

Recreational valuation of the coral diving activities at Similan island national park in Thailand

Kitipop Phewmau

Faculty of Economics, Chiang Mai University

tony_phewmau@hotmail.com

ABSTRACT

The objective of this study was to evaluate the recreational value of the coral diving activity at Similan Island National Park, Phang Nga Province. The study tool was the Individual Travel Cost Method (ITCM). The study results revealed that most of the samples, who were visitors diving to see coral reefs at Similan Island National Park, Phang Nga Province, were male, single, aged 21 – 30 years, had a bachelor's degree, had 4-7 family members, and had income between 10,001 – 30,000 Baht per month. Most of them were students, followed by traders and business owners, respectively. Most tourists diving to visit coral reefs were not members of diving clubs or marine environmental protection clubs. By the Individual Travel Cost Method (ITCM), it was found that the recreational value of Similan Island National Park, excluding the opportunity cost, was at 26,640 Baht per person per time, a total of 1,293.42 Million Baht per annum.

Keywords: Travel Cost Method

JEL Classification: O13, Q42, Q43

1. Introduction

Tourism is a very important sector in the Thai economy. It links directly to the development of rural area. The issue of sustainable tourism becomes more crucial. Tourism can be managed to be sustainable in many ways as suggested by Suriya (2012a) and Suriya and Gruen (2012). Tourism income is also an important resource that can compensate fading income from major economic activities (Pathompituknukoon, Khingthong and Suriya, 2012). Income from tourism has also been proven that it can reduce poverty directly in multiple dimensions (Suriya, 2012b) and indirectly via the linkage between income distribution and poverty reduction (Techanan and Suriya, 2012).

Natural abundance of Similan Island National Park in Phang Nga Province is well known among Thai and foreign tourists e.g. clear blue sea, magnificent coral reefs, sea animals and other living things, including beautiful islands with clean white sand beach, reefs and abundant forest and reserved wild animals.

To sustain natural resources, natural balance and ecosystem of the country, the Government announced and reserved this area as the marine national park under the National Park B.E. 2504 (1961), as public recreation areas, especially beautiful and diversified coral reefs. Natural resources generate benefits and activities, especially coral snorkeling and scuba diving which are famous among Thai and foreign tourists.

Snorkeling is a basic activity for tourists loving sea and wishing to close to natures in real environment. With only masks, snorkels, fins and life vests, snorkeling is a first and simple channel to visit underwater world. Snorkeling is different from scuba diving which requires several equipments. Divers shall be trained by internationally accepted institutions and have high expenses. So snorkeling is a much more popular ecotourism activity because of its convenience even for beginners. On the other hand, divers contribute to the destruction of marine environment resulting in negative consequences. Therefore, this study aims to evaluate the recreational value of the coral diving activity at Similan Island National Park, Phang Nga Province by the Individual Travel Cost Method (ITCM). As an input of the cost benefit analysis, the finding was used for properly establishing policies and budget allocation for coral diving development and improvement of Similan Island National Park, including promoting coral reef rehabilitation in the future.

2. Theory

2.1 Evaluation of Recreational Value

In this evaluation of the recreational value of the coral diving activity at Similan Island National Park, Phang Nga Province, the related theory is the Travel Cost Method (TCM). Its basic concept is summarized as follows. TCM concept is to evaluate the recreation value of persons willing to pay for travel expense. A traveler will decide to travel to, or use services of, a recreation place if his benefit or satisfaction is equal to expense and time. In this study, an assumption was that people living away far from recreation places (far-away people) had high travel expenses so their service rates were lower than that of people living near such places (local people). From the aforementioned concepts, the demand and consumer's surplus of the recreational use were calculated. Compared with the demand and supply for general goods and services, expenses i.e. travel expense and opportunity cost were prices of general goods and

services; and the number of visits to recreation places was the quantity of general goods and services (Somsakaw Petchanont, 1999) (Figure 1). It can be said that the demand on recreation travel was the number of visits to recreation places. The consumer's surplus of far-away people was lower than that of local people. The recreation value was the sum of the consumer's surpluses, or an area under a demand curve (shadow area in Figure 1). If a recreation place attracted far-away people, its value was considered high or difficult to substitute with other places. If it attracted only local people, its value was low.

