

# Visitors' Willingness To Pay (WTP) at Kionsom Recreation Centre, Inanam, Kota Kinabalu, Sabah

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**ABSTRACT:** Aim of this study is to determine the willingness to pay (WTP) of visitors to pay admission fees for conservation at Kionsom Recreation Centre (KRC) and opinion on ecosystem services of KRC. Contingent Valuation Method (CVM) of WTP is used to find out the respondents payment valuation on study areas by using open-ended payment vehicle. 140 of questionnaire is distributed in the area using convenience sampling but only 100 questionnaire are selected as they are fully answered by the respondents. Result showed that factor of WTP influenced by gender, age and distance between respondents place to Kionsom Recreational Centre. A regression model was created and the results shows that gender, age and distance have relationship on the amount of WTP that stated by respondents. Mean maximum WTP by per visitor to KRC is RM 2.89. Besides, most of the respondents valued highly the services of tree and ecosystem services of the site. The visitors also agrees that conservation fee collected are suitable for development purposes and add more recreation activities to attract visitor to visit Kionsom Recreational Centre (KRC). Future study on differences payment vehicle and elicitation method of contingent valuation on the site is highly recommended.

**Keywords:** Willingness to pay (WTP), Eco-tourism, Kionsom Recreation Centre (KRC), Ecosystem services, Conservation

Received 3 April 2017 Revised 23 April 2017 Accepted 20 May 2017 Online 23 July 2017

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## INTRODUCTION

Forest provides many services and one of the services is as recreation activity. Recreation activity in the forest is based on the ecosystem services provided in the forests. Ecosystem is a "dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit" (United Nations 1992: Article 2). The definition strengthen Tansley (1935) statements where "ecosystem not only organism-complex, but also the whole complex of physical factors forming what we call the environment". Ecosystem services are the benefits that human gain from the ecosystems such as provision services, regulating services, cultural services and supporting services (Millennium Ecosystem Assessment, 2005).

Recently, popularity of outdoor activities has increase the number of visitor into forest area. This cause over-use of the area as the area can only have small number of visitor per time to reduce the impact of exceeded carrying capacity (Badaruddin & Nikmatul, 2007). Hence, this will cause degradation to the area, which affects the market value of the area. Thus, to overcome these challenges, sustainable implementation plan on the site is fundamental to sustain the ecosystem services from degraded. One of the ways to create a sustainable implementation plan is to evaluate the area using the valuation method that called Contingent Valuation Method (CVM).

Contingent Valuation Method (CVM) is a technique to find out the economic benefits of non-use values especially nature ecosystem (Alex and Jim, 2015). It is usually done by making a hypothetical valuation were respondent can value the ecosystem based on the hypothetical scenario that been stated (Carson, 2000). Primary objective of CVM is to find out the maximum value of individual willingness to pay (WTP) or maximum value of individual willingness to accept (WTA). This is the

estimation or real value on an item or service (Competition Commission, 2010). Using Contingent Valuation Method, the management will find suitable value of admission fee that correlate with the ecosystem provided by the area. Thus, it is crucial to find the value of the site by find the mean of WTP of respondents to find the actual costs that users should pay when use the site to ensure the site will sustainable for future use.

Kionsom Recreation Centre (KRC) has many potential to become one of the best attraction site in the Kota Kinabalu. One of the way to help KRC reach it potential is to increase the funding to the management for develop its ecosystem services. One of the methods to reach the goals is by increase the admission fee of KRC. Now, the entrance fee to the site is price at RM1.50, which is used to pay salaries and expenses for carrying out the activities of the villagers (Sabah Tourism, 2015). Thus, this shows that the funding of the site is not enough for maintenance of conservation of ecosystem services provided by the area. Thus, the aim of this study to find out the visitors willingness to pay (WTP) and visitors' opinion regarding satisfaction on ecosystem services provided in Kionsom Recreation Centre (KRC).

## METHODOLOGY

### *Research site*

Kionsom Recreational Centre (KRC) is located in N5 58.32 E116 12.52, also known as Ulu Kionsom Waterfall and closed to the Inanam town. The recreational centre is famous for its waterfall as main attraction to the visitors and there are total of seven waterfalls in the site. The seven-storey waterfall was developed by the idea of Sepanggar Member of Parliament, Datuk Eric Majimbun who believe in its potential to be developed as a tourist destination. The waterfall was developed in collaboration with the villagers close to set up a committee to oversee the waterfall which is composed of Kampung Kobuni, Kampung Bambangan Baru, Kampung Kionsom and Kampung Poring. In addition, KRC waterfall also functional as water catchment for the locals as it provided as provision services to the nearest human settlements, Kampong Ulu Kionsom. The site is also close to another tourist attraction, Mari-Mari Cultural Village.



