact on their use behavior of information on food labels.

Keywords: Food Labels, Intention, Behavior, Using Information on Food Labels
JEL Classifications: L66, M

1. INTRODUCTION

Today, food safety issues have gained national intention, stemming from the fact that the issues on food safety are at an alarming rate. From another perspective, the misuse of products also has a negative impact on people health. That is the reason it is mandatory to label obesity warning on food product in Chile or lung cancer warning on the tobacco's packaging globally, According to Al-Tamimi and Company (2004), the information on the labels is very useful because it helps consumers to have right purchasing decision. Therefore, to understand customer choices, it is necessary to understand the key factors that affect the customer use of the information on the food labels. This will enable food manufacture to make right decisions on designing food labels to promote the customers attention and build their trust in the labeling information.

There are many studies related to food labels, such as: Nayga (1999) and Drichoutis et al. (2006) in the US on consumer's awareness of the use of the information on food labels; or Toomey (2013) with the aim of identifying the factors that predict the use of food labels by students at Texas Christian University. In Africa, there was a study by Themba (2013) on raising awareness of consumers and the use of nutrition information on the labels. This study was conducted in Botswana and its results highlight the need to improve nutritional education. In Asia, there was study performed by Vijaykumar et al. (2013), the study was to determine the factors affecting the use of the information on food labels by consumers in Singapore. In Vietnam, there are not any studies found related to information using on food labels of consumers. Therefore, the analysis of factors affecting the use of information on food labels of consumers is essential for producers in making labels as well as consumers in choosing safety products.

2. LITERATURE REVIEW AND SUGGESTED RESEARCH MODEL

Good labels are inscriptions, prints, drawings, copies of letters, drawings, image pasted, printed, attached, embossed directly on products or packaging or on other materials are mounted on the products, or on commercial packages.

2.1. Intention of Use

According to Fishbein and Ajzen (1975), behavioral intention is decisions to act or mentality representing the perception of

individuals involved in a particular behavior. Theory of planned behavior (TPB) theory (Ajzen, 1991) shows that motives or behavioral intention are considered as the primary motivating factor of consumer behaviors. Specifically, according to Vijaykumar et al. (2013), research on the factors that affect information using on food labels with expanded TPB model.

2.2. Information Using on Labels

The economic model of searching information presented by Stigler (1961), assuming that the use of product information is an operational process relating to the search of information. When choosing products, consumers must be able to evaluate the information obtained in the search and make a decision based on that evaluation. In this study, the use of food labels is considered as an action of seeking information by consumers.

This study uses the theory of reasoned action (TRA) by Ajzen and Fishbein (1975), and TPB by Ajzen (1991) for building theoretical models of consumers on the use of the information on food labels.

The relationship between attitudes toward information on food labels and intention to use: According to Ajzen and Fishbein (1975), attitudes toward a particular product are a prominent form of confidence. The prominent confidence is defined as the subjective ability of relationship between confidence of an object and other factors such as value, attributes. The attitude is considered as one of the main determining factor in explaining a person's intention, behavior including behavior using information on food labels in this study. The attitude is defined as a comprehensive assessment of a person on the behavior toward products/brands he/she cares about. The attitude is a measure combining the sense of behavior and positive or negative reviews on the implementation of the behavior of a person. Thus the hypothesis is given:

Hypothesis H_1: The more customers have positive attitudes toward the information on food labels, the more consumers intend to use the information on food labels.

The relationship between subjective norms of consumers and intention to use the information on food labels: The subjective norms are social pressures that they fells when doing behaviors. They are a person's abilities to grasp or feel about other people important in their habitat, their desire to behave in a certain way, subject to a certain standard (Ajzen, 1991). The findings of Fournier and Mick (1999) showed that customer satisfaction when doing behavior often contributed by the satisfaction of the other members of his family and social environment seems to have vital roles in shaping his intentions. Thus the hypothesis is given:

Hypothesis H_2: The more customers are affected by subjective norms, the more consumers intend to use the information on food labels.

The relationship between behavioral control and intention to use the information on food labels: Based on the theoretical foundations of the TRA, in theory TPB (Ajzen, 1991) included in the concept of behavioral control as a person's sense about difficulty or easiness in his doing behaviors. One who thinks he has few obstruction and thus his behavioral control is easy. The controlling factors are inside a person (skills, etc.) or outside them (time, opportunity, dependency on others, etc.). Thus the hypothesis is given:

Hypothesis H_3: The more customers are easily to control behaviors, the more consumers intend to use the information on food labels.

