

# Food Safety Management: Concerns from EU Tourists in Thailand

Kevin Wongleedee

**Abstract**—Culinary culture differences can cause health problems for international tourists in Thailand. This paper drew upon data collected from an international tourist survey conducted in Bangkok, Thailand during summer of 2012. Summer is the period that a variety of food safety issues and incidents are often publicized in Thailand. The survey targeted European Union tourists' concerns toward a variety of food safety issues that they encountered during their trip in Thailand. A total of 400 respondents were elicited as data input for t-test, and one way ANOVA test. The findings revealed an astonishing result that up to 46.5 percent of respondents were sick at least one time or more in Thailand. However, the majority of respondents trusted that the Thai hotel and Thai restaurants would ensure food safety, but they did not trust street vendors to ensure food safety. The level of food safety concern can be ranked from most concern to least concern by using the value of mean scores as follows: 1) artificial coloring, 2) use of preservatives, 3) antibiotics, 4) growth hormones, 5) chemical residues, and 6) bacterial contamination. The overall mean score for level of concerns was 3.493 with standard deviation of 1.677 which did not indicate a very high level of concern. In addition, the result for t-test and one way ANOVA test revealed that there was not much effect from the demographic differences to level of food safety concerns.

**Keywords**—Concerns, European Union Tourists, Food Safety Management.

## I. INTRODUCTION

EVERY summer in Southeast Asia countries over the past several decades, food poisoning, food borne outbreaks, and other food safety issues have often received media attention. There have been many cases of students becoming sick from food poisoning or tourists suffering from unsafe water. However, Thailand as one of the most attractive tourist destinations in this region has significantly improved the standard of food and water safety. And now the majority of food safety incidents are often related to street food vendors; only a few incidents occur in four or five star hotels and restaurants.

Traditionally, street food vendors have not been seriously regulated by the Thai government. In the past, Thai food was an important attraction and many international tourists stayed at four and five star hotels where they often enjoyed a high standard of food hygiene. Nowadays, however, the variety of Thai foods is still an important attraction but the demographics and habits of the tourists have changed; some tourists enjoy traveling by themselves, drinking and eating local food in small family restaurants, or patronizing street food vendors.

Kevin Wongleedee is with the International College, Suan Sunandha Rajabhat University, Bangkok, 10300 Thailand (Corresponding author phone: 662 160 1195 ext 28; fax: 662 160 1199; e-mail: scharoenchai@hotmail.com).

An increasing numbers of young and adventurous international tourists are actively seeking local unfamiliar food. And so these young tourists have started to patronize local eating places and ordering local dishes with various ethnic cuisines. In other words, the more international tourists have access to local unfamiliar food, the more they are vulnerable to the problems of street food safety. The risk can be intensified for some tourists such as children, elderly, and tourists with a compromised immune system or chronic health problems. Cohen and Avieli [1] stated that the problem of producing nutritious, hygienic, accessible, and culturally acceptable food to tourists is more complicated than that what might be assumed from promotional brochures or magazines. The concerns for food safety may come from international tourists observing unhygienic street food practices; such as, local cooker may touch meat or ice with their bare hands. Many international tourists may suffer from bad stomachaches or severe diarrhea after tasting the local street food in Bangkok such as traditional famous papaya salad which has as many peppers in it as papaya.

Illness from food safety could unexpectedly spoil the fun of a trip or a vacation. Therefore, the fear and concern of food safety might be the main reason for international tourists to be suspicious of local foods and beverages. This fear and concern of food safety has been exacerbated by the over warning and advice regarding culinary matters by the widespread tourists myths in Thailand. At the individual level, trust helps each tourist to reduce concerns about the risk of uncertainty to an acceptable level and to simplify decision making involving large amounts of information (Savadori et al.) [2]. There can be a negative effect on the Thai tourism due to concerns for the food safety risk issue. According to Siegrist, Cvetkovich, and Roth [3], trust in food safety management can be described as relying on those with responsibility for managing public health and safety. Moreover, trust in the food industry is negatively related to the perceived risks regarding food safety [4]. Therefore, it is important to study the impediments of food safety concerns which may cause an effect on international tourists' decision to come to Thailand. This paper is aimed to focus on food experience of the European Union tourists in Thailand since the majority and the most visible international tourists in Thailand are from the European Union.

## II. LITERATURE REVIEW

Despite the enormous importance for food safety in tourism, the role and the standard of food safety has been surprisingly little discussed. Page [5] stated that three levels

of health and safety risks which impact upon a tourist's well-being are: 1) minor accidents, injuries, and health issues such as traveler diarrhea 2) Medium-scale incidents such as road traffic accident 3) major-scale incidents such as kidnapping, terrorism, and natural disaster.

