The Safety and Self-protection Awareness Application Model for Sea Travel Risk

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Abstract— Research on the safety and self-protection awareness application model for sea travel risk has conducted survey with the sample populations of 385 tourists aged more than 18 yrs. who traveled to Chonburi province, Thailand. The purpose is to study the tourism season associated with threats in order to create the security awareness application program for seaside tourism. The travel seasons are summer and rainy season represent the high and low season. The travel risk consists of marine accident, road accident, price fraud, threat in life and property, and not receiving immediate help. The statistics used in data analysis are descriptive statistics (mean, percentage, and standard deviation) and inferential statistics (Chi-Square). For all 5 categories of risk, research found the weak relationship but still significant with the summer travel. The highest relationship is marine accident and the least is not receiving immediate help. In rainy season, the result infers that the marine accident is important risk in rainy season, mainly cause by the weather (monsoon). The study on marine accident should be further study in depth and expand to other sea travel place in Thailand. The result could be used as a guideline for understanding and reducing the tourism risk for both local and foreign tourists. The safety and self-protection awareness application model for sea travel tourist shall be constructed using this data.

Keywords- Travel risk application;Awareness Application; User-Generated Content; Sea travel; Travel threat;

I. INTRODUCTION

Tourism is the part of service-sector that brings lots of benefit to the country. The most explicit gain is from national income as a result of creating job in several sectors, improve transport facility, better understand of culture from foreign country [1][2][3][4]. In Thailand the income from tourism has range at the 10th highest income source compare with other country [5]. Thailand's most tourist attraction are the culture and sun-and-sand destination. The poupular destinations are Pattaya, Phuket, Phang-Nga, and Krabi. The tourist behavior in present has changed due to the Internet technology and the power of information search. The characteristic of destination itself is not enough for tourist to make a visiting destination. They are raising up the concern with the safety-related issue. The authority should be more concerned with the presence of tourism threat to prevent them from changing their destination [6].

The previous researches indicated that the tourist experienced with travel threat will reduce their chance to go back there again. If we want to attract more tourists, the tourism stakeholders should be well-prepared with the situations. The effective plan is to study in each specific location for travel risks. With these risk information, the protection and recovery plan shall be effectively created and resulted in welcome more tourists and increasing the tourism income.

This research survey the travel risk in sea destination in Thailand to find the relationship between tourism behavior and the travel risk. The objective is to find the travel risk that associate with travel season. The result will be use to benefit the concern authority and organization for creating the security awareness application program for sea travel tourism.

II. CONCEPTUAL FRAMEWORK

The research hypothesis stated that tourism season is related to travel risk. The sample population was 385 respondents, who experienced sea travel in Chonburi (e.g. Pattaya) and live in metropolitan area of Thailand. The conceptual framework which describe the variable and hypothesis is as following:

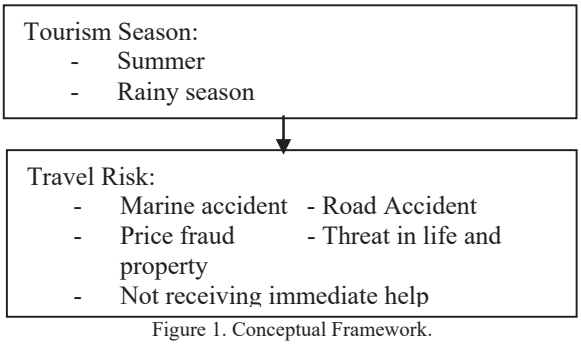

Figure 1. Conceptual Framework.

III. Literature Review and Related Studies

The weather influences the human behavior in many areas for example in the field of marketing [7], social [8], and tourist [9] [10]. Most of the tourist will seeking weather information before they make a decision on travel destination. For sea travel, the tourist usually visits during summer and winter time. As Hamilton and Lau [11] mentioned in their research from interviewing German tourist about how weather affect their travel destination. They found that temperature is one important aspect toward the selecting travel destination.

The travel risk is another factor that affects the travel destination determination. The tourist threat could be classified by crime, accident, health concerns, natural disasters, and not receiving immediate help. [12] [13] [14] G. Giusti and J.M. Raya [15] uses laboratory experiment to study the effect of perception crime toward tourist's intention to travel. They found that after the perception of crime, the tourist had a negative idea on travelling there. They suggest the policy maker to reduce the crime perception to tourist.

