

ASSESSMENT OF NON CONSUMPTIVE WILDLIFE ORIENTED TOURISM IN SUKAU, SABAH USING TRAVEL COST METHOD

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ABSTRACT

This study focuses on valuing the Wildlife River Cruising (WRC) activity in a rural area located in Kinabatangan River, Sabah. The Kinabatangan River (KR) is rich with natural biodiversity resources and is one of the main attractions for tourism in Sabah, Malaysia. The objective of this study is to determine the characteristics of tourists' participation in WRC, in terms of their socio-demographic backgrounds, and to estimate the economic value of WRC activity in Sukau, Sabah. An on-site questionnaire was used to obtain primary data for this study. The questionnaire used for the on-site survey was designed to capture the socio-economic demand of WRC and to estimate the economic value of WRC activity. The findings illustrate the value estimated per visit, per person was RM3.20 and the total estimated recreational value of WRC was RM40,149.63 for the year 2014. The data collected was vital for various local stakeholders, especially the Sabah State Government and tourism agencies, to value the area as a crucial and valuable natural resource to preserve. This can possibly initiate the potential and development of economic growth in the area, which could also improve the livelihoods of the local community.

Keywords: Recreational Economic Value; Time Cost; Wildlife River Cruising; Lower Kinabatangan River.

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1. INTRODUCTION

Wildlife tourism is tourism based on encounters with non-domesticated animals, whether in their wild habitat or simulated habitat. While early wildlife-related tourism was predominantly recreational hunting or gaming, the non-consumptive recreational wildlife tourism nowadays is in terms of observing animals in its natural behaviour, mainly in its natural environment. In a larger context, Duffus and Dearden (1990) proposed a conceptual framework where they define non-consumptive wildlife-oriented tourism (NCWOT) as human recreational engagement with wildlife, wherein wildlife is not purposefully removed or permanently affected by this engagement. NCWOT has grown substantially over several decades (Burgin and Hardiman, 2015). Wildlife tourism involves attractions at fixed sites, tours, experiences available in association with tourist accommodation, or it can occur as unguided encounters by independent travellers (Karen, 2004). A recreational activity could be those that are passive and contemplative or active and adventure based. In the park, passive activities include bird watching, nature walks/observation, photography, or even relaxing in a natural environment. Active recreation are recreational activities that require more physical involvement such as mountain climbing, jungle trekking, rock climbing, caving and outdoor camping (Syamsul Herman, Shuib, Ramachandran, Mohd Rusli, Richards, 2012). The researcher also explains that wildlife watching is focused on watching free ranging animals in their natural habitat.

In Malaysia, the Kinabatangan River (KR) in Sukau, Sabah is a well-known NCWOT destination in the country. KR is the longest river in where it originates from the Mount Kinabalu, some parts of the river run through Forest Reserves under the jurisdiction of Sabah Forestry Department (SFD). The site is internationally recognised as an important wetland for its undisturbed ecosystem such as the mangrove forest, rare pear swamp forest and more. Evidence from many prior studies points to the fact that marine ecosystems can be extremely sensitive to even the most uncertain temperature change (Prabhakaran, Nair and Ramachandran, 2016). Wildlife river cruising (WRC) is now a popular recreational activity at the site due to the existence of a number of rare, endangered and threatened species such as Proboscis monkey (*Nasalis larvatus*), Tembadau (*Bos javanicus*), Borneo pygmy elephant (*Elephas maximus borneensis*), Storm's stork (*Ciconia stormi*), rhinoceros hornbill (*Buceros rhinoceros*) and Oriental darter (*Anhinga melanogaster*). WRC encompasses two activities, which are cruising on a boat and experiencing the scenery along KR environment where tourists are able to watch wildlife in their natural habitat in close proximity. At present, the WRC of KR requires no entrance fee.

In particular and precise meaning of non-marketed goods and services refer to those, which may not be directly bought and sold in the market place (Pearce et. al, 2002). In this study, the benefits of recreation can be measured in terms of monetary value and non-economic significance (Zaiton, Syamsul Herman, Alias & Mohd Rusli, 2012); an individual who enjoys recreational activities would be able to gain benefits from these activities for example enjoyment from watching animals in the wild. The benefits to the individual and society can both be non-economic as well as economic, for example the expenditures from the recreational uses (Nurul Hikmah, Syamsul Herman, Zaiton and Ahmad, 2013). Economic benefits of wetland ecosystems are intangible, but have the qualities of a public good in enhancing benefits to the individual and society. With non-rival and non-excludable characteristics, public goods experience market failure; a situation where in which the allocation of goods and services is not efficient. In the case of natural areas such as river, its true value is generally not taken into account in development and environmental decision making processes, which leads to low investment and poor management (Sharma, Rasul and Chettri, 2015). This is because the non-market values of public goods such as rivers and surrounding wetlands are not taken into account in

its overall economic value. This has caused wetland ecosystem services to be undervalued and thus, widely threatened (Turpie, Lannas, Scovronick and Louw, 2010); to illustrate this point further, the world has lost about half of its wetlands since the beginning of the 20th century (TEEB, 2008).

