# Marine Tourism Behavior and Tourists' Risk: A Structural Equation Modelling Approach

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*Abstract*— Research on the application of safety and self-protection models for sea travel risks was conducted by a sample of 385 people aged 18 and over who traveled to Chonburi. The objective is to study the tourism season that is related to threats to develop a safety program for seaside tourism. The tourist season are summer and the rainy season. Travel risks consist of marine accidents, road accidents, price fraud, threats to life and property and do not receive immediate assistance. The statistics used in data analysis was SEM. Research shows that weak relationships but still important for summer tourism, the highest relationship is a marine accident and at least not immediately received assistance. In the rainy season, the consequence is that marine accidents are a significant risk, most of which is caused by the weather (monsoon). Marine accident studies should be conducted in depth and extended to other sea destinations. Thailand can be used as a way to understand and reduce tourism risks for both domestic and international tourists. The form of security and self-protection applications for tourists traveling by sea will be created using this information.

***Keywords- Risk; Price Fraud; Behavior; Activity; SEM***

## I. INTRODUCTION

Tourism is a part of the service sector that brings benefits to the country, mainly from national income, as a result of job creation in many areas of transportation services. In Thailand, tourism income ranks 10th highest national incomes compared to other countries. Most tourist attractions are culture, sunshine and sand. The main destinations are Pattaya, Phuket, Phang Nga and Krabi. At present, the nature of the destination is not enough for tourists to visit. They are more concerned about security issues. Officials should focus on tourism threats to prevent them from changing destinations.

Previous research shown that tourists who had travel threats will reduce their chances of going back there again. If we want to attract more tourists, tourism stakeholders should be ready. The effective plan is to study in each specific location for travel risks. Places for travel risks with these risk data, an effective prevention and recovery plan must be established and resulting in increased tourism and tourism income.

This research explores the risks of traveling to sea destinations in Thailand to search the relationship between personnel information, activities, tourism behavior and travel risks. The results will be used for agencies and organizations that involved in creating safety applications for sea travel tourism.

## II. CONCEPTUAL FRAMEWORK

The research hypothesis states that the tourist season is related to travel risks. The respondents are 385 who have experience in marine tourism in Chonburi (such as Pattaya) and live in the big cities of Thailand. The variables and assumptions are as in Figure 1.

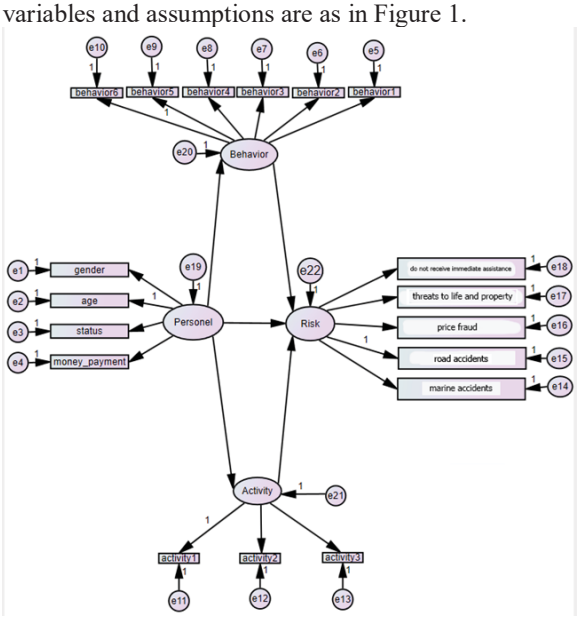


Figure 1. Conceptual Framework.

## III. LITERATURE REVIEW AND RELATED STUDIES

Weather has many influences on human behavior. For example, in marketing [7], society [8], and tourists. [9] [10] Most tourists will look for weather information

before traveling. In summer and winter, tourists tend to sea travel, like Hamilton and Ludong. [11] talk about their research from interviews German tourists about the weather that affects travel destination. They found that temperature is important toward the selected travel destination.

