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Community Economic Evaluation and Sample Distribution of a State Park: The Case of the Belum Royal State Park, Malaysia

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Abstract

Purpose: This study was conducted to gauge the economic evaluation and sample distribution of conserving the Belum Royal State Park (BRSP) in Perak, Malaysia and to identify factors influencing its use by the community. This study aims to examine community perception on the conservation of the Belum Royal State Park (BRSP) and maximum community's willingness to pay for park entry permits fees. **Research design, data and methodology:** A questionnaire survey was conducted involving a total of 280 respondents. The study adopted the Dichotomous Choice Contingent Valuation Approach (DC-CVM) and the Logistic Model, to estimate the maximum community's willingness to pay for park entry permits fees. **Results:** The results established that the factors of respondent's occupation, income, ecotourism influence on the BRSP and maximum entry price, significantly influenced visitors' decision on community's willingness to pay. The average community's willingness to pay was RM9.68 per person. **Conclusions:** In conclusion, surveillance and patrols in protected areas should be expanded. The extra expense for ensuring safety can be offset through income from ecotourism that should also benefit the local community on economic evaluation and equal distribution on the BRSP.

Keywords : Economic Evaluation, Sample Distribution, Contingent Valuation Approach, Willingness to Pay, Conservation, Ecotourism

JEL Classification Code : M21, O12, P46, Z32

1. Introduction

The number of national and international tourists is increasing and some countries worldwide are promoting

local tourism to their advantages. Tourism has played a significant economic role in emerging and developing countries, contributing more foreign currencies than conventional primary product exports (Lee & Syah, 2018;

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Purnomo et al., 2020) among other studies. According to the United Nations World Tourism Organization (UNWTO), tourism officially involves travel or movement of people from one place to another, over a span not exceeding one year, seeking destinations that provide different and exotic experience and environment relative to those found in their home country. Malaysia is one of the numerous tourist attractions in the region. The tourism industry began to emerge in Malaysia in the late 1960s. Tourism is one of twelve National Key Economic Areas (NKEA) listed as significant contributors to the Malaysian economy. After manufacturing and commodities, tourism is Malaysia's third-largest source of income. The second-largest source of foreign exchange income in Malaysia is the tourism sector, which benefits the economy (Hirschmann, 2020).

According to the International Ecotourism Society (TIES), ecotourism is described as responsible travel to natural areas that protect the environment, encourage the well-being of local citizens, and which also involve interpretation and education. Ecotourism is a reliable adventure of the environment aimed at enjoying and appreciating natural and cultural experiences. Ecotourism can have a limited impact on the land, contributing to the well-being of local communities. The activity has been increasingly popular in Malaysia ever since the 1990s. In 1996, to implement modern tourism goods in Malaysia, the Malaysian Government launched the National Ecotourist Plan (Mosbah & Mohamed Saleh, 2014). In addition, other ecotourism plans in Malaysia include a new economic model by the Federal government, emphasizing Malaysia's rich biodiversity that should make significant contribution to the rising industry.

In Malaysia, all ecotourism sites which comprise nature reserves, forest reserves, state and national parks, coastal parks, wetlands, mangroves, and calcareous cellars, are habitats to rich wildlife and fauna populations. In addition, 54 natural areas of a minimum 3.3-hectare size in the country are classified as protected areas. Such sites include shrines for animals, state and national parks, wildlife reserves, and aquatic parks (Ahmad Puad et al., 2006). A national park may be established for public recreation and enjoyment or for historical and scientific importance. In a national park, many ecosystems including the flora and fauna species that inhabit them are protected in their natural state. The International Organization, the International Union for the Conservation of Nature (IUCN), and its World Commission for the Protection of Areas (WCPA) have described the "National Park" as a Category II type of protected area (International Union for Conservation of Nature, 2016).

There are more than 30 national parks in Malaysia designated to nature conservation purposes as reserve areas. Each year, they draw thousands of visitors worldwide to

experience and enjoy the beauty of enchanting tropical flora and fauna. The parks are under the management of the Wildlife and National Parks Department for Peninsular Malaysia, the Sabah Wildlife Department for Sabah, and the Sarawak Forestry Department for Sarawak. The parks in Malaysia are genuinely fascinating for wildlife and nature lovers, mainly due to their extensive range and incredible distribution of tropical fauna and flora in the pristine environment of the rainforests.