The relationship between concern about the diet-health of consumers and the intention to use the information on food labels: The concern about the diet-health is defined as the ability to link the consumption of nutrients with the results related to health (Sapp, 1997). Other studies such as Cowburn and Stockley (2005); Drichoutis et al. (2006) also showed the importance between the health and the use of the labels. From the findings above, Vijaykumar et al. (2013) examined the variables on concern about the diet-health (diet-health concern [DHC]), whether that DHC may add to the predictive ability of the model TPB in explaining the intention to use food labels. The result is that the concern about diet-health proved to be a factor contributing substantially to the predictability of this model. Thus the hypothesis is given:

Hypothesis H_4: The more customers take care about diet-health, the more consumers intend to use food labels.

The relationship between the intention to use the information on food labels and use of the information on food labels: In the theoretical model of Fishbein and Ajzen (1975), and Ajzen (1991) has proven that behavioral intention is considered as an important factor in predicting actual behavior of consumers. The behavioral intention indicates the committed individual efforts in doing behaviors. The more increasingly the commitment is, the more likely that the behavior will be done. Therefore, when the more increasingly consumers intend to use the information on food labels, the more likely the use behavior of information on the product labels to be implemented. Thus the hypothesis is given:

Hypothesis H_5: The more consumers increasingly intend to use the information on food labels, the higher consumers are ability to use the information on food labels.

2.3. Demographic Factors

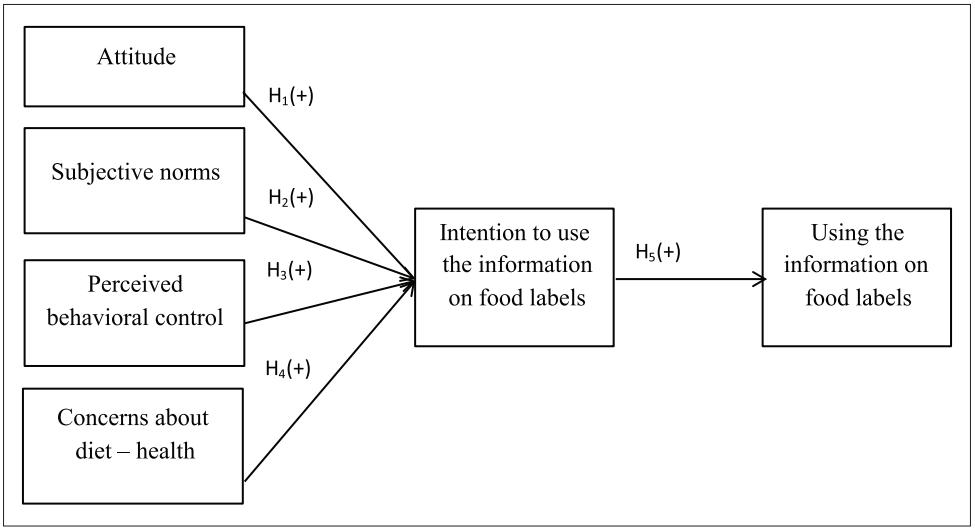
Many studies have shown that the demography has influence on information search behavior (Ippolito and Mathios 1990). According to studies by Katona and Mueller (1955); Mitchell and Boustani (1993), Bazhan et al. (2008), Cole and Balasubramanian (1993), and Godfrey (2013), etc., showing that searching information is affected by demographic factors such as ages, gender, and education, etc. Thus the study considered demographic characteristics variables as controlling one of consumers in the behavior of using the information on food labels.

From above literature review, the research model suggested is presented in Figure 1.

3. METHODOLOGY AND RESEARCH DATA

This is a quantitative research using analytical methods such as: Descriptive statistics, testing the reliability of the scale (Cronbach's alpha), exploratory factor analysis (EFA), multivariate regression, testing the difference (ANOVA).

Figure 1: Suggested research model



The study was to be done in two main steps. The qualitative research was performed by interviewing 04 experts in the field of labels, measure and test of the quality of food for the purpose of correction, supplement and perfection of the scale. The quantitative research was done by delivering the surveys directly or indirectly through tools such as email and social networking sites. The scale of independent variables and dependent variables was designed under Likert 5 (1 - Completely disagree and 5 - Completely agree). Respondents were consumers over 18-year-old in Vietnam. Total surveys returned were 420 people. After filtering and disqualifying 45 invalid questionnaires because of answering the same level for all the questions or of missing information, there were 375 valid questionnaires used as data for this study, reaching 89.2% in comparison with those turned back.