Takeuchi and Boonprab [6] had studied food safety in Thailand and their findings revealed that more than 40 percent of respondents thought that the government "seldom or never" provided any adequate food safety information. Moreover, respondents provided a list of food safety issues: chemical contamination, food vendor personal hygiene, bacterial /viral contamination, bird flu, and GMO foods. Yeung and Morris [7] stated that the major sources of food safety risks are related to microbiological, chemical and technological factors. Furthermore, their findings revealed that risk perceptions are heightened by the "unknown" or unfamiliarity of the characteristics of food safety risks.

In terms of food safety concerns, Kenerdy, Worosz, Todd, and Lapinski [8] disclosed in their study that consumers who are most likely to be unconcerned about food safety were those who were most likely to trust food actors such as government officials in the food and drug administration, food producers, restaurant owners and so forth. Moreover, the food industry used two main strategies to ensure food safety perception which were communication and education.

From the review of literature, the following research questions were developed:

1. What are the tourist sampled characteristics?
2. Do the respondents trust the food safety provided in Thailand?
3. What are the respondents' levels of food safety concern in Thailand?
4. Are there any demographic effects (gender, age, income, and education) associated with the level of food safety concerns in Thailand?

### III. METHODOLOGY

The population of this study was all European Union tourists who visited Thailand. The random sample for this study consisted of 400 respondents who visited Thailand at Suvarnabhumi airport during March to June 2012. Suvarnabhumi airport was chosen as a main area of study because it is a gate way to Thailand and therefore more demographic variety would be obtained. The sample size of 400 respondents was determined by Taro Yamane table with a 0.05 level of significance [9]. The data collation was done via an English questionnaire to elicit respondents' experience and to obtain their perspective. The validity of each question in the questionnaire was tested using Item-Objective Congruency or IOC index. In addition, 30 respondents were used as a pilot study in order to find ways to improve each question and to get an acceptable Cronbach Alpha Coefficient of more than 0.7 and any question with Cronbach Alpha Coefficient less than 0.7 would be redesigned and retested.

The procedure was to randomly question European Union tourists at Suvarnabhumi airport, Thailand. The respondents were questioned about their concerns and their trust in the

safety food management during their trip in Thailand. This research paper utilized mainly a quantitative method. Statistics tools such as t-test and one way ANOVA were utilized to report the results from the questionnaire. This research was also aimed to test these four research hypotheses concerning demographics: 1) It is hypothesized that there is no difference between gender and the level of food concern. 2) It is hypothesized that there is no difference between age groups and the level of food concern. 3) It is hypothesized that there is no difference between income groups and the level of food concern. 4) It is hypothesized that there is no difference between education groups and the level of food concern.

### IV. FINDINGS

The goals of the finding section in this research paper were to report sample characteristics and the main results of the data analysis used to answer the four research questions as well as three hypotheses.

TABLE I  
SAMPLE CHARACTERISTICS

	Frequency	Percent	N
<i>Gender</i>			400
Male	240	60	
Female	160	40	
<i>Age</i>			400
13-25 years old	294	73.4	
26-60 years old	91	22.8	
More than 60 years old	15	3.8	
<i>Income</i>			400
Less than €10,000	34	8.5	
€10,001 – €20,000	197	49.3	
€20,001 – €50,000	12	3	
More than €50,000	76	19	
<i>Education</i>			400
High school/GED	78	19.5	
College/University	258	64.5	
Graduate degree	64	16	
<i>Have you ever been sick due to eating food in Thailand?</i>			400
Never	214	53.5	
One time	87	21.8	
A few times	79	19.8	
Many times	20	5	

The target group was 400 European Tourists who visited Thailand via Suvarnabhumi airport during March to June 2012. TABLE I exhibited the frequency and percentage of the European Tourist sample characteristics. A demographic profile indicated that more male than female tourists were sampled with the ratio of 60:40. The age group of 13-25 years old made up 73.4 percent of the sample population and the age group of 26-60 years old made up 22.8 percent. Whereas, the age group of 61 or more, which was senior group, was only 3.8 percent. The majority of the sample population, 49.3 percent, had an income in the bracket of €10,001 – €20,000 and about 19 percent of them had an income in the bracket of more than €50,000. In terms of education, up to 64.5 percent had an undergraduate degree and 19.5 percent had high school

or General Education Development (GED), only 16 percent had a graduate degree. For the question of being sick because of the food in Thailand, up to 46.5 percent had been sick at least one time or more while 53.5 percent had never been sick because of the food in Thailand. To summarize, in terms of gender, the majority were male. In terms of age, the majority were in the age of 13-25 years old. In terms of Income, the majority had income in a range of €0,001 – €20,000. Finally, in terms of education, the majority had an undergraduate level.