Travel risk is another factor that affects traveling. Setting destinations may be a threat from tourists. Classified by crime, health-related accidents, natural disaster and did not receive immediate assistance. [12] [13] [14] G. Giusti and J.M. Raya [15] use laboratory experiments to study the impact of perceived crimes on tourism of intention to travel, they found after the perception of crime. Travelers have negative thoughts about traveling there. They advise the officer to reduce crime.

B. Rittichainuwat et al. [16] studied the frequency of natural disasters will be less risk prepared. They are more optimistic bias than tourists who have no experience with disasters. The result shows that the risk experience from disaster leading to a lack of security awareness.

J. Rosselló, O. Saenz-de-Miera [17] researches the causes of road accidents in Spain. They found that factors affecting the weather, road characteristics, economy and society and tourism. Research shows that tourists are the most important factor in accidents. The travel agency should inform the tourists about conditions that cause accidents and raise safety awareness.

J. Wang, et al. [18] study the safety of adventure tourism in China. Including personality and emotions in order to understand tourists' perceptions of safety. Research suggests that developing a risk communication model to encourage tourists to protect themselves from risks.

B. Faulkner [19] studies tourism disaster management plans by studying general disaster management and summarizing tourism results. The study shows a set of principles for disaster planning in the mid to long-term and solutions.

B. Khazai, et al. [20] research on tourist destination restoration after the disaster with the aim of finding a suitable recovery model for tourist destination recovery. They suggest the Tourism Recovery Scorecard (TOURS) is a crisis communication tool with secure physical data recovery.

## IV. Analysis of Data

The results show that the majority of the respondent are female, aged between 18-25 years, work in the private sector and spend money on tourism at a moderate level. The most seaside tourism occurs during the summer ($\bar{X}$=3.26) and less in the rainy season ($\bar{X}$=2.24). Tourists tend to stay less than 3 days because Chonburi is not far from Bangkok, where sample population lives. For who live more than 3 days, they might attend meetings and seminar. The five travel risk surveys show that price fraud (taxi / restaurant) is the most threat to tourists ($\bar{X}$=2.65), while other risks are very rare. A marine accident that is not surprising elsewhere here may specify standards, systems, procedures and equipment.

To analyze the model based on the given assumptions and have important statistics to check the consistency of the assumptions with the empirical data. The results of the data analysis are presented in the following order (1) over identified model or model specification (2) Calculation of correlation coefficient between variables by finding the Pearson correlation coefficient (Intercorrelation) (3) the results of parameter estimation of the model (4) Measures of the model fit. Using Structural Equation Modeling (SEM) to analyze the model. Which has the details of the research as follows.

1. The over identified model of the causal path analysis model. The researcher has defined abbreviations used in the analysis as follows.

Behavior means tourism behavior compose of tourism in summer, in the rainy season, in winter, 1-day tour, period of 2-3 days and, more than 3 days.

Risk means the risk event that the respondents encountered compose of the risk of water accident, road accidents, price fraud, in life and property and, not being assisted.

Activity refers to tourism activities compose of purchasing goods / services / food, entertainment at night and, to see nature.

Personnel refers to the respondent information compose of gender, age, status and, money payment.

2. Calculation of correlation coefficient between variables by finding the Pearson correlation coefficient (Intercorrelation) to study whether the variables studied are independent and to check or test the relationship between the independent variables and the dependent variables in order to consider the problems that may be caused by the variation too (Multicollinearity) by specifying the relationship between variables must not exceed 0.75 (Schroeder, 1990), in which the relationship of the variables are too high, resulting in incorrect analysis. In order to see the relationship of variables, researcher consider the Bivariate Correlation value of the variables to be analyzed in the model first. The result shown the pair does not exceed the standard threshold. Therefore, it can be concluded that the variable used in the analysis does not have a problem of having a relationship too high.

3. The results of parameter estimation of the model or coefficient estimation results. The results of analysis of model of independent variables with dependent variables. It is used to create a specified model instead of having a path in the same direction that can be associated with variables that are internal variables or hidden variables in every structural equation. Which shows statistics showing the relationship between variables with standard regression coefficient (Standard regression weight) t-

Value (critical ratio: C.R.), p-Value and standard error (S.E.) as a result of the analysis as in Figure 2.