In Figure 1, Belum Royal State Park in Perak State, Malaysia, was originally gazetted as a Hutan Simpan Belum (Belum Forest Reserve) under the Perak State Forest Department. It is located in Hulu Perak district, bordering Thailand on the north side, the East-West Highway on the south and the borders Kelantan on the east. The reserve was later renamed as Royal Belum by the Sultan of Perak, the late Sultan Azlan Muhibbuddin Shah, in 2003. Royal Belum was registered under the Perak State Parks Corporation Act 2001 by the Perak Government on 17 April 2007. The 117,500-hectare area is officially named the Belum Royal State Park (BRSP).



Source: Perak state website

Figure 1: The map of Belum Royal State Park

The Belum Royal State Park is estimated to be 130 million years old, rendering it as one of the oldest rainforests globally, if not the most ancient, and certainly much older than the Amazon Rainforest and the Congo Rainforest as reported by Malaysian Nature Society (MNS). Royal Belum is the second-largest protected region in Malaysian after Taman Negara (431,435 ha) and is part of the Titiwangsa Range mountain system. In 2012, the government proclaimed 117,500 hectares of the Belum Royal State Park as a National Heritage Site, and in 2017 a plan was submitted to the UN to designate the Belum Royal State Park a UNESCO World Heritage Site (Citrinot, 2018). The

BRSP will thus be recognized as a World Heritage Site in Malaysia.

Ecotourism in the Belum Royal State Park potentially offer a wide variety of environmental and socio-economic benefits. BRSP's strikingly beautiful landscape provides invaluable advantage and serves as a magnet that attracts travellers to its magnificently rich biodiversity. These assets entice tourists to explore the jungle treasures and also attract the local and international scientific community to undertake their research. Ecotourism is seen as an effective instrument for encouraging the protection of the area and simultaneously shielding it from unsustainable growth. The potential impact of ecotourism on nature is limited. However, if not effectively managed the development of ecotourism in the Belum Royal State Park may threaten its wealth of biodiversity. Since the launch of the Royal Belum in 2006, the rapid rise in the number of tourists may adversely affect its management and planning if not adequately controlled. One main reason for this is that some of the attractive tourist draws (such as the strange Rafflesia flower, salt licks, wildlife appearance and spectacular waterfalls) are delicate and highly vulnerable elements and with restricted access, that may lead to the depletion of these valuable resources.

The Belum Royal State Park is still not free from threats of logging and illegal poaching. Most perpetrators of the latter activity are foreign hunters attracted to the rich and valuable fauna, most of which are categorised as endangered species by the IUCN. The forest borders Thailand to the north hence posing attractive illegal access to poachers. Although there are protected areas on the Thai side, the international cross-border effort to combat illegal encroaching and hunting proves to be dauntingly complicated than expected (Schwabe et al., 2015). Typically, Thai poachers pay large sum of money to bribe local individuals to serve as their informants and accomplices. Further, intrusive infrastructure development by the government often result in the breakdown and destruction of habitats that frequently triggered human-wildlife conflicts with displaced large wildlife species. Such conflicts pose a dilemma for the local community, more often the Orang Asli, and the wildlife. Agricultural development and expansion was recorded as one of the most critical challenges to the survival of the Sumatran rhinoceros, tigers, and Asian elephants (Clements et al., 2010). Many Orang Asli villages in the Royal Belum were affected by conflicts with wildlife species, particularly wild boars and elephants. The repeated translocation of displaced elephants from forests throughout the Peninsular to release in the Royal Belum area by PERHILITAN authorities, further worsen the conflict triggered by the subsequent growth in population of the affected elephants. These conflicts regularly result in crop

destruction, thus resulting in more financial losses for the hapless Orang Asli community.

2. Literature Review

2.1. Total Economic Value (TEV) Concept

Total Economic Value (TEV) is a cost-benefit calculation distribution concept relating to individuals' value produced by a natural resource, or a human-made heritage resource, or an infrastructure scheme as substitute to not having it. It is conducted as an aggregate of the (main function-based) values in environmental economics. TEV includes all utility components obtained from ecosystem resources using a single unit of account, namely money or other market-based calculation units that make it possible to equate the advantages of different goods. The total economic value can be separated into use-value and non-use-value.