4. RESEARCH RESULTS

4.1. Descritptive Statistics by Characteristics

In study sample, there are 152 males and 223 females, accounting for 40.5% and 59.5%, respectively. People with age of 18-25 years old accounted for 39.7%, of 26-35 years old accounted for 52.8%, of between 36 and 45 accounted for 5.6%, of over the age of 45 accounted for 1.9%. People with education level of primary schools accounted for 8%, of junior high schools accounted for 6%, of high schools accounted for 5.6%, of second education schools accounted for 11.7%, of universities accounted for 71.5% and of 8.8% was graduate levels. For monthly income, 34.4% of level under 5 million VND (equivalent to 250 USD), from 5 to 10 million VND accounted 41.1%, from 10 to 20 million VND accounted for 18.9%, from 20 to 30 million VND accounted for 2.7% and above 30 million VND accounted for 2.9%. For people working in types of enterprises, working in limited companies accounted for 23.7%, in joint stock companies accounted for 19.2%, in joint venture accounted 0.8%, in enterprises with foreign investment accounted for 8.8%, in state-owned enterprises accounted for 8.8%, in privately-own companies accounted for 5.6%, in self-employment accounted for 8.8%. And the percentage of people who have not been employed accounted for 24.3%.

4.2. Descriptive Statistics of Variables

Based on Table 1, the results showed the following:

For the attitudes toward information on food labels, TD4 has the highest average value (3.74), in which the average value of TD1 is lowest (3.63). Thus, consumers believe in health releases listed on food labels rather than the perception of information on the labels useful.

Related to the social influence (subjective norms), CM1 has the highest average value (3.28) and the variable with lowest average values is CM2 and CM3 (3.2). The results showed that friends have the greatest impact on consumers, especially the young people.

Regarded to the perceived behavioral control, KS3 has the highest average value (3.56) and the variable with lowest average values is KS2 (3.29). Thus, in addition to self-evaluate of the information on labels is easy to understand, external factors such as time and other conditions also greatly affect the use of the information on food labels.

For the concerns about diet-health, variable with the highest average value is QT1 (3.02) and the variable with lowest average values is QT2 (2.91). Thus, consumers found the issue of obesity is very susceptible and they are very interested in this issue to identify the nutrients that are not consistent with your health, it is very difficult to determine when reading the nutrition facts listed on the labels.

For the intention to use the information on food labels, variable with the highest average value is YD4 (3.87) and the variable with lowest average values is YD2 (3.31). Thus, consumers intend to use the information on food labels when shopping and the intention shows more clearly that they would recommend their friends and relatives to use the information on food labels.

Related to the using the information on food labels, variable with the highest average value is HV4 (3.82) and the variable with lowest average values is HV2 (3.47). Thus, the behavior of using the information on food labels by consumers primarily related

Table 1: Descriptive statistic of variables

Variables	Content	Minimum	Maximum	Mean±Standard deviation
Attitudes toward information on food labels				
TD1	I found the information on food labels is helpful	1	5	3.63±0.836
TD2	I found the information on food labels is correct	1	5	3.67±0.825
TD3	I believe the nutritional information listed on food labels is true	1	5	3.67±0.875
TD4	I believe the information on health listed on food labels is true	1	5	3.74±0.853
TD5	I believe food labels fully represent the required information	1	5	3.72±0.830
Social influence (subjective norms)				
CM1	My friends advised me to use the information on the labels to choose foods	1	5	3.28±0.797
CM2	My family advised me to use the information on the labels to choose foods	1	5	3.20±0.831
CM3	People around me often use the information on the labels to choose foods	2	4	3.20±0.541
CM4	In my opinion, it is necessary to check the information on the labels to distinguish safe food	2	5	3.23±0.573
Perceived behavioral control				
KS1	I easily find the information on food labels when buying packaged food	1	5	3.34±0.791
KS2	No more problems hinder me from checking the information on food labels	1	5	3.29±0.847
KS3	For me, the information on food labels is easy to understand	2	5	3.56±0.548
KS4	If you have no more time for shopping, I will check the information on food labels more closely	1	5	3.31±0.828
KS5	For food which has not been bought regularly, I will check the information on the labels more closely	1	5	3.31±0.850
KS6	I always use the information on food labels	1	5	3.21±1.069
Concerns about diet-health				
QT1	I use the information on food labels because I'm in the diet	1	5	3.02±0.780
QT2	I use the information on food labels to avoid nutrient composition harm to your health	1	5	2.91±0.830
QT3	I use the information on food labels because I'm often allergic	1	4	2.92±0.827
QT4	I use the information on food labels because I'm afraid that the food condition of unknown origin affects health	1	5	2.92±0.812
QT5	Using the information on the labels is the way I recognize good food for my diet-health	1	4	2.99±0.799
Intention to use the information on food labels				
YD1	I think the use of the information on food labels as a choice when buying food	1	5	3.62±0.660
YD2	I intend to use the information on food labels when buying food	1	5	3.31±0.627
YD3	I will use the information on food labels when buying food	1	5	3.34±0.604
YD4	I will advise my friends and relatives to use the information on food labels when buying food	1	5	3.87±0.684
YD5	I'll say about something in favor of the use of information on food labels	1	5	3.74±0.707
Using the information on food labels				