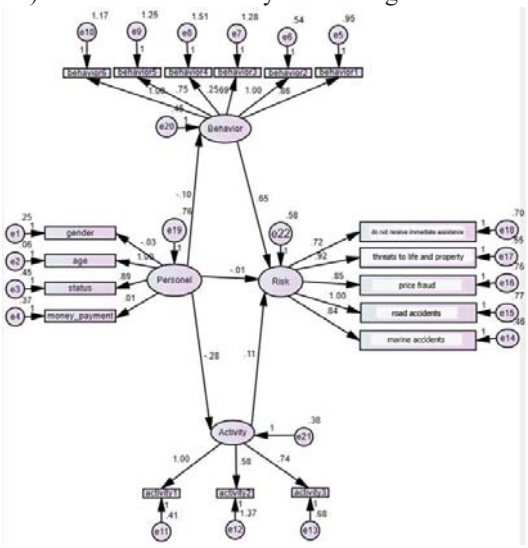


Figure 2. SEM model parameter.

From Figure 2, the model parameter estimation results can be displayed. Some statistics between variables with standard regression coefficient (Standardized Regression Weights) Standard error (S.E.), t-Value (critical ratio: C.R.) and p-Value are shown in Table I.

TABLE I. DEMONSTRATE THE STANDARDIZED REGRESSION WEIGHTS

| Relationship pairs between | | | Estimate | S.E. | C.R. | P |
|---|---|---|---|---|---|---|
| Risk | < | Personel | - | 0.064 | -0.184 | 0.854 |
| Risk | < | Activity | 0.107 | 0.1 | 1.065 | 0.287 |
| money_pay | < | Personel | 0.015 | 0.037 | 0.395 | 0.693 |
| gender | < | Personel | - | 0.031 | -1.114 | 0.265 |

Note: *** statistically significant p <0.001

From hypothesis, different personal factors have different risks, as the P shown in the Regression Weights table is 0.854, which is higher than 0.05 and therefore reject the hypothesis. This means that different personal factors do not affect the risk.

From hypothesis, different tourism activities have different risks, as the P shown in the Regression Weights table is 0.287, which is higher than 0.05 and therefore rejects the hypothesis. Which means Different tourism activities do not affect the risk.

From hypothesis, different personal factors indirectly affect the risk through tourism activities because different tourism activities do not affect the risk. As shown in hypothesis above, therefore rejecting this hypothesis as well.

From the Regression Weights table, it is found that the p value between spending money and personnel factors is 0.693, and between sex and personnel factors is 0.265, indicating that the use of money for tourism and sex not suitable to be a representative of personnel factors. Therefore, eliminating this variable from next calculation Which can be re-written the relationship path of variables show as in Figure 3.

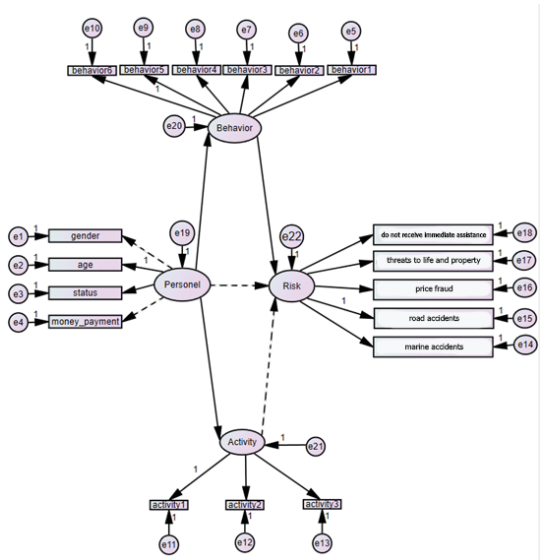


Figure 3. SEM adjusted model parameter.

Remark: Significant ——▶ Insignificant ·····▶

From the analysis of the coefficient of the path to the full causal relationship, it is found that the relationship between the variables used in the analysis is not appropriate. There are 4 paths that are not significant as shown in Figure 4.3. Therefore, the relationship model must be modifying patterns to get the best style. The statistical is shown in Table II.