B. Rittichainuwat et al. [16] study the traveler with low frequency of natural disaster would have less prepare for the risk. They are more optimistic bias than the tourist who has no experience about the natural disaster. The result suggested that the experience in natural disaster risk lead to lack of security awareness.

J. Rosselló, O. Saenz-de-Miera [17] researched on the cause of tourist road accident in Spain. They found the effect factors consisted of weather conditions, road characteristics, socio-economic, and tourist exposure. The result suggested that tourist themselves are the most important factor for the accident. The authority at travel destination should informed tourist about any conditions that cause accident and created security awareness among them.

J. Wang, et al. [18] studied the safety of adventure tourism in China. They included the personality traits and emotion to understand the tourist's safety awareness behavior. The result suggested developing risk communication model to motivate the tourist for self-protective action in order to protect them from any risk.

B. Faulkner [19] study the tourism disaster management plan by studying disaster management in general and draw the conclusion on the tourism aspect. The study suggests a set of principles on disaster planning as pre-event, prodromal, emergency, intermediate, long term (recovery), and resolution.

B. Khazai et al. [20] researched on recovery of tourism destination after disaster. The objective is to find the recovery model that is suitable for restoring the image of tourism destination. They suggest the Tourism Recovery Scorecard (TOURS) as a crisis communication tools with safety, physical recovery and business recovery.

IV. Analysis of Data

The finding revealed that majority of population were female, age between 18-25 yrs., working in private sector and spending tourism money at moderate level. Analysis of data according to each category using descriptive statistics display in table 1-13.

Table I. Display mean and S.D. for the tourism behavior in travel season

Travel Season	$\bar{x}$	S.D.	Meaning	Order
1. Summer (March-June)	3.26	1.13	Often	1
2. Rainy (July-October)	2.24	1.00	Sometimes	3
3. Winter (November-February	3.21	1.19	Often	2

The survey gives us the conclusion the seaside travel occurred most during summer and less in rainy season.

Table II. Display mean and S.D. for the tourism behavior in duration of stay

Duration of Stay	$\bar{x}$	S.D.	Meaning	Order
1. 1 Day	3.08	1.24	Often	1
2. 2-3 Days	3.05	1.16	Often	2
3. More than 3 Days	2.52	1.28	Sometimes	3

The tourists often stay less than 3 days because Chonburi province is not far from Bangkok where our sample population lives. For those who stay more than 3 days might go for the meeting and seminar according to the survey.

Table III. Display mean and S.D. for the travel risk in 5 categories

Travel Risk	$\bar{x}$	S.D.	Meaning	Order
1. Marine Accident	1.89	1.01	Sometimes	5
2. Road Accident	2.58	1.25	Sometimes	2
3. Price fraud	2.65	1.16	Often	1
4. Threat in life and property	2.41	1.11	Sometimes	3
5. Not receiving immediate help	2.38	1.06	Sometimes	4

Among the 5 categories of travel risk, the research found that price fraud (taxi/restaurant) is the most threat to tourist while the other risks are seldom happening. The marine accident is surprisingly less than other, this could be indicated for the system standards of all procedures and equipment.

Hypothesis 1: The travel season (Summer) is associated with the travel risk.

Due to data in travel season give us the summer is the most travel season, then this hypothesis only focus on summer time. Next section, the research hypothesis will be tested.

TABLE IV. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (MARINE ACCIDENT)

Summer (March-June)	Never	Seldom	Some-times	Often	Almost always
Never	22	4	2	0	0
Seldom	30	26	5	2	0
Sometimes	60	47	23	7	1
Often	29	40	15	8	1
Almost always	29	11	13	1	9
Statistics					
χ2	**Cramer's V**		**Sig.**		
68.490	0.211		0.000*		

* Significant at the statistical level 0.05

From the analysis found that travel in summer has a relationship with marine accident at significant level 0.05 (Sig.= 0.000) with the weak level of relationship (Cramer's V=0.211). The relationship is minimally acceptable.

