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ESTIMATING THE ECONOMIC VALUE OF THE ECOTOURISM DESTINATION: THE CASE OF TRA SU MELALEUCA FOREST NATURAL PARK IN VIET NAM

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Abstract: In this article, the application of the Individual Travel Cost Method (ITCM) aims at providing a deeper insight into visitors' preferences and their expenses on marketed and non-marketed services when travelling to the Tra Su Melaleuca Forest Natural Park, an ecotourism destination in An Giang Province of Viet Nam. The empirical findings from the survey of 237 visitors in 2022 showed that the frequency of trips to this recreational site was 1.3 per year on average and relied strongly on the travel costs. Additionally, the estimate of tourism revenues for 2022 of this site was 82,3 billion Viet Nam Dong (VND; equivalent to 3,5 million USD). Meanwhile, its economic value calculated by the ITCM application reaches 206,2 billion VND (or 8,8 million USD). It is obvious that a greater economic value over the monetary amount of revenue also raises several ideas of managerial implications dedicated to the recreational site. It includes building a marketing team for developing recreational services and digital marketing performance, expanding tour services like transportation, lodging, local guides. Finally, enabling local people to engage in dialogues, decision-making, and interest shares is also necessary for the sustainable development of ecotourism.

Keywords: ecotourism; travel costs; visitors; Tra Su Melaleuca Forest; Viet Nam

1. Introduction

Despite occasional falls caused by the COVID-19 pandemic at the beginning of 2020, the global tourism industry has showed an impressive recovery. The information from the World Travel & Tourism Council (2022) reported that the global travel and tourism gross domestic product in 2021 grew by 21.7% (equivalent to 1,038 billion USD) as compared with the world economic growth of only 5.8%. The recent development of tourism industry has been taking place in the diversification of activities based upon an exploitation of economic, cultural, social, and environmental values that aims at providing services of recreation, accommodations, and traveling (Brown & Hall, 2008). It can be widely accepted that tourism has truly become one of the important and fastest growing economic sector for many developing countries (Pablo-Romero & Molina, 2013).

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Quite different from the fast development of mass tourism, ecotourism often requires a managerial consideration of tradeoffs between marketed goods and non-marketed goods. The reason for this could be that the operation of ecotourism activities is expected to reach two core objectives of development implying economic benefits, and cultural and environmental conservations. Some empirical studies, for example Cheung and Jim (2014), reported that tourists who booked tours to ecotourism destinations in Hong Kong were almost happy to pay at the rate of 40% higher than normal tours. Similarly, Hwang and Lee (2018) also emphasized the significant correlation between ecological beliefs and willingness to pay for ecotourism services. Furthermore, in his book entitled *Ecotourism*, Fennell (2020) mentioned that growing potentials of this branch of tourism will have grown three times faster than the conventional tourism by the year 2024 onwards.

Despite pointing out the potentials of ecotourism development, a few recent studies in Viet Nam and Indonesia also addressed inherent limitations in planning and managing ecotourism destinations. For instance, Yee et al. (2021) found the lack of the comprehensive assessment of perceived values, both monetary and non-monetary, among stakeholders involved. Such weakness resulted in the unbalanced allocation of economic benefits among stakeholders and it was also marked as a threat to sustainable development of ecotourism in Viet Nam. Additionally, Arinta et al. (2023) emphasized the destination operation without strategic master plan as the main reason of failures in the ecotourism development in Indonesia.

It is obvious that there is a research gap between the theoretical approach and empirical practices of ecotourism that needs to be further explored in the analysis. First, recreational services related to environmental and conservative education are viewed as a core subject for ecotourism development and must be valued sufficiently. Second, the estimation of both marketed and non-marketed goods or services will provide more potential insight into an ecotourism site, since economic values are often greater than the real amount of revenues. Therefore, this study also addresses the discussed issues regarding the estimation of the economic value of the Tra Su Melaleuca Forest Natural Park (TSMF site). It would be of interest to local stakeholders to gain comprehensive insights about marketed and non-marketed benefits for recreational services in ecotourism development.

2. Study design and estimation methodology

2.1. Study area

The TSMF site is located in An Giang Province, Viet Nam, which is about 10 km far from the border with Takeo province of Cambodia and 15 km from the Mekong River. With its total natural area of 845 ha covered with wetland ecosystem and the home to more than 70 bird species and 140 categories of plants (especially melaleuca tree), this forest has been certified as the specialized wetland forest and protected landscape in the western part of the Mekong River delta region (Khanh et al., 2021).