(*Contd...*)

Table 1: (*Continued*)

Variables	Content	Minimum	Maximum	Mean±Standard deviation
HV1	I will use the information on food labels when buying new products	2	5	3.59±0.626
HV2	I usually buy a food with health release on the label instead of one does not have that information	2	5	3.47±0.579
HV3	I use the information on food labels to compare nutrient composition upon choosing food of the same kinds	2	5	3.56±0.604
HV4	I use the information on food labels to buy suitable food for my diet - health	2	5	3.82±0.607
HV5	I choose the food with clear information on the labels	2	5	3.72±0.633

to their diet, because they are worried about obesity which will affect their health.

4.3. The Cronbach's Alpha Analysis

All coefficients Cronbach's alpha of the factor "attitudes toward information on food labels," "social influence (subjective norms)," "Concerns about diet-health," "intention to use the information on food labels," "using the information on food labels" are qualified (greater than 0.7) with coefficients respectively: 0.798, 0.734, 0.768, 0.749, 0.753. And the global variable correlation coefficients are (>0.3) satisfactory. Thus the variables observed in above factors are taken into the EFA.

The only coefficient of Cronbach's alpha of the factor scale "Perceived behavioral control" after the first test was 0.708 (>0.7) and satisfactory, however, the global variable correlation coefficient of observed variables KS6 is 0.290 (<0.3). After disqualifying variable KS6 and re-running to check the reliability of the scale, the Cronbach's alpha of the scale for the second time was 0.734, satisfactory (>0.7), and the global variable coefficients were (>0.3) satisfactory. Therefore the remaining variables were taken into the factor analysis EFA.

4.4. The EFA

Based on the analysis results of scale reliability, with 19 observed variables of 04 factors were included in the analysis EFA and carried out the analysis of factor EFA, factors affecting the intention to use the information on food labels. After performing for the first time, variables CM3 and KS3 were discarded. The load factors after the second time were satisfactory with KMO coefficient of 0.770 and testing significance of Bartlett at 0.000.

Based on the results in Table 2, the variables were grouped into 4 groups of factors and were named as follows: Factor 01 includes 05 observed variables (TD1, TD2, TD3, TD4, TD5), remained the name as "attitudes towards the information on food labels," denoted by TD. Factor 02 includes 03 observed variables (CM1, CM2, CM4), named as "social influence (subjective norms)," denoted by CM. Factor 03 includes 04 observed variables (KS1, KS2, KS4, KS5), named as "Perceived behavioral control," denoted by KS. Factor 04 includes 05 observed variables (QT1, QT2, QT3, QT4, QT5), remained the name as "Concerns about diet- health," denoted by QT.

Table 2: Results of the EFA

Composition	Component			
	1	2	3	4
Attitudes toward information on food labels				
TD3	0.764			
TD4	0.763			
TD1	0.746			
TD2	0.736			
TD5	0.702			
Concerns about diet-health				
QT3		0.757		
QT2		0.723		
QT1		0.713		
QT4		0.709		
QT5		0.673		
Perceived behavioral control				
KS1			0.758	
KS4			0.747	
KS2			0.729	
KS5			0.695	
Social influence (subjective norms)				
CM1				0.811
CM2				0.792
CM4				0.748
Eigen values	3.026	2.814	2.174	1.637
Percentage of variance	16.356	16.089	12.954	11.374
% cumulative	16.35	32.445	45.399	56.773

EFA: Explanatory factor analysis

4.5. The Regression Analysis

According to the results in Table 3, evaluating the coherence degree of the model with coefficient R^2 was 0.545. That is 54.5%, variation of "Intention to use the information on food labels" can be explained by the independent variables in the model. Testing the coherence degree of the model, test result F = 113.172 with significance level of 0.000, so the regression model is considered as coherence in overall. Also based on Table 3, testing the multi-collinearity phenomenon, the results show satisfactory values VIP (VIP <10). Therefore, the linear-related assumption of regression models is not violated.