TABLE V. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (ROAD ACCIDENT)

Summer (March-June)	Never	Seldom	Some-times	Often	Almost always
Never	12	2	8	3	3
Seldom	19	22	15	6	1
Sometimes	33	32	37	31	5
Often	15	26	30	14	8
Almost always	19	10	10	10	14
Statistics					
χ2	**Cramer's V**		**Sig.**		
48.819	0.178		0.000*		

* Significant at the statistical level 0.05

From the analysis found that travel in summer has a relationship with road accident at significant level 0.05 (Sig.= 0.000) with the weak level of relationship (Cramer's V=0.178). The relationship is minimally acceptable.

TABLE VI. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (PRICE FRAUD)

Summer (March-June)	Never	Seldom	Some-times	Often	Almost always
Never	9	9	6	3	1
Seldom	20	19	13	9	2
Sometimes	24	36	42	34	2
Often	11	22	31	22	7
Almost always	11	20	12	12	8
Statistics					
χ2	**Cramer's V**		**Sig.**		
32.784	0.146		0.000*		

* Significant at the statistical level 0.05

From the analysis found that travel in summer has a relationship with price fraud at significant level 0.05 (Sig.= 0.000) with the weak level of relationship (Cramer's V=0.145). The relationship is minimally acceptable.

TABLE VII. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (THREAT IN LIFE AND PROPERTY)

Summer (March-June)	Never	Seldom	Some-times	Often	Almost always
Never	9	9	6	3	1
Seldom	20	19	13	9	2
Sometimes	24	36	42	34	2
Often	11	22	31	22	7
Almost always	11	20	12	12	8
Statistics					
χ2	**Cramer's V**		**Sig.**		
47.245	0.175		0.000*		

* Significant at the statistical level 0.05

From the analysis found that travel in summer has a relationship with threat in life and property at significant level 0.05 (Sig.= 0.000) with the weak level of relationship (Cramer's V=0.175). The relationship is minimally acceptable.

TABLE VIII. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (NOT RECEIVING IMMEDIATE HELP)

Summer (March-June)	Never	Seldo	Some-times	Often	Almost always
Never	9	8	10	0	1
Seldom	17	22	20	4	0
Sometimes	30	46	50	10	2
Often	19	26	31	14	3
Almost always	17	18	11	10	7
Statistics					
χ2	**Cramer's V**		**Sig.**		
32.345	0.145		0.009*		

* Significant at the statistical level 0.05

From the analysis found that travel in summer has a relationship with not receiving immediate help at significant level 0.05 (Sig.= 0.009) with the weak level of relationship (Cramer's V=0.145) . The relationship is minimally acceptable.

The discussion from the first hypothesis are as follows:

Summer time is the highest season for sea travel as a result of temperature which consistent with the finding from [22]. The analysis suggested on the relationship of temperature and the tourist destination. Most of the tourism stakeholder are well-prepared for The arrival of tourists. The result shows us the weak relationship but at significant level. The statistics (Cramer's V) to indicate relationship for 4 types of risk are: road accident (0.175), price fraud (0.146), threat in life and property (0.175), and not receiving immediate help (0.145). This result gives us a suggestion on the normal situation of risk in summer time. The important observation is in the marine accident which highest level of relation at Cramer's V = 0.211. We can imply that the accident in marine maybe higher during summer because of the number of tourists engaging in marine activity. All the stakeholder should pay more attention in security safeguard in this risk.

Hypothesis 2: The travel season (Rainy) is associated with the travel risk.

The hypothesis testing are as follows:

TABLE IX. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (MARINE ACCIDENT)

Rainy Season (July-October)	**Never**	**Seldom**	**Some-times**	**Often**	**Almost always**
Never	63	24	12	0	1
Seldom	59	57	15	5	0
Sometimes	42	37	25	7	3
Often	5	9	6	3	2
Almost always	1	1	0	3	5

Statistics		
χ2	**Cramer's V**	**Sig.**
138.514	0.300	0.000*

* Significant at the statistical level 0.05

From the analysis found that travel in rainy season has a relationship with marine accident at significant level 0.05 (Sig.= 0.000) with the moderate level of relationship (Cramer's V=0.300) . The relationship is acceptable.

TABLE X. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (ROAD ACCIDENT)

Rainy Season (July-October)	**Never**	**Seldom**	**Some-times**	**Often**	**Almost always**
Never	31	23	24	17	5
Seldom	37	40	36	13	10
Sometimes	23	25	33	26	7
Often	7	3	7	5	3
Almost always	0	1	0	3	6

Statistics		
χ2	**Cramer's V**	**Sig.**
56.378	0.191	0.000*

* Significant at the statistical level 0.05

From the analysis found that travel in rainy season has a relationship with road accident at significant level 0.05 (Sig.= 0.000) with the weak level of relationship (Cramer's V=0.191). The relationship is minimally acceptable.