**Figure 1.** Location of Kionsom Recreation Centre. Source: Google Map (2015).

### *Questionnaire design*

Questionnaire is divided into 3 parts. The first part is the respondents profiling on socio-demographics, second part is the visitor opinion on the function of tree in the area and ecosystem services provided in the area and final part is the visitor valuation on willingness to pay (WTP) for admission fee to the Kionsom Recreational Centre (KRC).

### *Willingness to pay*

This study was attempted to measure the conservation benefits from visitor's perspective (non-use values) on ecosystem services provided by KRC. The contingent valuation method (CVM) is used to derive willingness to pay (WTP) of users in KRC for conservation of ecosystem services provided in KRC. Then, the aggregate monetary benefits of conserving recreation centre were estimated. The CVM with open-ended WTP as elicitation format is employed in the questionnaire (Baral and Ranju, 2008).

*If payment as much as RM3 imposed to every tourist by way of something upgrades Recreational Centre Kionsom (KRC) area, are you willing to pay?*

The respondents were asked in the questionnaire whether the respondents were agreed or disagreed with the elicited WTP and then, if the respondent were agreed with the elicited value, the open-ended question is asked:

*What is the maximum amount of money that you willing to pay to upgrade the Recreational Centre Kionsom (KRC)?*

If the respondents were disagreeing with elicited WTP, then the respondents were asked:

*What is the maximum amount of money that you willing to pay to upgrade the Recreational Centre Kionsom (KRC)?*

### *Sampling technique*

Due to unavailability of statistical visitors that visited the KRC, the convenience samplings have been used instead of random sampling in the research. Total of 140 questionnaire is collected but only 100 of questionnaire is selected for further analyse as the questionnaire is fully answered by the respondents. Data collection has been done for two weeks on the weekends and the process of data collection is started at 8 am and finished at 5 pm.

### *Method of analysis*

This researched is using descriptive analysis, chi-square and multiple regression based on model that proposed by Yamano (1985) regression model on the CVM of recreation park, which education, occupation, nationality citizenship, salary earned, references and number visited to the site.

$$WTP = \alpha + \beta_1(edu) + \beta_2(occ) + \beta_3(nat) + \beta_4(wage) + \beta_5(ref) + \beta_6(num)$$

Where, WTP is the willingness to pay,  $\alpha$  is the p-value of the constant,  $\beta_i$  is the parameter p-value. Then, the abbreviation of the parameter is used in the equation such as (edu) for respondent education level, (occ) for respondent occupation, (nat) for respondent nationality citizenship, (wage) for respondent monthly earnings, (ref) for respondents sites references and (num) for number of respondents visited to the site. For mean and median WTP in open-ended CVM elicitation is calculated using simple arithmetic mathematical because it do not require fitted model (Ndebele, 2009).

## RESULT AND DISCUSSION

### *Socio-demographics*

Majority of the respondents were male, age in between 21 to 30, undergraduate students and single. This supported by Afifuddin (2009) statements that majority of respondents that visited the recreational area or parks are youth group due to the group physically able to do activity that

required physically challenge such as jogging, swimming and hiking. Then, most of the respondents were also have visited the site in large number, peers are the site reference, mostly are first time visited, 16 to 25 KM their distance from home to the site, and mostly are using car as transportation access to KRC (See Table 1 for further analysis). This trend of visitor supported by Wan Sabri (1989) statement, "industry and social national development has exposed the society to many psychology pressures, thus increasing the activity of recreation among them". Although there are foreigners who visited the site but they are less likely to participate in the questionnaire due their incapability to speak in native language, which became barrier for understanding the questionnaire and communication during interview. Furthermore, lack of timespan during the researched has prevented from getting foreign visitor that capable of speaking in English. This is also supported by Simon (2010), which state that foreign tourist visited the recreation site usually come in large number through tourism agency and visited the site in certain period only.

**Table 1.** Socio-demographics of respondents

Socio-demographic	Variable	Freq.(n)	Percentage (%)
Gender	Male	51	51%
	Female	49	49%
Age	Less than 21	25	25%
	21-30	63	63%
	31-40	8	8%
	41-50	2	2%
	More than 50	2	2%
Education level	No formal education	7	7%
	Primary school	2	2%
	Secondary school	28	28%
	Diploma	9	9%
	Bachelor	51	51%
	Others	3	3%
Occupation	Public Worker	16	16%
	Students	62	62%
	Private Worker	9	9%
	Self employed	11	11%
	Others	2	2%
Nationality	Malaysia	100	100%
	Non- Malaysia	0	0%
Relationship status	Single	81	81%
	Married	19	19%
	Others	0	0%
Family size	1-3 People	22	22%
	4-6 People	42	42%
	7-9 People	26	26%
	10 People and Above	10	10%
	Monthly income	Less than RM500	45
RM500-RM999		5	5%
RM1000-RM1499		11	11%

