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DEMAND MODEL OF INTERNATIONAL VISITORS TO THE KILIM KARST GEOFOREST PARK, LANGKAWI: APPLICATION OF ITCM MODEL

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Abstract

Kilim Karst Geoforest Park in Langkawi offers rural tourism attractions to the visitors. The rural tourism demand model of international visitors to the site can be developed using the non-market valuation techniques. One of the common techniques is using the revealed preference technique, which is the Travel Cost Model (TCM). There have been various modifications made to the basic TCM developed by Clawson 1959. Modification of the basic TCM takes into account other factors that may shift the demand of visitors. The individual travel cost model (ITCM) has been employed in the research. Thus, the main objective of this article is to develop the rural tourism demand model for the park using the individual travel cost model (ITCM). In addition, the basic TCM model is estimated to determine the consumer surplus value of the international visitors to the park. Structured questionnaire and face-to-face data collection method are employed to obtain the primary data from 330 international visitors using the convenient sampling technique. Poisson regression analysis has been conducted to estimate the basic TCM model. The finding for ITCM shows that the consumer surplus value per trip for the Langkawi model €6993 is greater than for the Kilim models (€1437 and €633) for the Poisson regression analysis.

Keywords

Consumer surplus; Demand; Modification; Rural tourism; Travel cost model.

INTRODUCTION

A geoforest park is a special conservation area within a Permanent Forest Reserve (PFR), it has supreme geological and biological resources, is geared towards a sustainable tourism practice, it promotes multidisciplinary research and enriches community awareness about the natural integration of various forest resources (Shaharuddin and Mohd Shafee, 2004). Global Geopark Network (GGN) defines 'geopark' as a national protected area containing a number of geological heritage sites of particular importance, rarity, or aesthetic appeal. These Earth Heritage sites are part of an integrated concept of protection, education, and sustainable development. On 1st June 2007, Langkawi Island has been gazetted by the United Nations Educational and Scientific Organization (UNECSO) Global Network of National Geoparks as one of the first geoparks in Southeast Asia (Othman and Rosli, 2011). The Langkawi geopark is a rare island geopark comprising 99 islands, possessing one of the most spectacular tropical island karst landscapes in the Southeastern Asian region. It has been officially endorsed by the Chief Minister of Kedah on May 31, 2006 with the objective of fostering sustainable development of its natural resources. This is manifested through sustainable ecotourism and geoheritage conservation. LADA provides the administrative backing and finance, while Universiti Kebangsaan Malaysia (UKM) provides academic input towards the realization of the Langkawi geopark. On the other hand, the geoheritage conservation is carried out under the jurisdiction of the Forestry Department. Kilim Karst Karst Geoforest Park is one of the three geoparks in Langkawi Island.