TABLE XI. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (PRICE FRAUD)

Rainy Season (July-October)	**Never**	**Seldom**	**Some-times**	**Often**	**Almost always**
Never	22	30	23	19	6
Seldom	24	44	41	22	5
Sometimes	23	30	30	29	2
Often	5	2	8	6	4
Almost always	1	0	2	4	3

Statistics		
χ2	**Cramer's V**	**Sig.**
35.647	0.152	0.003*

* Significant at the statistical level 0.05

From the analysis found that travel in rainy season has a relationship with price fraud at significant level 0.05 (Sig.= 0.003) with the moderate level of relationship (Cramer's V=0.152). The relationship is minimally acceptable.

TABLE XII. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (THREAT IN LIFE AND PROPERTY)

Rainy Season (July-October)	**Never**	**Seldom**	**Some-times**	**Often**	**Almost always**
Never	37	32	21	9	1
Seldom	27	53	42	11	3
Sometimes	28	24	36	23	3
Often	5	3	8	7	2
Almost always	1	0	1	4	4

Statistics		
χ2	**Cramer's V**	**Sig.**
85.253	0.235	0.000*

* Significant at the statistical level 0.05

From the analysis found that travel in rainy season has a relationship with threat in life and property at significant level 0.05 (Sig.= 0.000) with the weak level of relationship (Cramer's V=0.235). The relationship is minimally acceptable.

TABLE XIII. DEMONSTRATE THE RELATIONSHIP BETWEEN TRAVEL SEASON AND TRAVEL RISK (NOT RECEIVING IMMEDIATE HELP)

Rainy Season (July-October)	**Never**	**Seldom**	**Some-times**	**Often**	**Almost always**
Never	38	30	27	2	3
Seldom	27	52	42	13	2
Sometimes	22	33	45	13	1
Often	4	5	7	7	2
Almost always	1	0	1	3	5

Statistics		
$\chi 2$	**Cramer's V**	**Sig.**
111.302	0.268	0.000*

* Significant at the statistical level 0.05

From the analysis found that travel in rainy season has a relationship with not receiving immediate help at significant level 0.05 (Sig.= 0.000) with the moderate level of relationship (Cramer's V=0.268). The relationship is acceptable.

The discussion from second hypothesis are as the following: The rainy season are not usually for sea travel because there is possibly a chance of monsoon which dangerous to tourist. In Thailand, during this time, there is one month for school break (October) and having some family trip. Foreign tourists also take a trip because of lower travel price. The weak relationship between travel season and risk indicate by Cramer's V as: road accident (0.191), price fraud (0.152), and threat in life and property (0.235). The finding suggests that these risks are not much related to the travel time in rainy season. The noticeable moderate relationships are in marine accident (0.300) and not receiving immediate help (0.268). The result infers that the marine accident is important risk in rainy season, mainly cause by the weather (monsoon). The preventive method such as the motivated self-protective action and maximum security standard should be in place. Also the helping team and life-saving equipment should be ready for use in emergency case.

V. CONCLUSION

The travel season has a relationship with the type of travel risk. The research had analyzed data for both the high-season in summer and low-season in rainy season. The findings still show the significant relationship in all risk categories. The tourism stakeholder could further make more investigation into the matter and come up with the security safeguard for tourism industry both local and foreign tourist.

VI. LIMITATION AND FURTHER STUDY

This research has done by using population as Thai tourist who experienced sea travel in only Chonburi (e.g. Pattaya). Due to the funding limitation, that make the scope of the research was not covered the main part of tourist attraction especially southern part of Thailand (e.g. Phuket). In order to get more effective result, the research should further extend the boundary into foreigner tourist for sea travel in southern Thailand to investigate into the biggest security risk at sea. Those data could be used to create the safety and self-protection awareness model for sea travel tourist in Thailand.

The security awareness program will be created based on the travel risk data. The application on mobile phone will construct to keep track of tourist location. The application will create the link to the authority in order to provide help immediately when in need. The requirement and explanation on user-generated contents will be made clear to the tourist before using this system.

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