	RM1500-RM1999	9	9%
	More than RM2000	30	30%
Come with	Alone	3	3%
	Family	14	14%
	Partner	12	12%
	Large group	71	71%
Visit purpose	Picnic	56	56%
	Sightseeing	39	39%
	Research	1	1%
	Field Trip	2	2%
	Others	2	2%
Information references	Friends	80	80%
	Family	7	7%
	Internet	1	1%
	Tourism agency	3	3%
	Surrounding people	8	8%
	Inadvertently	1	1%
	Mass media	0	0%
Number of visit	First time	43	43%
	2 times	14	14%
	More than 2 Times	43	43%
Distance to the site	Less than 5Km	12	12%
	5Km-15Km	34	34%
	16Km-25Km	36	36%
	More than 25Km	18	18%
Transportation use	Car	75	75%
	Public transport	15	15%
	Motorcycle	10	10%
	Walking	0	0%
	Bicycle	0	0%

#### *Opinion on ecosystem valuation*

Most of the respondents are agree that trees in KRC plays an important role as 96 of the respondents are agree while only 4 people are disagree. Then, question about forest tree function and contribution were asked in the questionnaire. The scale is from 1 to 5, which 1 is the lowest and 5 is the highest in contribution. Based on the findings, most of the respondents are agree that trees provide natural beauty with the highest mean score of 4.55. Then, followed by shading as second biggest contribution by tree in the site (mean score=4.46), and give calmness is the third function of tree in the area that stated by majority of respondents (mean score=4.46). Meanwhile, the least function and contribution of tree in the area is the function of tree as religious activity (mean score=2.87) (See Table 2).

**Table 2.** Visitor's opinion on role of trees in KRC

<i>Contribution of tree's at KRC</i>	<b>Mean score</b>	<b>Standard Error</b>
• Providing natural beauty	4.55	0.672
• Shading	4.46	0.758
• provide calmness	4.46	0.809

• Supplying oxygen & fresh air	4.46	0.827
• For soil erosion control	4.39	0.834
• Provide appropriate climate	4.33	0.865
• Decrease stress and psychological pressure	4.27	0.886
• Recreation, sport & picnic	4.25	0.896
• Provides aesthetic value	4.23	0.92
• Ornamental & beauty	4.19	0.936
• Rain absorber	4.16	0.956
• Ground cover plants	4.12	0.961
• Reduce earth temperature	4.09	1.005
• For wildlife habitat	3.94	1.023
• Increase property value	3.88	1.102
• For education	3.8	1.174
• Screening	3.71	1.192
• Wind barrier	3.57	1.208
• Controlling weed production	3.51	1.218
• For wood product	3.46	1.223
• Sound barrier	3.41	1.291
• For religious purpose	2.87	1.419

Note: Mean score 1 is the lowest and 5 is the highest in contribution

Next part in the questionnaire is the landscape of ecosystem services is been asked in the questionnaire. Ecosystem services such as habitat and ecosystem support, cultural services, provision services and regulating services are been asked in the questionnaire, which most of the respondents are agree with the services and only a portion of the respondents is not agree and unsure with the services provided by the site. Function of services in habitat and ecosystem support of Kionsom Recreation Centre has the highest mean score with 3 out of 4 functions ranked above 4 with respondents feels that nutrient recycling, soil formation and habitat for wildlife is one of crucial function of the site. Then, in cultural services 2 out of 6 functions rank above 4 with respondents state the site providing recreational services and tourism areas while respondents find the area provide least in secret grove areas. There are no mean score higher than 4 is ranked in provision services provided by the site as the highest is the function is clean water. Last services asked in the questionnaire is regulating services with 4 out of 7 is ranked above 4. Regulating local climate and air quality, stabilizing extreme weather, carbon sequestration and storage, and soil erosion and soil fertility are the function that gains mean score higher than 4 (See Table 3).