Kilim Karst Geoforest Park, Langkawi

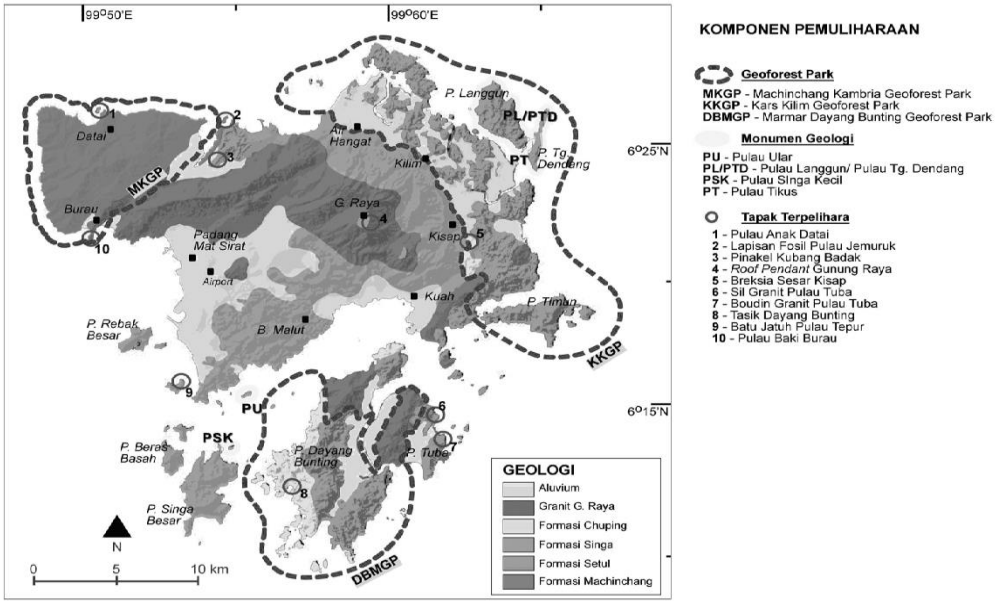

FIG. 1 LOCATION MAP OF THE KILIM KARST GEOFOREST PARK (Source: Mohd Shafeea, 2010)

Kilim Karst Geoforest Park (KKGP) is located in the north of Langkawi Island and is surrounded by protected mangrove swamps with an area of approximately 100 km^2. It has been developed by the oldest limestone in the country, namely the Setul Formation. The KKGP features breathtaking landscapes of nearly vertical karstic hills with pinnacles of various shapes and sizes (Shaharuddin et al, 2004). Perhaps among the main factors contributing to the formation of such beautiful karstic landscape are its generally thin beds and flat to gently dipping altitudes with many high angle vertical faults and fractures as well as its exposure to the open sea (Shaharuddin et al, 2004). It comprises several elongated hills and islands with narrow valleys in-between. The valleys are home to one of the best-kept and unique limestone mangrove forests in the world. Many caves with beautiful features could be found within the park, for example the Gua Kelawar, Gua Buaya, Gua Landak, and Gua Cerita. In addition, a small fresh water valley has developed in Pulau Langgun.

Some of the attractions available at the park are the greenish mangrove swamps, Kilim River, narrow valleys, limestone caves of the tunnel variety, wildlife, etc. The wildlife in the park comprises the belly sea eagles, brahminy kite eagles, brown winged kingfisher, monkeys, monitor lizards, swimming macaque, etc. Next, in the fish cage, there are fish, eels, crabs, mantis prawn, stingrays, and sea bass. On the other hand, the physical facilities available at the park are boats, the Kilim jetty, a *Surau* and small restaurants.

TABLE 1. TOTAL VISITOR ARRIVALS TO THE KKGP FROM (2006 – 2012)

Year	2006	2007	2008	2009	2010	2011	2012
Visitors	42,375	78,145	167,142	115,660	117, 931	321, 325	273, 450

Source: Langkawi Development Authority Offical Website (2012)

Table 1 shows an increase in the total number of visitors arriving from 42,375 in 2006 to 273,450 in 2012. Nonetheless, the accuracy of the data shown in the table is questionable because the visitors arrival data was only properly recorded beginning from 2011 (S. Siti, personnal communication, March 29, 2012). In 2011, out of 321,325 visitors to the park, 168,528 were international visitors whereas 152,797 were local visitors. Next, in 2012, out of 273,450 visitors to the park 126,982 were international visitors whereas 146,468 were local visitors.

Suryani et al (2012) pointed out that economic valuation is an attempt to assign quantitative values to the goods and services provided by the environmental resources, which has no market price, with the economic value, expressed in the form of willingness to pay for the services. The need to assign value to the environmental resources, which are non-market goods, stems from its public good

characteristics. Therefore, the consumption price by consumers could not be determined through the interaction between demand and supply in the market. Consequently, the values of the resources remain ambiguous. In relation to that, Gurluk and Rehber (2008) claimed that the failure to determine the value of the resources existing at a particular site had lead to an underestimation of the true value of the resources or it had been considered to have zero value. This in turn, may prompt the decision makers to use the site for other development activities that may result in the damage of the site, (Poor and Smith, 2004).

METHODS/APPROACHES

There are several methods developed to measure the economic value of non-marketed environmental goods like national parks, geoforest parks, beach, islands etc. They are direct and indirect methods. Indirect method is a tool to reveal the value that consumers assign to non- marketed goods through a revealed preference technique (Ortacesme et al, 2002). On the other hand, direct method is a tool to determine the value that consumers assign to non- marketed goods by directly asking the willingness to pay through a survey (Ortacesme et al, 2002).