Use-values are those that flow from resources that specifically impact individuals, such as food production, flood regulation, leisure activities, and the availability of clean water. Use-Value may either be direct or indirect. Direct use-values are the material advantages of an environment related explicitly to the economic system. Conversely, indirect values of usage are material advantages and are implicitly associated with the economic structure. According to Tisdell (2003), usage-value is usually collected on-site in a natural environment and is the commercial use-value of an area that can be extracted from ecotourism (commonly referred to as non-consumptive economic use) or from hunting and fishing (a consumptive use). These use-values may be calculated based on measurable profits or expenses, such as mortgage payments or entry fees. These sums can be complemented by figures of unobservable benefits, such as imputed rentals of owner-occupied residences (Throsby, 2014).

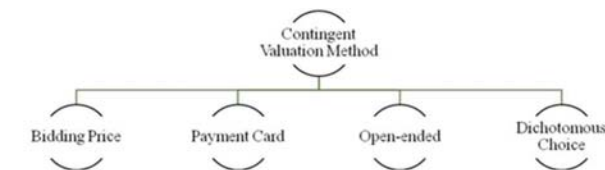
Non-use value is the value placed on economic assets by individuals who acquire them but did not use them. The term is most often used to refer to the value of natural and constructed resources. Non-use value as a category can involve the value of the option. The value is based on the consumer ability to pay for the upkeep of an object or resource, even though there is little or no likelihood that the individual may eventually utilize it. The second is the value of the bequest. Bequest value is a value imposed on the individual's ability to pay for the upkeep of an object or resource that is not used by the individual so that others can make use of it. It is worth extracted from the usage of the commodity or resource by others. The third is the value of existence which refers to the pleasure of understanding that there exists a species or an environment. The values of

existence Robert & Kimberly, 2005 derive from altruism toward biodiversity and are connected to ethical role of humans as related to the importance of other species. While some critics have questioned the significance of some elements of non-use values (Diamond & Hausman, 1994), there is now general acceptance that non-use values are a valid component of the total economic worth (Arrow et al., 1993; Atkinson et al., 2012).

According to Kim et al. (2007), non-use value is extracted from the intrinsic or abstract valuation of goods, namely the value of choice, the value of life, and the value of legacy. The non-use value was a significant component of several cultural heritage sites (Mohd Ariffin et al., 2015; Throsby, 2014; Kim et al., 2007). According to Rolfe and Windle (2003), non-use value is a passive use of cultural heritage value that is not defined in business processes but is instead appreciated by people who share resources, such as investing money to acquire or maintain them. This is parallel to what is in the Resource Based View-RBV theory which emphasizes the importance of capabilities in organizations as a driver to achieve competitive advantage (Ramdan et al., 2020)

2.2. Contingent Valuation Method (CVM)

Contingent Valuation is a technique for calculating the value placed on a good by an individual distribution. It enables individuals to explicitly disclose their willingness to pay (WTP) in order to obtain a specified good or willingness to agree (WTA) to give up a good from the sample distribution. Contingent valuation constitutes an economic methodology focused on a survey to evaluate non-market commodities, such as protecting the ecosystem or the effects of pollution. The contingent valuation approach is the "stated preference" method since it requires people to explicitly specify their preferences rather than inferring values from accurate decisions, as compared to the "revealed preference" method. CVM for sample distribution focuses on what people think they will do instead of what people are perceived to do. WTP may be sourced from respondents in a variety of ways. Boxall et al. (1996) claim that query, iterative bidding, payment cards, dichotomous options, and double-bound dichotomous choices comprise various "open-ended" forms (see Figure 2).