TABLE II  
FOOD SAFETY TRUST

Food safety trust in each area	Yes	No	Rank
1. Do you trust the Thai government to ensure food safety for you?	212 53%	188 47%	4
2. Do you trust the Thai restaurants to ensure food safety for you?	231 57.8%	169 42.3%	3
3. Do you trust the Thai hotels to ensure food safety for you?	292 73%	108 27%	1
4. Do you trust the Thai street vendors to ensure food safety for you?	110 27.5%	290 72.5%	5
5. Do you trust the Thai grocery stores to ensure food safety for you?	238 59.5%	162 40.5%	2

From TABLE II, the respondents trusted that the Thai hotels will ensure food safety for them with the highest number of yes responses of 73 percent. Whereas, the respondents trusted that street vendors to ensure food safety for them the least with the number of yes responses of only 27.5 percent. The food safety trust can be ranked in decreasing order according to the percentage of “yes” answer as follows: 1) hotels, 2) grocery stores, 3) restaurants, 4) government, and 5) street vendors.

TABLE III  
LEVEL OF FOOD SAFETY CONCERN

	Mean	S.D.	Rank
<i>Level of food safety concern</i>			
1. Use of preservatives.	3.657	1.731	2
2. Growth Hormones	3.557	1.588	4
3. Artificial coloring	3.930	1.694	1
4. Bacterial contamination	2.660	1.783	6
5. Antibiotics	3.627	1.537	3
6. Chemical residues	3.530	1.731	5
All categories	3.493	1.677	

From TABLE III, the mean score can be used to rank the highest to the lowest concern as follows: 1) artificial coloring, 2) use of preservatives, 3) antibiotics, 4) growth hormones, 5) chemical residues, and 6) bacterial contamination. Also, the mean score of all categories is 3.493 with standard deviation of 1.677 which indicated that EU tourists' level of food safety concern is not very high.

#### 1. The Independence Sample T-Test Hypothesis

$H_o$ : There is no difference between gender and level of food safety concern.

$H_1$ : There is a difference between gender and level of food safety concern.

TABLE IV  
MALE AND FEMALE LEVEL OF CONCERN (GENDER)

Level of food safety concern	Level of Concern					
	Male N=240		Female N=160		t	Sig.
	Mean	S.D.	Mean	S.D.		
1. Use of preservatives.	3.69	1.72	3.61	1.74	.415	.678
2. Growth Hormones	3.63	1.53	3.46	1.64	1.099	.272
3. Artificial coloring	4.01	1.69	3.82	1.69	1.163	.245
4. Bacterial contamination	2.49	1.62	2.84	1.92	-1.99	.047*
5. Antibiotics	3.61	1.52	3.64	1.55	-.213	.832
6. Chemical residues	3.49	1.73	3.57	1.73	-.466	.641

\* P value is less than 0.05

From TABLE IV, one can observe that the majority of p values are more than 0.05, and therefore, this indicates that there are no gender differences in terms of food safety except in the bacterial contamination category. Hence, the hypothesis 1 is answered; there is no gender difference except with bacterial contamination category.

#### 2. One-way ANOVA: F-test Hypothesis

$H_o$ : There is no difference between age groups and level of food safety concern.

$H_1$ : There is a difference between age groups and level of food safety concern.

From the analysis of SPSS results, all p values are more than 0.05, and therefore, this would indicate that there are no differences between age groups and the level of food safety concern in all categories. Hence, hypothesis 2 is answered; there is no age group effect in terms of the level of food safety concern in any category.

#### 3. One-way ANOVA: F-test Hypothesis

$H_o$ : There is no difference between income groups and level of food safety concern.

$H_1$ : There is a difference between income groups and level of food safety concern.

TABLE V  
ANOVA TEST FOR LEVEL OF FOOD CONCERN (INCOME)

Level of concern		SS	df	MS	F	Sig.
Chemical residues	Between groups	34.634	4	8.659	2.946	.020*
	Within group	1161.006	395	2.939		
	Total	1195.640	399			

\* P value is less than 0.05

To answer hypothesis 3, one way ANOVA test was performed to test the significance of income group difference of the respondents in six categories: 1) artificial coloring, 2) use of preservatives, 3) antibiotics, 4) growth hormones, 5) chemical residues, and 6) bacterial contamination. Therefore, this indicates that there are no age group differences in terms of food safety except in the chemical residues category. Hence, the hypothesis 3 is answered; there is no age group difference except with chemical residues category.

#### 4. One-way ANOVA: F-test Hypothesis

$H_0$ : There is no difference between level of education groups and level of food safety concern.