TABLE 2. TYPES OF ENVIRONMENTAL VALUATION TECHNIQUES

Revealed Preferences (RP)	Stated Preferences (SP)
Travel Cost Method (TCM)	Contingent Valuation Method (CVM)
Hedonic Pricing Method (HPM)	Choice Modeling (CM)
Market prices	
Adverting Behavior	
Random utility model	

Source: Adapted from Nijkamp et al (2008)

Referring to Table 2, among the popular methods employed using RP technique are the hedonic pricing, travel cost and market pricing methods (Nde, 2011). On the other hand, choice modeling and contingent valuation are among the common methods employed by researchers for SP technique. However, Contingent Valuation Method (CVM) and the Travel Cost Method (TCM) are the two frequently used methods to determine the value of the resources at a particular site to consumers. Despite the approaches being different, their purpose is still the same, which is to derive the demand curve for outdoor recreational resources. Thus, the consumer surplus gained by the consumers could be measured (Ahmad, 2011). Individual Travel Cost Model (ITCM) and Zonal Travel Cost Model (ZTCM) are two types of travel cost models. For the ITCM the dependent variable is the number of trips per season or per year made by an individual to a particular recreation site. On the other hand, for ZTCM the dependent variable is the number of trips to a particular site by the population of a particular zone or region.

Basic TCM

The TCM method was initially suggested by Harold Hotelling (1949) in 1930s as a potential instrument to determine the value of non-market goods (Ortacesme et al, 2002). The importance of knowing the value of non-market goods stemmed as a response to the US National Park Service's intention to determine the economic value of national parks by employing economic principles (Ward and Beal, 2000). Hotelling suggested that the travel cost incurred by an individual to a recreational location could be used as an implicit price to enjoy the site. Therefore, the travel cost is highly influenced by the distance travelled. The longer the distance to a site the more the travel cost and lesser the frequency of visits to the site.

Douglas and Taylor (1999) indicate that the basic travel cost model assumes that opportunity cost of visiting a particular site is an increasing function of the travel distance. This indicates that the consumer needs to forgo more money to travel further. Hence, the utilities that are generated by the visits to the site are a function of an array of discretionary expenditures. This indicates that the satisfaction they gain through the recreation is reflected by their expenditure to the particular site. Enyew (2003) points out that the basic TCM assumptions are as follows.

- The total round trip travel cost, which comprises the amount of money and time spent for travelling to a site, is proxy estimator of WTP to visit the site
- Visitors to a site react similarly to the changes in entrance fees as similar to the changes in the travel cost
- The trip to a particular site is assumed to be the sole intention. Therefore, all travel costs are incurred solely to visit the site.
- Populations where these visitors come from have similar characteristics and preferences
- The total benefits gained from visiting a site are equal to the travel cost incurred by the marginal user.
- The consumer surplus of the marginal user is zero

Following is the basic TCM model

Where:

$VisCap_{ij} = \beta_0 + \beta_1 RITC_{ij} + \varepsilon$

$Viscap_{ij}$ = Total visits per capita from the main cities of each country

$\beta_1 RITC_{ij}$ = Total round trip travel cost of individual *i* to tourism site *j*

ε = Random error

METHODOLOGY

The development of basic TCM started from Clawson (1959) and Knetsch (1963). After a short period of time, both of them combined to develop the basic TCM, (Clawson and Knetsch, 1966). The functions of ZTCM suggested by Clawson were as follow.