According to the results in Table 4, evaluating the coherence degree of the model with coefficient R^2 was 0.505. That is 50.5%, variation of "Behavior of using the information on food labels"

intention of using labels. Testing the coherence degree of the model, test result F = 382.095 with significance level of 0.000, so the regression model is considered as coherence in overall. Also based on Table 4, testing the multi-collinearity phenomenon, the results show satisfactory values VIP (VIP <10). Therefore, the linear-related assumption of regression models is not violated.

4.6. Discussion of Regression Results

The factor of "attitude toward information on food labels" is statistically significant at 1%, with value $\beta = 0.576 > 0$. This proves that the hypothesis H_1 is accepted. The attitude toward information on food labels, according to Ajzen and Fishbein (1975), attitude toward a particular product is prominent form of beliefs. According to the study by Toomey (2013), Vijaykumar et al. (2013) also found similar results compared to the study by Themba (2013), when carrying out the regression analysis, they found that the positive effects of the factor "attitude towards the information on food labels" to the intention to use the information on food labels by consumers. This is understandable because the attitude is a very important factor for all behaviors. The research results also show that if consumers have a positive attitudes or are in favor of information on food labels, and they believe the health releases indicated on the labels as well as find out that the information on the food labels essential to choose foods, it will motivate them to use these information more when purchasing foods subject to their needs.

The factor of "Social influence" is statistically significant at 5%, with value $\beta = 0.076 > 0$, proving that the hypothesis H_2 is accepted. The influence of society on the customers is that from outside, from society, friends, relatives and the people around affecting them. Previously, studies by Vijaykumar et al. (2013) showed the same-dimension impact of social influence over the intention to use the information on food labels. The results of this study demonstrate again this impact among consumers in Vietnam. Currently, the food products circulating on the market are very diverse and plentiful and there are so many fake or shoddy items. The management of labels of food items is strengthened strictly by authorities; however, it is impossible to control all the goods of unknown origin, without printed labels or printed labels in contravention of the regulations, leading to unsafe conditions of goods. Therefore, using the information on the labels is also a way to minimize the risk of buying goods of unknown origin or the shoddy ones. So when consumers find the use of the information on food labels prevalent, together with friends or relatives' advices, they will increasingly intend to use the information on food labels when shopping.

The factor of "Perceived behavioral control" is statistically significant at 1%, with value $\beta = 0.459 > 0$. This proves that the hypothesis H_3 is accepted. The factor "perceived behavioral control" refers to a person's sense of difficulty or easiness in performing behaviors. Like studies of Vijaykumar et al. (2013), this stud y also found a positive relationship of controlling behavior to intention of using the information on food labels. Research results among consumers in Vietnam also showed the perceived behavioral control including the inside and outside control has an effect over consumers. It is the understanding of consumers about the information on food labels, the issue of limited shopping time makes consumers not intend to check or rarely check information on labels.

The factor of "Concerns about diet-health" is statistically significant at 1%, with value $\beta = 0.121 > 0$. This proves that the

Table 3: Results of regression analysis the model of Intention to use the information on food labels

Independent variable	Unstandardized coefficients (B)	Standardized coefficients (β)	Value (t)	Significant	VIF
(Constant)	0.373**		2.239	0.026	
Attitudes toward information on food labels	0.426***	0.576	16.469	0.000	1.005
Concerns about diet-health	0.096***	0.121	3.375	0.001	1.049
Perceived behavioral control	0.349***	0.459	13.046	0.000	1.018
Social influence (subjective norms)	0.060**	0.076	2.113	0.035	1.062
R	0.742				
R^2	0.550				
Adjusted R^2	0.545				
F (ANOVA)	113.172				
Significant (ANOVA)	0.000				
Durbin–Watson	1.594				

Dependent variable: Intention to use the information on food labels. ***Results at the significance level of 1%, **Results at the significance level of 5%. VIF: Variance inflation factor