KR is a part of a larger Lower Kinabatangan Segama Wetlands basin, gazetted as the largest Ramsar (78,000ha) site in Malaysia. The river, not only, supports rich and endangered species in KR basin, but is also critical to the livelihood of 104 villages within the vicinity, and also for the population of Sandakan and Lahad Datu town. Being a public good, KR also faces a market failure, where no market valuation has been conducted for the area, especially in its environmental service to the human population. Moreover, WRC provides an environmental service along the KR, but its recreational benefit towards people has not been valued in the market. This is especially significant in the KR region whereby its local economic value is still poorly understood, and thus contributes to the absence in public decision-making. In dealing with the situation, economic valuation provides an empirical tool to assess wetlands and other ecosystems as economically productive systems; this allows conservation and development decision makers to consider them on their agendas (Kubiszewski, Costanza, Dorji, Thoennes and Tshering, 2013). Since the river is part of Permanent Forest Estate under Sabah Forestry Department (SFD), it is imperative for the department to understand the value of WRC, in addition to the forestry commodities under its authority.

Under the total economic value framework, the travel cost method (TCM) is a popular method in assessing the value of recreational use of an environment (Syamsul Herman, 2010). The situation in KR is unique, whereby tourists use different transportation modes to enjoy recreational experiences in KR. Using TCM, the consumer surplus (CS) can be measured, and the recreational value of KR can be estimated by multiplying CS with the total visitation to KR in a year. In Malaysia, empirical work employing TCM includes Syamsul Herman, Shuib, Ramachandran and Rusli (2012), Afandi, Samdin, & Shuib (2013), Matthew, Shuib, Ramachandran & Herman (2013), and Matthew, Shuib, Ramachandran & Mohammad Afandi (2015).

Although there have been studies of KR in the past, mostly related to provisioning, little is known about the non-market economic value, from the perspective of cultural (recreational and tourism) resources provided by KR. To date, this is the only study attempting to reveal the economic value of NCWOT through the assessment of WRC as a product, in KR. Hence the main objective of this study is to estimate the economic value of WRC of KR in Sukau, Sabah by applying TCM.

2. METHODOLOGY

The study adopts a well-known non-market valuation method particularly for recreational use of the environment, known as travel cost method (TCM). TCM adopts a demand theory where cost to travel to the site is a proxy to price, whilst the quantity is represented by the frequency of visits over a period, which is usually in a season or a year (Ward and Beal, 2000). TCM is a tool economists use to estimate recreation demands. The model relies on actual behaviour in that the site choices of individuals must be observed by the researcher, and that market purchases associated with this behaviour (travel costs) are complementary to the choice of a recreation site (Fletcher, Adamowicz and Graham, 1990). Since only recreational visits are counted in TCM, it is an economic valuation tool is narrowly tailored to uncover recreational value of the environment. Over the years, the improvements made to TCM have incorporated substitution effects, time cost, socio-economics,

perceive site quality, methodological and econometrics issues such as multi-destination, multicollinearity and heteroscedasticity (Afandi et al., 2013).

In the study, the calculation for travel cost method included all of the respondents' individual expenditures. These included air transportation from country of origin, land transportation to the tourist jetty in Sandakan Town, Sabah and the charges tourists paid to participate in WRC. Data was collected using a structured questionnaire. The questionnaire captured data on individual travelling costs, travel and visit, perception on WRC experience and personal socio demographic information. The respondents were tourists on WRC trips, aged 18 years old and above. A series of face-to-face interviews were conducted, within a period of two months, at the tourist jetty in Sandakan, between May and July 2015. A total of 170 useable questionnaires were obtained and used in the analysis. The Statistical Package for Social Sciences (SPSS) version 22 was employed for data analysis.

2.1. Descriptive Analysis Result

The tourists' demographic is summarized in Table 1. Based on the data collected, most of the respondents who partook in WRC were male (66.5%). In terms of age, most of WRC's tourists (67.1%) were between 20 to 39 years old, with an average age of 39 years old and can be categorised in the young adult group. A study by Nur Syuhada, Syamsul Herman and Zaiton (2013) stated that age played an important role in determining types of activity preferences and behaviours of individuals. The middle-aged group in the study suggests that they are more adventurer-type tourist of WRC. Generally, as the age groups increased, the level of participation in an activity related to recreation decreased.