$V_a = f (POP_a, Cost_a, Y_a, Alt_a)$

$Cost_a = g (Dist_a, TT_a, ET_a)$

Whereby V_a = number of visits from origin a, POP_a = number of population in origin a, $Cost_a$, which is the travel cost incurred from a zone to a particular site Y_a = Income levels and Alt_a = alternative sites. Travel cost from origin to the site was measured as the function of $Dist_a$ = Distance from origin a to the site, TT_a = Travel time cost to the site and ET_a = entrance fee

ITCM

According to Ward and Beal (2000) ITCM were developed by Brown and Nawas (1973) and Gum and Martin (1974). One of the first to employ the method was Garrod and Willis (1999) in the study of valuing the benefits of environmentally sensitive areas. In the ITCM, travel costs are determined as follows.

$$TC_{ij} = (DC_{ij}, Time\ C_{ij}, F_i) \qquad i = 1\text{- } n, j = 1 - m$$

TC_{ij} is the travel cost incurred by an individual for an origin i to a particular site j. Next, the DC_{ij} is the distance cost, Time C_{ij}, is the travel time cost which depends on the length of time required to a a particular site and the value of an individual's time, and the F_i is the entrance fee charged at a particular site. The travel costs is employed in a trip generating function (TGF) to predict the number of visits made by an individual to a particular site. Besides the travel cost, the socio- economic variables namely the income, education, age level were included.

The demand function is as follows

$$V_{ij} = f (TC_{ij}, SOC_{ij})$$

The dependent variable, V_{ij} is the number of visitors in a group to the Kilim Karst Geoforest Park. The independent variables are the TC_{ij} (travel cost) and the SOC_{ij} (socio demographic variables).

ITCM model

$$V = \beta_0 + \beta_1 RITC_{ij} + \beta_2 TTimeC_{ij} + \beta_3\ AltsiteC_{ik} + \beta_4 OSC + \beta_5 OSTime + \beta_6 MS + \beta_7\ WTP + \beta_8 Age + \beta_9 Edu + \beta_{10} GM + \varepsilon \quad (1)$$

Where:

I	=	Origin (Main cities of the respondents)
j	=	Langkawi island
k	=	Alternative site
V	=	Number of visitors in a group to the Kilim Karst Geoforest Park
$RITC_{ij}$	=	Total round trip travel cost of individual from i to site j
$TTimeC_{ij}$	=	Cost of travelling time of individual i to site j
$AltsiteC_{ik}$	=	The total round trip cost per individual i to alternative site k
OSC	=	On-site cost of the individuals in the Kilim Karst Geoforest Park
OSTime	=	Number of hours spent in the park
MS	=	Quality of the Kilim Karst Geoforest Park as measured by mean satisfaction
WTP	=	Willingness to pay by the individuals for an entrance fee at the Kilim Karst Geoforest Park, Langkawi
Age	=	Age of individuals
Edu	=	Education level of individuals
GM	=	Gross monthly income of individuals
$\beta_0 - \beta_{10}$	=	Coefficients to be estimated
ε	=	Random error

Elucidation of the variables

Generally, the majority of past studies employed the number of trips made by the visitors in a year for ITCM. In the present study the number of visitors in a group to the park is used as the dependent variable for ITCM with an assumption that each visitor in the group makes only one trip. The groups are composed of individuals, spouse, fiancé, family, friends, institutions, and organizations.

Travel cost is used as the proxy of price due to the absence of markets. Travel cost incurred by the visitors comprises both the monetary and time cost. Generally, the monetary cost comprises the distance cost, accommodation cost, and cost for food and drinks. On the other hand, the time cost can be determined by verifying the cost of travelling time from the visitor's home to the respective holiday destinations. Travel time is an opportunity cost because during the time taken to travel the visitors can do something else, for instance working, resting at home, visiting their relatives, etc. As in most of the past literatures on TCM, the present study adopts the

loss in hourly wages of the visitors as the opportunity cost for travel time. However, in the present study, the travel cost is defined as inclusive of the distance cost, food, and drinks only. The time cost is not included when determining the travel cost because the variable is included as one of the independent variables in the demand model as done by (Syamsul Herman, 2010).

Thus, the effect of time cost would still be taken into account. The distance cost is determined by accumulating all the transportation costs incurred by the respondent from his home to Langkawi Island, for example, the airfare, train fare, car rental, taxi fare, etc. However, the cost incurred by the respondent from his home to the first departure point of his holiday trip is determined by the information given in the questionnaire. Later, the travel cost was multiplied by 2 to obtain the round trip cost. Next for the food and drinks, an assumption that the airfare is inclusive of food and drinks are made to standardize the measure of food and drinks.