To reach the goals of sustainable ecotourism development in the protected forest area, the business model of ecotourism has operated since 2018 with the assessable area of 159 ha. It offers a wide range of recreational activities such as taking boat trips, bird-spotting, walking on the longest bamboo bridge with 10 km in length, and especially enjoying local cuisine.

2.2. Conceptual framework and estimation specification

The basic premise of the Individual Travel Cost Method (ITCM) is formed underlying the demand theory. It is assumed that individual's consumer surplus is considered as a main subject for estimating economic welfares of a site (Ezebilo, 2016).

However, the application of this method also faces a lot of challenges when calculating travel costs related to the case of multi-purpose trips and multi-destination trips (Hill et al., 2014; Leh et al., 2018), rather than a single-destination trip according to the ITCM's basic assumption. Several options are suggested to address this challenge in the analysis, such as: (a) only identifying visitors who have a single-destination trip and inviting them to participate the survey; (b) taking the average consumer surplus per trip calculated from the single-destination trip and using it for estimating the whole multi-destination trip; and (c) calculating the cost share to each destination attributed to the trip (Hill et al., 2014).

Therefore, in this analysis, the first suggestion made by Hill et al. (2014) will be applied to identify only single-destination visitors who had number(s) of visits to the TSMF site within 12 months preceding the survey time. This selection may be explained by underlying the following reasons: (a) ecotourism is seen as a special mode of tourism activities so that it seems to be segmented to visitors who pay a lot of attention to recreational services of natural environment; (b) it usually takes lots of time to experience activities of ecotourism, partly dependent on natural features such as water level of canals and presence period of wild animals. Consequently, visitors normally have to spend all the time at one destination instead of visiting several destinations as on a conventional trip (Liu et al., 2019).

The ITCM is formed to calculate an economic value relating to the Marshallian consumer surplus from expenditures on recreational goods and services during the visitor's trip (Purwoko et al., 2022). It may be written in an econometric form as follow (Parsons, 2017):

$$v = \alpha c + \beta_k \Sigma_{(k=1)} X_k + \varepsilon \quad (1)$$

in which, v is the number of visits to a site in the given period made by one visitor, c is the travel costs, α and β are unknown estimated coefficients, k is the number of explanatory variables (X_k) relating to socio-economic and demographic characteristics, and ε is error term. As widely known, the estimated coefficient of the travel costs is always negative ($\alpha < 0$), meaning that the number of visits would be decreased in association with an increase of travel costs. Concerning the way of estimation, the Poisson probability distribution estimation is likely more consistent than the estimation of ordinal least squares, because the frequency of visits to a destination per year (v) is almost less than 10 and expressed in non-negative integers (Hellerstein, 1991).

Based on the results from the estimation Equation 1, a given visitor's consumer surplus during a trip to the recreational destination in a period of time (cs) is obtained from one of the two alternative formulas: (a) Equation 2.1 for a linear relationship between the number of trips and travel costs or (b) Equation 2.2 for the case of the travel costs per trip entries non-linearly (Blaine et al., 2015).

$$cs = -\frac{1}{\alpha} \quad (2.1)$$

$$cs' = -\frac{1}{2\alpha} \tag{2.2}$$

Finally, the total economic value of a destination (*CS* or *CS'*) as shown in Equation 3 is basically calculated depending on two key indicators, including the visitor's consumer surplus per trip a year (*cs*) and the total number of visitors entering the destination in a period of time, usually a year (*V*). Based on the given description, Equations 2.1 and 2.2 may be rewritten as follows:

$$CS = -\frac{V}{\alpha} \quad \text{or} \quad CS' = -\frac{V}{2\alpha} \tag{3}$$

2.3. Survey design and data collection

First of all, targeted respondents were selected and invited to participate in the survey by using the selective question: "Is visiting the TSMF site the main purpose of your trip?". If their response was *yes*, the interview session was started. Such a selection of the targeted respondents aims at dropping multi-purpose or multi-destination visitors out of the survey due to the difficulty in allocating travel costs as discussed earlier.