**Table 3.** The visitor rated on the function of each ecosystem provided in the area.

Ecosystem Services	Function	Mean score	Standard Deviation
<i>Habitat and ecosystem support</i>	• Nutrient recycling	4.28	0.877
	• Soil formation	4.28	0.889
	• Habitat for wildlife species	4.23	1.004
	• Maintenance of genetic diversity	3.60	1.414
<i>Cultural services</i>	• Increase cultural, artistic and aesthetic appreciation	3.87	1.070
	• Increase of spirituality, history and	3.74	1.116

	approach the creator		
	• Providing recreational services, to improve the mental and physical health	4.42	0.794
	• Provide education and learning	3.82	1.077
	• Provide tourism areas	4.54	0.744
	• Provide secret grove areas	2.86	1.491
<i>Provision services</i>	• Food resources	3.58	1.112
	• Source of raw materials	3.57	1.047
	• Genetic resources	3.17	1.400
	• For clean water	3.85	1.077
	• Source ethno-medicines	3.73	1.090
	• Source decorative	3.69	1.107
	• Source energy (Hydro power)	3.18	1.373
<i>Regulating services</i>	• Regulating local climate and air quality	4.29	0.891
	• Stabilizing extreme weather	4.37	0.761
	• Carbon sequestration and storage	4.06	1.052
	• Soil erosion and soil fertility	4.22	0.917
	• Purification of water and air	3.87	1.079
	• Pollination	3.58	1.249
	• Pest and disease control	3.65	1.282

#### Contingent valuation analysis

Respondents were asked about their willingness to pay (WTP) on the stated admission fee. Results show 58 respondents were agreed with the payment and 42 of the respondents are disagreed with the payment. The mean maximum WTP is RM 2.89 (See Table 4).

Based on the Yamano (1985) regression model, a model has been built, where:

$$WTP = 0.159*(Gender) + 0.103*(Age) - 0.090*(Distance) + 1.238$$

where the p- value of the factors are gender (p = 0.061), age (p = 0.048) distance travelled to the site (p = 0.035).

**Table 4.** The average of respondents WTP

Class (RM)	Average	Frequency	Relative frequency (f/n)	Average*Fr (f/N)
RM 0.10 – RM 1.00	0.55	20	0.20	0.1100
RM 1.10 – RM 2.00	1.55	22	0.22	0.3410
RM 2.10 – RM 3.00	2.55	17	0.17	0.4335
RM 3.10 – RM 4.00	3.55	17	0.17	0.6035
RM 4.10 – RM 5.00	4.55	15	0.15	0.6825
RM 5.10 – RM 6.00	5.55	2	0.02	0.1110
RM 6.10 – RM 7.00	6.55	2	0.02	0.1310
RM 7.10 – RM 8.00	7.55	0	0.00	0.0000
RM 8.10 – RM 9.00	8.55	0	0.00	0.0000
RM 9.10 – RM 10.00	9.55	5	0.05	0.4775
				<b>TOTAL=RM2.89</b>

The aim of this study is to estimate the mean of WTP of visitors in KRC. The increasing number of visitors in the area has increased the number of footprint at the site and this will exceed the KRC carrying capacity in the future if no sustainable plan implement for future use. The current admission fee is RM 1.50 for adults and RM 0.50 for child. Based on the WTP aggregation, the mean visitors WTP are RM 2.89. Thus, this shows increase of admission fee of visitors willing to pay (WTP) from RM 1.50 to RM 2.89.

## CONCLUSION

89% of the respondents were agreed to pay for the elicited WTP of RM 3 for visitors in Kionsom Recreation Centre (KRC). Majority of visitors were agreed with the elicited WTP stated that they are willing to pay to help developing the area by repairing the infrastructure. Although majority of respondents were agreed with the elicited amount, there were 11% of respondents disagreed with the payment due to the infrastructure and level of safety in the area. Thus, improvements in the area will increase the visitors WTP.

Admission fee is very crucial for KRC to function as the management use the fee for maintenance, infrastructure improvements and other services. The increased amount of admission fee can be conduct by management of KRC by putting trial to evaluate the effect of increasing amount of admission fee to the number of visitor come to the site. The findings also find out that the function of tree in the ecosystem of KRC is highly regarded by the visitors. This indicates the importance of tree as part of attraction of visitors to come to the KRC. KRC also provided significant ecosystem services to the locals. Majority of visitors agreed the function of KRC as ecosystem services provided to the local community around Ulu Kionsom.

Sample size in this questionnaire is too small, which is the limitation of the study. Convenience sampling is also an issue because the probability of the sample is low. Recommendation for future study is to use larger sampling size and random sampling method instead of convenience sampling. Using different payment vehicle is also recommended, as it will increase the variability of WTP for the site.

## ACKNOWLEDGEMENTS

We would like to thank the head of village of Kg. Kampung Kobuni, Kampung Bambangan Baru, Kampung Kionsom and Kampung Poring to make this study possible and UMS undergraduates who have been helping during the researched. The funding of this study was from UMS small grant SGK0027-STWN-2015. We would also like thank the anonymous reviewers for this manuscript.

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