Although the objective of this study is to estimate the consumer surplus value of the international visitors to the KKGP, doing so using the TCM is problematic because for the visitors, KKGP is only one of the many attractions visited in Langkawi Island. Consequently, the decision has been made to apportion the travel cost to Langkawi Island to the park. Consistently, in the present study, three types of travel cost, which constitutes of the travel cost to Langkawi, travel cost to Kilim based on satisfaction and travel cost to Kilim based on hours in the park has been employed. Firstly, total round trip travel costs of the Langkawi Island has been determined by adjusting the total round trip travel cost from home to Langkawi (including the travel cost incurred to other sites until Langkawi for the MDT visitors only) that has been adapted from Fleming and Cook (2007) as follows:

(Round trip travel cost from home until Langkawi) x (Number of days in Langkawi/ Total days from home until the end of the trip in Langkawi)

Next, the specific travel cost to Kilim is calculated by multiplying the adjusted travel cost for both the MDT visitors and visitors for whom Langkawi is the only destination as adapted from Fleming and Cook (2007):

i. The time spent in the park as a proportion to overall recreational hours spent at or will be spending in Langkawi by assuming that the time available for recreation in a day is 8 hours, consistent with the assumption made by Tiantian (2009)

ii. The satisfaction from visiting KKGP as a proportion of the total satisfaction obtained from visiting Langkawi Island (as reported by the respondents)

The formulas are as follows:

(Adjusted round trip travel cost from home until Langkawi) x (the time spent in the park as a proportion to overall recreational hours spent at or will be spending in Langkawi)

(Adjusted round trip travel cost from home until Langkawi) x (The satisfaction from visiting KKGP as a proportion of the total satisfaction obtained from visiting Langkawi Island)

The assumption made in the first approach is that the benefits obtained by the visitors are proportional to the expenditure and time allocated for visiting the site (Beardsley, 1971). Thus, the increase in the length of stay or time spent at a particular site will stimulate the opportunity to obtain more value and consequently determine the benefit obtained by the visitors. Some of the limitations of the approach are factors such as weather conditions, fixed trip itineraries and lack of prior information regarding the site's true attraction may influence the time spent at the site and the value attached to the site (Clough and Meister, 1991).

For the second approach based on the satisfaction attained an assumption is that decisions made to travel to a particular site are based on the visitors hope to obtain positive utilities (Nillesen et al, 2005). Next, the assumption is that visitors are able to rank the sites they visited based on their preferences or the weightage they allocate for the sites.

Next, the travel time taken by respondents throughout the journey starting from their home to Langkawi Island has been determined using the following steps:

Step 1: The travel time taken by the respondents from their home to the first departure point of their holiday trip is ascertained by the information given in the questionnaire.

Step 2: The travel time taken for the flight is ascertained using websites such as www.expedia.com and www.qatarairways.com based on the lowest fare booked one month prior to departure. Train, bus, and ferry travelers, the travel time is determined using the respective websites and the travel time incurred using the taxi in Malaysia is determined using Google Maps.

Step 3: The transit time is excluded in order to standardize the travel time for all of the respondents.

Step 4: The round trip travel time is obtained by multiplying the overall travel time taken by the respondents by 2 to obtain the round trip travel time. Consistent with the travel cost, the similar adjustment is used to adjust the travel time to Langkawi for MDT visitors as shown below:

(Round trip travel time from home until Langkawi) x (Number of days in Langkawi/ Total days from home until the end of the trip in Langkawi)

The travel time attributable to Kilim is determined by multiplying the travel time adjusted to similar technique used for travel cost. The travel time is later converted into a monetary value by applying the opportunity cost of travel time measured in terms of the loss in wages during the travelling period. In this study, the opportunity cost of time is assumed to be 1/3 of the hourly wage followed by the suggestion from Cesario (1976). The travel time cost is determined using the following formula:

(33.33% X visitors wage per working hour) x (Round trip travel time)

Hourly income is determined by dividing the monthly income of the respondents with the total hours worked in a month. Total working hours are assumed to be 8 hours per day based on the Malaysian standard of working hours. Similarly, Nde (2011) applied the same number of working hours in his study. It is assumed that the respondents work for 30 days in November, which is the month when data collection is conducted. Therefore, the total working hours for that month is 240 hours. This assumption is made because in some countries, including Malaysia, Saturdays, and Sundays is a public holiday. In this case, we could assume that the respondents are on paid leave. Similarly, the self-employed visitors are assumed to work 8 hours in a day is made to standardize the time cost measurement. In order to obtain the hourly income, the total monthly income is divided by the total number of working hours (240). Next, the hourly income is multiplied by the total round trip travel time that is standardized in hours.