In the survey of consumption behavior, the sample size is usually determined based on the probability that the targeted respondents are happy or not happy to participate in the survey. In statistical terms, let p be the probability of an event that respondents are willing to join the survey and thus the probability of an event that they are not willing to join the survey is (1 – p). It may be assumed that 50% of targeted respondents at the TSMF site are willing to join the survey (p = 0.5), and the remaining 50% refuse to join it (1 – p), d refers to error tolerance (d = 5%), and the confidence interval is at 95% level (Equation 4). It holds the sample size of 196 observations based on the formula as follow (Iarossi, 2006):

$$n = \frac{z^2_{\left(1-\frac{\alpha}{2}\right)}}{d^2} \cdot p(1-p) \tag{4}$$

Due to the lack of basic information about the targeted respondents at the TSMF site, the survey must be conducted in the convenient way, non-probability sampling, by using the formatted questionnaire consisting of the necessary information of the targeted respondents such as: demographic and socio-economic characteristics, trip features, number of trips to the TSMF site a year, and expenses incurred. Each direct interview took place about 15 minutes before checking out the site.

3. Results

3.1. Description of visitor's characteristics

The survey was completely conducted with the total of 262 interviewed visitors at the TSMF site, but 25 out of those respondents were left out from the sample due to the missing information about travel costs. As a result, the valid sample of 237 observations, greater than the targeted sample of 196 observations, was included in the analysis.

The descriptive results calculated from the survey show that the majority of the respondents are male (55%), compared to the female ones (45%) participating in the survey. Relating to the age group, over 40% of the respondents are young, aged below 25, and 70% of the respondents are less than 35 years old. In addition, the surveyed results indicate that the respondents have a good attainment of education, 61.6% of them completed college or university programs and 14.3% have higher levels of education (postgraduate programs). It may be inferred that people characterized as young and highly educated likely prefer to choose ecotourism sites for their holidays or trips. A previous study of promoting the development of ecological cultural tourism in An Giang Province also supported this finding, when 80% of the visitors travelled there for the second time and would certainly return to ecotourism sites in An Giang (Huong et al., 2020). Regarding the visitors' status of employment, approximately 50% of the respondents are paid-employed. Of these, 30.4% work in the private sector and 16.5% work for public organizations. Besides, respondents who are students and self-employed make up 27.8% and 11.8%, respectively, in the sample.

The main purpose of visitors' trip to the TSMF site was related to experiencing ecological environment and enjoying local food (over 80% of the respondents). However, some others chose this site as an interesting place to perform their activities of internship and studies.

3.2. Visitors' preferences to the TSMF site

Statistical results presented in Table 1 show that the respondents had an average of 3.7 trips to the TSMF site during their life of recreational movement preceding the survey time and 1.3 trips to this site in the last 12 months. Due to the main constraints of travel costs and time, the majority of respondents (75.9%) only visited this ecotourism site once a year and this rate was remarkably decreased in the case of respondents with many trips per year. Regarding the number of visitors participating in the trip to this site, more than 50% of the respondents reported that they visited this site with friends or family members. It is worth noting that for groups of students, the number of visitors also varied from 30 to 100 persons.

Table 1. Frequency of trips to the TSMF site

Average number of visits	All visits	Visits in the last 12 months
	3.7 (2.8)	1.3 (0.7)
Frequency of trips (%)		
1	9.3	75.9
2–3	54.8	21.6
4–5	23.2	2.5
6 and more	12.7	0

Note. Standard deviations are shown in parentheses.

3.3. Economic value to the TSMF site

The surveyed results show that a visitor spent an average of 758,282 Viet Nam Dong (VND; or equivalent to 33 USD) for their trip to this site (standard deviation of 522,061). Relating to the items of expenses, one third of the total expenses was paid for the transport. Next, 24% of travel expenses were paid for meals, while costs relating to the recreational activities in the TSMF site were only incurred at 16% of the total. Besides, costs of buying gifts and souvenirs and lodging costs made up 14% and 5%, respectively.

With regards to the estimation of factors affecting the frequency of trips to this site, the Poisson estimated results presented in Table 2 reveal that an increase in the travel costs was associated with the decrease in the frequency of trips to this site at the statistical significance level of .01. In terms of incidence rate ratios, it means that an increase of the travel costs by one million VND would induce a decrease in the frequency of trips to this site by 40%. Relating to the test for non-linearity of the travel costs against the frequency of trips, there were not enough statistical data to conclude the existence of the non-linear relationship between these two variables. Thus, Equation 2.1 is used to calculate the visitor's consumer surplus and then the economic value to the TSMF site as well.