Majority of the tourist (38.2%) had the highest monthly income of more than RM10,000 while the mean income was RM10,924.18. Although the income level was considered to be relatively high, it was mostly due to the larger composition of foreign tourists of the WRC in KR; some of the foreign tourists had paid salaries in their own currency, some of which were valued higher than RM, resulting in a high monthly income level in the data. This was supported by the fact that majority of the tourists (95.9%) were foreigners, whereby 77.6% were from the continent of Europe. This finding also suggests that WRC in KR is a product of international tourism market, rather than domestic. The uniqueness of KR as the habitat to many wildlife, where some of which are endemic to Borneo; making WRC appealing to foreigners. Approximately half (50.6%) of the respondents were degree holders and worked in the private sector (51.2%). This finding showed that tourists of WRC were educated. It was understandable that individuals with higher levels of education would spend more money on recreation activities than the others (Nurul Hikmah et al., 2013; Kostakis et al., 2014). Highly educated people usually earned much more money than others, thus, they might consume more recreation due to more discretionary income.

Table 1: Visitors Demographic Characteristics

	Profile	Frequency	Percentage (%)
Gender	Male	113	66.5
	Female	57	33.5
Age	Below 20 years	1	0.6
	20 – 39 years	114	67.1
	40 – 59 years	41	24.1
	60 years and above	14	8.2

Table 1: Visitors Demographic Characteristics (cont.)

	Profile	Frequency	Percentage (%)
Income	RM0 to RM2000	13	7.7
	RM2001 – RM4000	7	4.2
	RM4001 – RM6000	13	7.6
	RM6001 – RM8000	34	20
	RM8001 – RM10,000	38	22.3
	RM10,000 and above	65	38.2
Origin	Domestic	7	2.4
	Foreign	163	0.6
Occupation	Government	39	22.9
	Government link companies	16	9.4
	Private	87	51.2
	Own Business	16	9.4
	Housewife	2	1.2
	Others	10	5.9
Education level	Secondary school	12	7.1
	General Certificate of Education		
	Ordinary/Advanced Level	43	25.3
	Undergraduates	86	50.6
	Post Graduates	29	17.1
Tourist's Origin Continent	Europe	132	77.6
	Americas	15	8.8
	Australia & Oceania	12	7.1
	Asia	11	6.5

Table 2 describes the visitation characteristics of WRC tourist. The mean visit frequency is estimated at 1.15 per year due to the high population of foreign tourists. This also explains the high travel cost to experience WRC in KR, where the mean cost is RM2,796.47, one way. Tourists also bear the cost at the location, estimated average at RM1,353.57 per person. The average stay in Sandakan for WRC is 58.31, or approximately 2.4 days.

Table 2: Descriptive statistics of WRC trip in Sukau

Variable	Min.	Max.	Mean	Std. Deviation	Median
Visitation in a Year (Times)	1.00	10.00	1.15	1.02	1.00
Travel Cost (RM)	100.00	28,000.00	2796.47	2573.18	2250.00
On-site Cost (RM)	87.00	32,000.00	1,353.57	2,947.15	655.00
Time Cost (RM)	40.23	11,494.25	998.02	1535.80	638.31
On-site Time (Hours)	12.00	216.00	58.31	26.12	48.00

Tourists were also asked to rate their satisfaction on four features of the WRC, based on a scale (Table 3). The features were counter service (CtS), fee price (FP), the enjoyment of wildlife viewing experience (VE) and river cruising experience (RE). A mean score was later calculated (Table 3). Except for fee, based on the scale provided, all features scored more than 4. This indicates that tourists were generally satisfied with the quality of WRC in KR.

Table 3: Satisfaction index towards WRC in Sukau Sabah

Conditions	Counter Service (CtS)	Fees (FP)	Wildlife Viewing Experience (VE)	River Cruising Experience (RE)
Satisfaction Mean Score	4.06	3.54	4.04	4.09

Note: *1= Very dissatisfied, 2= Dissatisfied, 3=Neutral, 4= Satisfied, 5=Very Satisfied

2.2. Multiple Regression Result

In constructing the recreational demand function for WRC, an OLS regression model is specified. The specified model determines the relationship between visits and independent variables. From the study, R^2 value is found to be 0.188%; indicating that the independent variables explain 18.8% the variation of the dependent variable, which is visits per year. The F value shows that there is a significant relationship between dependent variable and independent variables.

Table 4: Regression Summary Output

Output	R^2	Adjusted R^2	F	Standard error of the estimate
Regression	0.188	0.151	5.071	0.969

Among all independent variables in the model, only two variables were found to have influence on visit per year, with a 95% confidence level (Table 5); Travel cost and satisfaction level. The negative algebraic sign in travelling cost was anticipated, as this was consistent with demand theory (Matthew et al., 2015). The result implied that, the higher the cost to participate in WRC at the KR, the lesser the visits a person. It was especially true for KR since a majority of the tourists were international inbound tourist. In another related study, Elizabeth (2015) found that TCM recognized that individuals faced budget constraints. Allocating a bigger portion of monetary expenditure to the recreation site reduced the total amount of money (income) that an individual could spend on other goods and services at the site.