TABLE II. THE STANDARDIZED REGRESSION WEIGHTSAFTER ADJUSTED

| Relationship pairs between | | | Estimate | S.E. | C.R. | P |
|---|---|---|---|---|---|---|
| Behavior | < | Personel | - | 0.258 | -5.575 | *** |
| Activity | < | Personel | - | 1.03 | -2.708 | 0.007 |
| Risk | < | Behavior | 0.676 | 0.111 | 6.066 | *** |
| status | < | Personel | 0.827 | 0.105 | 7.859 | *** |
| age | < | Personel | 1 | | | |
| behavior5 | < | Behavior | 0.557 | 0.115 | 4.845 | *** |
| behavior4 | < | Behavior | 0.439 | 0.127 | 3.452 | *** |
| behavior3 | < | Behavior | 0.507 | 0.115 | 4.429 | *** |
| behavior2 | < | Behavior | 0.89 | 0.106 | 8.422 | *** |
| behavior1 | < | Behavior | 0.929 | 0.13 | 7.158 | *** |
| risk5 | < | Risk | 0.728 | 0.079 | 9.207 | *** |
| risk4 | < | Risk | 0.97 | 0.095 | 10.249 | *** |
| risk3 | < | Risk | 0.867 | 0.098 | 8.82 | *** |
| risk2 | < | Risk | 1 | | | |
| risk1 | <- | Risk | 0.855 | 0.067 | 12.823 | *** |
| behavior6 | <- | Behavior | 1 | | | |
| activity1 | <- | Activity | 1 | | | |
| activity2 | <- | Activity | 1.648 | 0.24 | 6.859 | *** |
| activity3 | <- | Activity | 0.917 | 0.131 | 7.004 | *** |

Note: *** statistically significant p <0.001

Therefore, the path coefficients of each structural equation can be used to write the paths of the causal relationship model that has been decorated in relation to an economical model. (Parsimonious Model) to get the best relationship model Which reflects that 1) personal factors directly affect the risk through tourism behavior 2) personal factors directly affect the selection of tourism activities as shown in Figure 4.

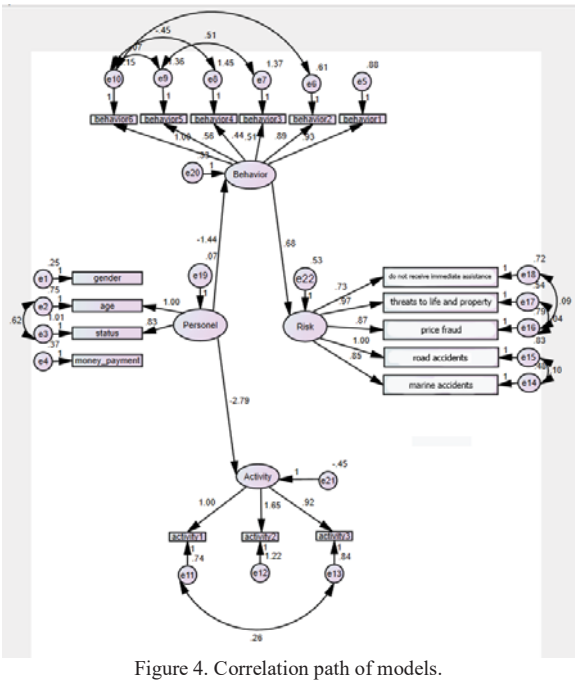


Figure 4. Correlation path of models.

Figure 4 shows model estimation results or various coefficient estimation results.

Examining the consistency of a model or checking the relationships between variables, if they can be analyzed and if the variables are not consistent, the structural equation model cannot be calculated. The researcher has to adjust the model until it is complete, acceptable, and reliable according to the principles of the research process. Therefore, the model development that is consistent with the empirical data is popularly called "Model Fit".

The results show that the empirical model and the theoretical model is consistent. The value shown as follows

1) Relative Chi-square: CMIN / df equals 2.128

2) Goodness of Fit Index: GFI equals .929

3) Adjusted Goodness of Fit index equals .903

4) Root Mean Square Residual is equal to .060

5) Root Mean Square Error of Approximation: RMSEA is .054

6) Comparative Fit Index is equal to .915

7) Hoelter equals 220.