$H_1$ : There is a difference between level of education groups and level of food safety concern.

TABLE VI

ANOVA TEST FOR LEVEL OF FOOD CONCERN (EDUCATION)

Level of concern		SS	df	MS	F	Sig.
Antibiotics	Between groups	20.640	3	6.880	2.952	.033*
	Within group	922.857	396	2.330		
	Total	943.497	399			

\* P value is less than 0.05

TABLE VII

ANOVA TEST FOR LEVEL OF FOOD CONCERN (EDUCATION)

Level of concern		SS	df	MS	F	Sig.
Chemical residues	Between groups	28.648	3	9.549	3.240	.022*
	Within group	1166.992	396	2.947		
	Total	1195.640	399			

\* P value is less than 0.05

To answer hypothesis 4, one way ANOVA test was performed to test the significance of education group difference of the respondents in six categories: 1) artificial coloring, 2) use of preservatives, 3) antibiotics, 4) growth hormones, 5) chemical residues, and 6) bacterial contamination. Only antibiotics and chemical residues showed a level of significance. Therefore, this indicates that there are no education group differences in terms of food safety except in antibiotics and chemical residues category. Hence, the hypothesis 4 is answered; there is no education group difference except with antibiotics and chemical residues category.

#### V. DISCUSSION

The findings of this research revealed an astonishing fact that up to 46 percent of respondents were sick at least one time or more due to eating food during their trip in Thailand. This indicates that the international tourists are very susceptible to the risks of food safety in Thailand. In terms of trust, the sample showed more trust in hotels and grocery stores and showed less trust in government and street food vendors. In terms of food safety concern, the tourist sampled had more concern in the artificial coloring and the use of preservative category and had less concern in chemical residues and bacterial contamination category.

When viewing at the difference between male and female concerns, the majority of the categories showed no association of gender effect except in the bacteria contamination category. The result concurred with the study of Leikas, Linderman, Roininen, and Lahettnmake who reported that there was no gender difference concerning the perception of risks of food safety [10]. After utilizing one way ANOVA test, the findings revealed that only chemical residues showed a level of

significance with the age groups. In terms of education groups, the antibiotic and chemical residues category showed a level of significance within the education groups.

#### VI. LIMITATIONS AND FUTURE STUDIES

The main limitation of this paper came from sampling only EU tourists who may not represent all international tourists visited Thailand. As a consequence, the findings may not be generalized to international tourists. Therefore, future research should use random sampling with all international tourists. Also, future studies should cover not only the level of concern in food safety of international tourists but also the reasons that international tourists are concerned or are not concerned with any particular food safety category. Then, it will possible to develop more general marketing strategies that are suitable to reduce the level of concern in food safety and increase travel satisfaction.

#### REFERENCES

- [1] COHEN, E. AND N. AVIELI, "FOOD IN TOURISM," ANNUAL OF TOURISM Research, Vol.31, No. 4, 2004, pp. 755-778.
- [2] Savodori, L., Savio, S., Nicotra, E., Rumati, R., Finucan, M., & Slovid, P. "Expert and public perception of risk of biotechnology," Risk Analysis, 24(5), 2004, pp.1289-1299.
- [3] M. Siegrist, G. Cvetkovich, and C. Roth, "Salient value similarity, social Trust and risk/benefit perception," Risk analysis, Vol.20, No.3, 2000, pp.353-362.
- [4] M.F. Chen, "Segmentation of Taiwanese consumers based on trust in the Food supply system," British Food Journal, Vol. 114, Iss:1, 2012, pp. 70-84.
- [5] S.J. Page, "Current issue in tourism: the evolution of travel medicine Research: a new research agenda for tourism?," Tourism Management, Volume 30, 2009, pp.149-157.
- [6] M. T. Takeuchi and K. Boonprab, "Food safety situations in Thailand With Regard to their Thai's food safety knowledge an behaviors," Kasetsart Journal, 2006, 40: pp.222-228.
- [7] R. M.W. Yeung and J. Morris, "Food safety risk consumer perception and Purchase behavior," British Food Journal, 2001, Vol.103, pp.170-186.
- [8] J. Kennedy, M. Worosz, E.C. Todd, and M.K. lapinski, "Segmentation of US Based on food safety," British Food Journal, 2008. Vol.110, pp. 691-705.
- [9] T. Yamane, "Statistics: An introductory analysis," 3rd editon, 1973, New York, Harper and Row.
- [10] S. Leikas, M. Lindeman, K. Roininen, and L. Lahteenmaki, "Food risk Perspective, gender, and individual differences in avoidance and Motivation, intuitive and analytic thinking styles, and anxiety," 2007, Appetite, 48, pp.232-240.