The WTP for an entrance fee to the KKGP has been asked in part C of the questionnaire. There are many elicitation techniques available to identify the WTP namely, bidding game, open-ended, payment card and dichotomous choice, (Mohd Rusli et al, 2008). Nevertheless, the bidding game technique has been employed. Under this technique, the respondents were assigned bids from the range of predetermined bids. The amount of bids starts from RM 25 to RM 60 for every 50 respondents. This is because during the pretest with 30 visitors to the park, the majority of them stated the WTP between the earlier ranges. Later, the bid values were converted to the Euro currency to standardize the currency measure for all the respondents who originate from various countries of the world. The currency is chosen because the biggest proportions of the respondents to the park originated from the European countries (43.7%). Next, the on-site time and on-site cost for the respondents have been determined based on the mangrove tour packages offered by the Kilim Cooperative.

The round trip travel cost to the alternative site was determined using the holiday itinerary of the visitors from their respective homes to the alternative site that they would visit in Malaysia as indicated by them. The alternatives sites are Pulau

Pangkor, Pulau Tioman, Pulau Perhentian and Pulau Redang. For the MDT visitors similar adjustments to obtain the travel cost attributable to Langkawi for MDT visitors were made as follows:

(Round trip travel cost from home to the alternative site) x (Number of days in Langkawi/ Total days from home until the end of the trip in Langkawi)

For the socio demographic variables, the age and education level of the respondents were measured in years. Further, for income the individual gross monthly income was asked. The onsite time and cost incurred by the respondents have been determined based on the mangrove tour package offered by the Kilim Cooperative. The package composes 1 hour (RM 250), 2 hours (RM 350), 3 hours (RM 450), and 4 hours (RM 500) respectively. The satisfaction level of the respondents in relation to the resources available at the KKGP as a measure of the quality of the site variable is determined using the Likert Scale. The five-point Likert scale used to determine the level of satisfaction of the respondents is classified as follows: 1 = Very dissatisfied, 2 = not really satisfied, 3 = neither satisfied nor dissatisfied, 4 = Satisfied, 5 = Very Satisfied. Later, the mean satisfaction is used for the regression analysis.

SAMPLING AND DESIGN

Structured questionnaire and face-to-face data elicitation technique are employed at the park and the Langkawi International Airport for about two weeks in November 2012 to obtain the primary data for the research. Even though, 330 respondents are selected through the convenience sampling based on the nearest and conveniently available, only 300 samples are used for further analysis due to inadequate or irrelevant information retrieved from the respondents. Average time incurred for the survey is about 10-15 minutes. The instrument of study (the questionnaire) is designed only in English. The reason being that the English language is an internationally recognized language and an appropriate medium to divulge a higher response rate from the respondents. A Poisson regression analysis is conducted to run the ITCM model using the Limited Dependent Variable (LIMDEP) software version 4.

RESULTS AND FINDINGS

The need to modify the basic TCM is shown in the findings of the analysis for basic TCM using the ITCM. The basic Clawson model was estimated using the Ordinary Least Square Regression (OLS) and the SPSS version 21 software to determine the relationship between total visits per capita and the total round trip travel cost and the fitness of the model. The results are shown in Table 4.