Table 2. Estimated coefficients of the visitor's demand on the TSMF site

Variables	Coefficients (*b*)	Std. Error (*SE*)	IRR (e^b)
Travel costs (c_i)	−0.90***	0.35	0.41
Travel costs squared (c_i^2)	0.05^{NS}	0.14	1.05
Age (year)	−0.01*	0.01	0.99
Gender (1 = male)	0.12*	0.08	1.13
Monthly income (millions VND)	0.09***	0.04	1.09
Constant	0.21^{NS}	0.32	-
LR (X^2) = 23.2			
Prob > (X^2) = 0.01			
Pseudo R^2 = .58			

Note. *p < .1, **p < .05, ***p < .01, NS = non-significant.

The estimated results also indicate that younger visitors had more preferences for recreational entertainment with the ecotourism mode than the groups of older visitors. An increase of age would be associated with a decrease in the frequency of visiting this site annually. In terms of gender, male visitors were more likely to prefer the recreational activities of ecotourism than their female counterparts at the statistical significance level of .1. In addition, monthly income was found to be a force inducing people to enjoy recreational activities. More specifically, an increase of the monthly income was correlated with the increase in the frequency of visits to this site at the confidence level of 99%.

Given that the estimated coefficient of the travel costs (α) is −0.90, with the regards to the ITCM as presented by the Equation 3 above, the recreational value per trip a year is about 1,1 million VND, compared to 758,282 VND per trip that one visitor spent. According to the statistical report from the An Giang Department of Culture, Sports, and Tourism (An Giang Provincial People's Committee Portal, 2023), the total number of visitors who experienced the TSMF site (V) was approximately 185,000 in 2022. Therefore, the economic value to the TSMF site is about 206,3 billion VND per year, which is 2.5 times greater than the total revenues (about 82,3 billion VND) earned from recreational services and commodities at the TSMF site.

4. Discussion

The estimated results addressed a negative impact of the travel costs on the frequency of visits to the TSMF site at the confidence level of 99% and such effect seems to be non-linearized, but it was rejected at the statistical significance level of 5%. Thus, it can be concluded that the number of visits to this recreational site would be decreased by an increase of the travel costs incurred. This finding is almost consistent with and supported by previously reviewed studies, for example Ezebilo (2016) and Liu et al. (2019), where it was indicated that the frequency of trips to the natural areas was negatively affected by travel costs, but positively correlated with the increase in income amounts and male visitors.

It may be obviously recognized that there are a lot of potentials to increase the economic benefits of this ecotourism site, as the calculated results show that the total economic value was really much greater than the monetary amount of revenues in 2022. Therefore, it is necessary for the board of manager to have creative ideas of boosting accommodation activities, tour packages, and diversity of recreational activities. One recent study done in Indonesia by Purwoko et al. (2022) also emphasized the improvement of service quality, such as infrastructure and recreational space for large groups, that affects and drives visitors' intention to stay longer or to return to the destination.

Ecotourism development is commonly known along with the conservation of natural, cultural, and ecological values and the creation of stable livelihoods to local communities. However, most of the recreational services offered by the TSMF site are rather related to typical activities of a conventional tour, while learning activities related to the transfer of knowledge on the environmental protection and natural conservation are quite limited and not explored enough. A recent study of the community-based tourism in An Giang Province done by Huong et al. (2020) also emphasized that reinforcing the close linkages between local people, authorities, and environmental practitioners is indispensable to develop the ecotourism activities in protected natural areas in a more competitive and sustainable way. So, there is a great potential for the TSMF site in designing and offering educational services related to ecological and cultural environment.

5. Conclusion

Based on the field survey from 237 respondents visiting the TSMF site, the empirical findings indicated that visitors are characterized by being young (70% less than 35 years old), with good educational attainment, and employment diversification. Most visitors had self-arranged trips to this site, and they mostly originated from provinces within the Mekong river delta region.

The estimated results revealed that the frequency of trips to this site was negatively associated with the travel costs incurred during the trip, but strongly linked to individual factors of visitors such as monthly income, age, and gender. According to the calculation of the travel cost allocation, it is clear that the recreational site only received less than 60% of the total amounts spent, or equivalent to 445,000 VND per visitor. Additionally, the economic value of this site was calculated to be 2.5 times greater than the real amount of revenues received annually. It may be inferred that the visitors who prefer natural environment and ecotourism entertainment are willing to pay much more for their experiences of non-marketed things like fresh atmosphere, sightseeing, listening to birds, and local cultural shows. Therefore, developing a comprehensive strategy of business dedicated to the TSMF site for enhancing the diversification of recreational and educational activities is really necessary and imminent.

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