Satisfaction shows a positive relationship with visit. A direct relationship between satisfaction and visits was found in past recreational studies (Lee & Chen, 2005; Nurul Hikmah et al., 2013; Nur Syuhada et al., 2013). The studies implied that the more the tourists were satisfied, the more they would likely visit the location. In many cases, satisfaction was a representation of perceived quality of the site. Better-perceived quality means bigger popularity, which leads to more visits.

Table 5: Multiple regression output

Variables	B	t-value	p-value
(Constant)	1.950	2.123	0.035
Age (Years)	0.005	0.634	0.527
Income (RM)	-0.064	-1.860	0.065
Travel Cost (RM)	-0.597	-3.908	0.001*
On-site Cost (RM)	0.174	1.789	0.076
Length of stay (Hours)	-0.017	-0.038	0.969
Satisfaction level (Mean score)	0.299	2.216	0.028*
Time cost (RM)	0.000	-1.885	0.061

2.3. *The Estimation of Recreational Value*

Consumer Surplus (CS) was used to assess recreation value of WRC in KR. Taking the integration of the demand function, while leaving other variables constant, the CS value was estimated at RM 3.19 per visit per person for the year 2014. The CS value for WRC in KR, Sabah was seen to be too low for a site that had all the resources that a recreational place needed. However, low estimated value on CS had appeared in many past studies; for example research from Mckean et. al (2005) where he found that the CS value for willingness to pay for non-anglers recreation at Lower Snake River reservoirs using TCM was USD 14.03 per visit which, he claimed to be low. In another, earlier study, Bergstrom and Cordell (1991) reported that the CS per participation for an outdoor recreation in the United States was only US dollar 2.39.

To estimate the total economic value of WRC, the CS value was then multiplied with the total number of tourists per year. Supplied by the Kinabatangan District Forestry Department Office, the total number of tourist visits to KR, Sabah in 2014, was 12,593 visits. Therefore, the total economic value of WRC in KR, Sukau, Sabah as a recreational area was estimated approximately at RM 40,149.63, in year 2014.

3. CONCLUSION

In general, the main objective of this study was to estimate the economic value of Wildlife River Cruising (WRC) at Kinabatangan River (KR), in Sukau, Sabah, to highlight the importance of non-consumptive wildlife-oriented tourism (NCWOT) for the area. The study observed the socio-demographical characteristics of the wildlife river cruising tourists' backgrounds, which was dominated by international tourist, and which showed more male participants within a middle-aged group, with high incomes, a high education level and were full-time workers.

This study also identified factors affecting the demand in WRC's activity; from the regression output, there were seven variables that are found to relate to the demand in WR; only two of the variables were found to be significant, while the others were not. The significant factors were the travel cost and the level of satisfaction towards wildlife river cruising. The result indicated that that an increase in travel costs would decrease the frequency of visits in a year to Sukau, Sabah. However, an increase in level of satisfaction towards WRC would result in an increase in frequency of visits in a year. This signifies the importance of maintaining the quality of the Sukau as NCWOT site in the country.

In estimated the economic value of WRC in Sukau, Sabah, determined through a valuation technique applied called travel cost method (TCM) found that the value was RM 40,149.63. When this study was conducted, there were no such assessments on the recreational value in Sukau, Sabah. This value indicated the non-consumptive and non-market benefit generated by WRC for the public. This information would be useful, particularly to the Sabah Forestry Department, in which it can serve as a baseline value for allocations of budget, manpower, training, empowerment and entrepreneurship programmes.

The estimation of economic value was related to the visitation rates and the estimated CS, which was counted the monetary units of one trip, and then the total economic value of WRC, which the study

now can consider as recreational value for a particular year, determined by multiplying the CS with the number of visitations in that particular year.

The method shows that if there are changes in visitation rates, it would affect the WRC economic value. Therefore, this study indicates that it is vital for the stakeholders of WRC in KR to maintain a certain number of tourist visits so that the economic value would be sustainable. Strategies to increase or to attract more tourists to visit Sukau, Sabah is needed and this should be emphasized to government and tourism agencies involved in Sukau as well as the local stakeholders in the area. This output can be used by any parties involved in tourism directly or indirectly, mainly the travel agencies, stakeholders such as the Forestry Department, Wildlife Department and the state of Sabah to develop strategies to attract more tourists internationally or locally and to improve the economic value of this place in the future.

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