Table 4: Results of regression analysis the model of using the information on food labels

Independent variable	Unstandardized coefficients (B)	Standardized coefficients (β)	Value (t)	Significant	VIF
(Constant)	1.261***		10.304	0.000	
Intention to use the information on food labels	0.663***	0.711	19.547	0.000	1.000
R	0.711				
R^2	0.506				
Adjusted R^2	0.505				
F (ANOVA)	382.095				
Significant (ANOVA)	0.000				
Durbin–Watson	1.664				

Dependent variable: Using the information on food labels. ***Results at the significance level of 1%. VIF: Variance inflation factor

hypothesis H4 is accepted. The concern about the diet-health is defined as the ability to link the consumption of nutrients with the results related to health (Sapp, 1997). Besides, the research (Vijaykumar et al., 2013) also showed that the intention to use the information on food labels is affected by concerns about diet-health, and such effects are same-directional. This study shows that consumers having concerns about diet-health are expressed more clearly when the issues of food safety are at an alarming rate. Consumers are finding more detailed information about products and the most visible communication channel is labels on packages. Consumers intend to use the information on labels to be sure to buy safe food which is suitable for their needs.

The factor "Intention to use the information on food labels" is statistically significant at 1%, with value $\beta = 0.711 > 0$, proving that the hypothesis H_5 is accepted. The behavior of using information on food labels is understood as an operational process relating to the search of information. When choosing products, consumers must be able to evaluate the information obtained in the search. Previous studies of Vijaykumar et al. (2013) on the use of the information on food labels also showed the same-dimensional relationship between the intention to use the information on food labels and behavior of using information on food labels. This study re-confirms the rightness of hypothesis of intention having positively impact over the behavior using food labels. This is the same-directional impact and the results showed that this is a very strong impact on the market in Vietnam. Intention like a predictor of consumers'behavior (Ajzen and Fishbein, 1975).

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Conclusions

Based on the theory and researches, the proposed model includes 06 factors. There are 04 factors affecting the intention to use the information on food labels by consumers, and this intention has a positive impact on the behavior of using information on food labels of the consumers in Vietnam. The study was conducted through 02 stages as preliminary qualitative research and official quantitative research with the data collected from 375 people aged 18 and older. After testing the reliability of the scale and conducting the EFA, 02 observed variables have been removed, but not altering the factors that have influence on the intention to use the information on food labels. Results of the multivariate regression analysis showed that the impact of factors affecting the intention to use, and this intention also has a strong impact on the consumers' behavior of using information on food labels.

5.2. Recommendations

From above findings, the researcher hereby offers some basic solutions in order to raise consumers' awareness, interests, understanding and trust the information on food labels and thereby increase the intention of using the information and increase the habit of using the information on the labeling in selecting food as follows:

Firstly, the research results showed that the most prominence in the attitude of consumers toward information on labels is the trust of customers about the health releases on them. It is derived from information published on the product labels which have been registered and censored with authorities, so it is necessary to resolve conflicts on information gap between producers and consumers. Thereby the information published on the label will be perceived by consumers in a positive way. The solution for manufacturers is highlight the information published on products because this is what consumers depend on to choose the suitable products.

Secondly, the intention of using the information on food labels is also subject to the impact of external social factors. Therefore, to raise this attention, in order to encourage consumers to choose safe food, then manufacturers are required to coordinate with authorities in promoting advertising to, propagate benefits of labels. It is essential for the whole society to have clear awareness that examination of information on food labels to distinguish safe food is really necessary. The authorities should regularly update the necessary information and warn the consumers about how to recognize bad quality or unsafe products. They should also warn consumers about the harmful effects of using the food items without labels or of unknown origin, which will adversely affect their health.

Thirdly, the factor of perceived behavioral control has the strongest impact on the intention to use the information on the label only following the attitude factor, so the solution set for enterprise administrators is to put the labels at the most visible positions when consumers come into contact with the products and labeling information should be clear and easy to understand. Because consumers may have limited time for shopping, they ignore the strong points of the products shown on the labels.

Finally, concerns about diet-health affect the intention to use the information on food labels. Therefore, in the process of food production, manufacturers must consider the food safety criteria as the first priority such as the investment in self-contained production process or disclosure of information about food which is fresh, safe, nutritious and good for health. The information published should be explicitly examined, to meet the needs of consumers with respect to the use of the information on the labels when choosing food.

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