TABLE 4.BASIC TCM ESTIMATION FOR ITCM

	Travel cost (Langkawi) (model)	TC Satisfaction (model)	TC Hour (model)
Constant	1.395	1.433	1.395
Coefficient	-.143E-03 (-4.049)	-.696E-03 (-4.994)	-.158E-02 (-4.000)
Standard error	.354E-04	.139E-03	.389E-03
P- value	.001**	.000**	.001**
Log Likelihood Function	-867.347	-861.989	-867.347
Pseudo R^2	.077	.120	.090

Note:** Significant at 95% level of confidence

* In brackets are the t-statistics value

The failure to incorporate those variables had resulted in a low model fit as shown in Table 4. The Pseudo (R^2) the measure of fit for a model is 8% using the travel cost Langkawi model, and 12% and 9% using both the satisfaction and hours models. As an example, the model fit (R^2) for the travel cost variable in the hour's model (9%), implies that only 9% of the variations in the number of visits to the site is due to the travel cost (*RITC*) incurred by the visitors. This necessitates the need to modify the basic TCM model through the incorporation of other variables that may shift the demand of visitors to a particular site.

Consumer Surplus

The consumer surplus value for ITCM can be estimated using the formula below, adapted from (Parsons, 2003).

Langkawi CS = $R^* \frac{\omega / -\beta tc_r}{\omega} = \frac{R}{-\beta tc_r} \frac{N_r \, International}{-\beta tc_r \, International} = \frac{126{,}982}{-0.000123}$ = €887 million

Kilim (Sat) CS = $R^* \frac{\omega / -\beta tc_r}{\omega} = \frac{R}{-\beta tc_r} \frac{N_r \, International}{-\beta tc_r \, International} = \frac{126{,}982}{-0.000440}$ = €182 million

Kilim (Hour) CS = $R^* \frac{\omega / -\beta tc_r}{\omega} = \frac{R}{-\beta tc_r} \frac{N_r \, International}{-\beta tc_r \, International} = \frac{126{,}982}{-0.000896}$ = €80 million

Whereby:

R = Total number of trips made by the visitors during a period of time

βtc_r = coefficients of the travel cost to the site r

ω = Parameter vector

Nonetheless, R (the number of trips) is assumed as the actual number of visits to the park in 2012 similar to Tang (2009). Therefore, the R = 126,982, which is the total number of international visitors to the park in 2012. The average CS value per trip can be determined by taking the inverse of β (Nde, 2009).

$$\text{CS per person/ trip/year} = -1/b$$

TABLE 5.CONSUMER SURPLUS VALUE ESTIMATION FOR ITCM

	Travel cost (Langkawi)	Travel cost Satisfaction (Kilim)	Travel cost hours (Kilim)
Total CS	€ 887 million	€ 182 million	€ 80 million
CS per trip	€ 6,993	€ 1,437	€ 633

The result shows that the consumer surplus value for the travel cost Langkawi model (€887 million) is larger than the Kilim models (€182, €80 million). This is consistent as the Kilim Karst Geoforest Park is only one of the many attractions in Pulau Langkawi. In this, the benefit gained by the visitors in Kilim Karst Geoforest Park, shown in monetary terms should be only a proportion of the total benefit accrued to Langkawi island.

CONCLUSIONS

This article has developed the demand model specifically for international visitors to the KKGP. The basic TCM model resulted in low model fit. This prompts the necessity to modify the basic TCM model with other variables besides the travel cost variable such as onsite cost, onsite time, cost to alternative site, quality of site, WTP and socio demographic variables constituting of the age, gender, education level, and gross monthly income of the visitors. The importance to incorporate those variables arises, as they are demand shifters. Therefore, the failure to incorporate them would lead towards the underestimation or overestimation of the consumer surplus or benefit gained by the visitors to the park. More specifically, the shift of the demand curve to the left will result in an overestimation of the CS whereas; the shift to the right will result in an overestimation of the consumer surplus value. The comparison of consumer surplus value from the estimation using the travel cost to Langkawi and travel cost to KKGP based on satisfaction attained and number of

hour's models showed that the CS value for the Langkawi model is larger than for the Kilim models. The findings is consistent with the expectation made in the study that the CS value attributable for Langkawi would be larger than for Kilim because KKGP is only one of the many attractions in Langkawi island. Also, the finding is consistent with the basic TCM assumption that the total benefit from the use of the site proportional to the total travel cost incurred by the visitors.

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