From the model path, the relationship of variables has been adjusted into the best relationship. Therefore, the aforementioned relationship model is used to analyze the Direct Effect (DE), Indirect Effect (IE), and Total Effect (TE) as shown in Table III.

TABLE III. DEMONSTRATE THE RESULTS OF EFFECT BETWEEN VARIABLES

| Factor | Effects Type | Predictive variable | | | |
|---|---|---|---|---|---|
| | | Personal | Behavior | Activity | Risk |
| Behavior | Direct | -1.44 | 0 | 0 | 0 |
| | Indirect | 0 | 0 | 0 | 0 |
| | Total | -1.44 | 0 | 0 | 0 |
| Risk | Direct | 0 | 0.68 | 0 | 0 |
| | Indirect | -0.97 | 0 | 0 | 0 |
| | Total | -0.97 | 0.68 | 0 | 0 |
| Activity | Direct | -2.79 | 0 | 0 | 0 |
| | Indirect | 0 | 0 | 0 | 0 |
| | Total | -2.79 | 0 | 0 | 0 |

The conclusion of the research is based on the analysis of influence values as follows:

1. Demographic factor (except gender and money payment, due to lack of statistical significance) have a direct influence in the opposite direction to the behavior, with predicted values of -1.44 can be analyzed as follows:
   - Older tourists are preferring to travel in summer but younger tourists are preferring to travel in winter
   - Older tourists are plan to travel for 1-day tour but younger tourists are preferring to travel more than 3 days.
   - Student or employees are preferring to travel in winter but who are officer preferring to travel in summer.
   - Student or employees are preferring to travel more than 3 days. but who are officer preferring to travel less than 3 days.
2. The behavior has a direct influence in the same direction with risk with predicted value of 0.68. Meaning that more traveling and spend more time for travel may get more risks. Since the regression weights are all positive.
3. Demographic characteristics (except gender and money payment, due to lack of statistical significance) have indirectly effect in the opposite direction for risk through the behavior, with predictive values of -0.97 (-1.44 * 0.68). The analysis can be explained as follows:
   - Older tourists are found the risk less than the younger tourist.
   - Young tourists who prefer to travel in winter found the risk more than travel in summer.
   - Older tourists are plan to travel for 1-day tour was found risk less than younger tourists who preferring to travel more than 3 days.
   - Student or employees are preferring to travel in winter was found risk more than whose are preferring to travel in summer.
   - Student or employees are preferring to travel more than 3 days was found risk than whose are preferring to travel less than 3 days.
4. Demographic factor (except gender and money payment, due to lack of statistical significance) have a direct influence in the opposite direction to the activity, with predicted values of -2.79 can be analyzed as follows:
   - Older tourists are preferring to purchase goods / services / food more than younger tourists

- Older tourists are plan to entertainment at night less than younger tourists
- Older tourists are plan to see nature less than younger tourists
- Student or employees are plan to entertainment at night more than tourists who are officer.
- Student or employees are preferring to purchase goods / services / food less than tourists who are office.

## V. CONCLUSION

Travel seasons are risky when traveling. The research analyzes the data for the summer and tourist seasons. The findings still shown important relationships in all risk categories. Tourism stakeholders could take action on this issue and strengthen the tourism industry both local and foreign tourist.

## VI. LIMITATION AND FURTHER STUDY

This research was conducted by the Thai tourists with experience in Chonburi only (such as Pattaya). Due to financial limitations, the scope of the research does not cover all important parts of tourist destinations, especially the region, southern Thailand (such as Phuket). For more effective results, research should be extended to tourists. For foreigners traveling by sea in southern Thailand to determine the biggest security risk at sea, this information can be used to raise awareness and safety for self-protection for tourists. That traveled by sea in Thailand

Safety awareness programs will be created based on travel risk data. The mobile application will be created to track tourist attractions. The application will create links to authorized agencies to provide immediate assistance when needed. The terms and descriptions of user-generated content will be revealed to tourists before using this system.

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