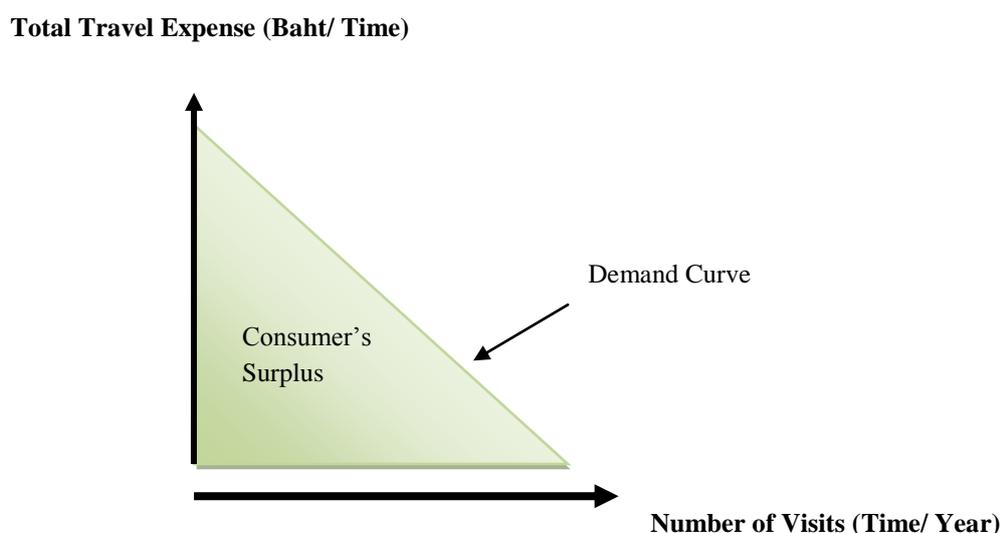


Figure 1 Demand Curve of Travel to Recreation Place

The basic travel cost method for evaluating THE recreation value by travel expense was as follows.

$$N = f(TC, Y) \tag{1}$$

- Where
- N = Number or frequency of visits to recreation places
 - TC = Total costs for recreation
 - Y = Other variables related to visits

From this basic Travel Cost Method, the Individual Travel Cost Method (ITCM) was formulated as follows.

Individual Travel Cost Method (ITCM)

In this method, the variables of the basic Travel Cost Method were adjusted. A dependent variable, the rate or number of visits to recreation places, was different from that in the Zone

Travel Cost Method. The demand curve represented a travel rate to recreation places of each individual person at each expense level. In addition to the dependent variable, the independent variables were different. ZTCM analyzed aggregate data or zonal data so its disadvantage was the explanation of recreational behaviors of each individual person due to different preferences but ITCM analyzed individual data. Its independent variables were individual person's variables so this method explained personal behaviors at a certain level (Somsakaw Petchanont, 1999).

The relationship between a visit rate and factors was presented in Formula 4.

$$W_i = f(TC_i, Y_i) \quad (4)$$

Where

- W_i = A visit rate to recreation place (Time/ Year) of person i
- TC_i = Travel expense to recreation place of person i
- Y_i = Other factors affecting travel decision of person i such as substitute places, etc.
- i = Persons travelling to recreation place (i= 1, 2, ... , m)

From the relationship mentioned above, the demand on recreation travel was forecasted by raising travel expenses until the travel rate was zero (0).

The demand curve was drawn and the recreational value was calculated from the area below the curve. This area represented the consumer's surplus.

3.Literature review

Somsakaw Petchanont (1999) explained the limitation of ZTCM that it was calculated from the zonal data. The assumption was that each individual person living in the same zone had the same needs and expenses. However, in reality, people living in the same zone may have different recreational preferences. Hence, the method's weak point was explaining relaxation behaviors or preferences of each person. ITCM analyzed the individual data so this method was able to explain personal behaviors or preferences of each individual person. In addition, people's opportunity costs (expenses) on travel and data searching were different due to different income bases. As a result, ZTCM and ITCM differently estimated the consumer's surplus.

To efficiently estimate the consumer's surplus of the recreation value of the the coral diving activity at Similan Island National Park, Phang Nga Province, the researcher decided to use ITCM which may result in more accurate estimation than ZTCM because the individual data represented the samples more accurately than the zonal data.

4. Methodology

This research evaluated the recreational value of the coral diving activity at Similan Island National Park, Phang Nga Province. The study tools comprised the Individual Travel Cost Method (ITCM), the estimated changes in demand and the recreational value, especially the estimated use value of the coral diving activity of on-site visitors in August 2012.

The population of this study was on-site visitors diving to see coral reefs at Similan Island National Park, Phang Nga Province. By the accidental sampling method, the sample size of 386 was calculated by the Taro Yamane (1968) from the total visitors of 48,993 visiting Similan Island National Park, Phang Nga Province in the fiscal year 2011.

The questionnaire for data collection was divided into 3 sections: Section 1 Economic and social information, Section 2 Coral diving behaviors and Section 3 Expenses of samples diving at Similan Island National Park, Phang Nga Province.

The Individual Travel Cost Model (ITCM) was as a follow.

$$V_i = f(C_i, X_i) \quad (5)$$

Where

- V_i = Number of visits of person i within 1 years
- C_i = Expense or cost to travel to Similan Island of person i
- X_i = Other factors affecting decisions to travel to Similan Island National Park, Phang Nga Province of person i such as economic and social factors, etc.
- i = Visitors diving to see coral reefs at Similan Island National Park
($i=1,2,3,\dots,386$)

5. Data

The data in this paper we collect from Thai Traveler who visited Mu Ko Similan National Park, Pangnga Province for 386 samples. Which consisted background information, travel behaviors, Cost information. The data is analyzed by Multiple Linear Regression Function

6. Result

Most of the samples, diving to see coral reefs at Similan Island National Park, Phang Nga Province, were male, single, aged 21 – 30 years, had a bachelor's degree, had 4-7 family members, and had average income of 14,035.38 Baht per month. Most of them were not members of diving clubs or natural preservation clubs. An average expense of the coral diving activity was at 11,843.42 Baht per person per time.

6.1 Evaluation of recreational value of Similan Island National Park, Phang Nga Province, by Individual Travel Cost Method (ITCM)

The coefficient of all 8 independent variables i.e. sex (MALE), age (AGE), educational level (EDU), student (STUDENT), job characteristic (PERMANENT), income (INCOME), substitute place (SUB) and travel expense (COST) was proceeded into the Simple Linear Regression Formula. The dependent variable was the number of visits to see coral reefs at Similan Island National Park, Phang Nga Province (V) as described in Table 1.

Table 1. Estimation by Individual Travel Cost Method (ITCM)
(The dependent variable was the number of visits to see coral reefs at Similan Island National Park, Phang Nga Province)

Variable	Individual Travel Frequency Method			
	Model 1		Model 2	
	Coefficient	Prob.	Coefficient	Prob.
Constant	2.262	0.004	2.019	0.000
COST	-3.276	0.005	-0.31	0.006
MALE	0.113	0.631	-	-
AGE	-0.003	0.844	-	-
EDU	-0.008	0.869	-	-
STUDENT	0.25	0.923	-	-
PERMANENT	-0.062	0.812	-	-
INCOME	-4.405	0.645	-	-
SUB	0.252	0.215	-	-
R ²	0.026		0.019	
N	382	382	382	382

Source : From calculation

From Model 1 testing all independent variables, it was found that sex (MALE), age (AGE), educational level (EDU), student (STUDENT), job characteristic (PERMANENT), income (INCOME) and substitute place (SUB) has no relationship with the number of visits at the statistic significant level, but expense (COST) has negative relationship with the number of visits at the statistic significant level of 0.01 with the coefficient of -3.276.

In conclusion, if travel expense (C) decreased, the number of visits to see coral reefs at Similan Island National Park (V) would increase.

7. Conclusions

The objective of this study was to evaluate the recreational value of the coral diving activity at Similan Island National Park, Phang Nga Province. The study results revealed that most of the samples, who were visitors diving to see coral reefs at Similan Island National Park, Phang Nga Province, were male, single, aged 21 – 30 years, had a bachelor's degree, had 4-7 family members, and had income between 10,001 – 30,000 Baht per month. Most of them were students, followed by traders and business owners, respectively. Most tourists diving to visit

coral reefs were not members of diving clubs or marine environmental protection clubs. From the study on travel behaviors, it was found that most visitors needed to relax by coral diving at Similan Island National Park. Their coral diving period was 1 day with no overnight stay. Persons suggesting coral diving were friends/ relatives. The most attractive reason to see coral reefs was clean and clear sea water. Most of them planned to re-visit Similan Island National Park. Most of them traveled to Phang Nga Province by personal cars and traveled to a port by rental cars. Tublamu port was the most favorite one. Excluding an opportunity cost, a travel expense of this activity was at 11,843.42 Baht per person. From an analysis of factors affecting the number of visits to Similan Island National Park, the number of visits had a negative relationship with travel expense, provided that the finding was in line with the Law of Demand. However, sex, age, occupation, educational level, income and substitute place had no relationship with the number of visits for coral diving at Similan Island National Park. By the Individual Travel Cost Method (ITCM), the Average Consumer Surplus (ACS) of visitors diving to visit coral reefs at Similan Island National Park, Phang Nga Province was at 26,640 Baht per time. In 2012, the recreational value of Similan Island National Park was worth 1,293.42 Million Baht.

However, the samples of this study included Thai tourists only, provided that foreign tourists may have different travel behaviors and spending. The researcher suggests that, in a next research, data of foreign tourists should be collected to maximize benefits for other researchers.

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