Source: Boxall et al. (1996)

Figure 2: Contingent Valuation Method for Sample Distribution

According to Figure 2, the contingent valuation is commonly employed to acquire WTP for leisure, choice, life, and bequest values. The Contingent Method is a preferred method widely used to generate the optimal WTP for non-market products. This technique enquires the respondent's preference for non-market products and services by questioning how much they would be willing to pay to improve on or avoid negative effects. According to Lockwood et al. (1996), claimed that the CVM for sample distribution obtains individual respondent estimate of the WTP to use or protect natural resources through developing a virtual sector. The simulated business is communicated by utilizing an e-mail questionnaire or a telephone or in-person interview. Contingent value surveys may also demonstrate on how the individual will be compensated for the change (such as a rise or decrease in price) or request compensation for land pollution in the study. In private economies, this concept is often referred to as "will to pay," although applied in a particular sense, namely in the form of public goods. According to Mukanjr et al. (2021), the approach of contingent valuation allows the full WTP of the particular respondent to boost or prevent harm to products and services in the hypothetical sector.

Lockwood et al. (1996), assessed the potential advantage of preserving long-standing grazing practices and environmental preservation in the Austrian Alps by evaluating the findings of a CVM for sample distribution study, which evaluated the economic worth of objects with cultural heritage. According to survey results, respondents estimated a mean WTP of \$73 for continued grazing with minimal environmental effect.

The researchers adopted an open-ended contingent valuation survey approach involving domestic and international visitors in estimating Gunung Gading National Park's environmental economy. This was to elucidate visitors' acceptance of the WTP approach to contribute to the park's conservation. Visitors' response to the WTP was positive. The response illustrates a good example of WTP use as an effective indicator of visitors' role in contribution to conservation of the national park. In practice the mean WTP entry cost per visit was made higher for international visitors (Kamri, 2013).

The economic importance of conservation and recreation at Paya Indah Wetlands (PIW), using DC-CVM, was surveyed by Siew et al. (2015). With growing number of tourists per year, PIW's management necessitates an increasing degree of protection and conservation of the wetland environment. The study showed that tourists were willing to pay RM7.12 per person entree fee. The bid price and profits were significant factors in influencing visitor's ability to pay. The study thus justifies Paya Indah Wetland management to implement the designated fees on tourists which should effectively add to the park's conservation

funding and ease current financial constraint.

In an earlier study, Nuva, et al. (2009) similarly evaluated visitors' WTP to finance the protection of the Gunung Gede Pangrango National Park (GGPNP), in Indonesia, and to determine visitors' use satisfaction of its ecotourism resources. The dichotomous option CVM for sample distribution was used to assess visitors' WTP. The respondents were directly interviewed and the results compiled. Visitors generally accept that the management of the relevant organization must work to source and secure the capital for ecotourism. The economic gain of protecting ecotourism facilities at the GGPNP was calculated using the visitor WTP for higher entrance fees. The findings show that income, gender (male), and residence (urban) were the significant factors that influence the visitor's WTP for the entry fee to the park.

Studies using CVM questionnaire commonly use direct interview approach. Mohd Ariffin et al. (2015), in a study on the George Town, Penang World Heritage Site, indicated a connection between local stakeholders' perceptions and public reaction to the importance of maintaining the nature of non-use and the WTP value. Salazar, and Marques (2005) had used the CVM to gauge social gains arising from renovation of the old Arab tower in the area of Valencia, in Spain. The key results of this study indicated that the purchase of cultural products favourably influences the mean WTP value and that citizens are willing to spend far more than the actual per capita spending in order to preserve cultural heritage goods in the Valencia area.

Pengwei and Linsheng (2018) used the CVA survey to analyse WTP value for ecotourism services in the Hulun Lake protected area, in Inner Mongolia, China. A total of 800 questionnaires were distributed in the area eliciting 708 responses. Most tourists (79.9%) were willing to pay for ecotourism as against 21.1%. The most popular reason for the negative response was the unwillingness to pay government's duty. The result reflects on China's unique social and economic characteristics, which suggest that Chinese citizens lack knowledge and hence the need to involve in conservation matters.

In addition, Adams et al. (2008), used the CVM to assess the economic value of protecting the seasonal semi-deciduous Atlantic Rainforest in the Morro do Diabo State Park, in São Paulo State. The study gauged the community's WTP value for the restoration (existence value) of the park. The survey was conducted through informal questionnaire-based interviews in the homes of respondents.

3. Research Methods

3.1. Data Collection and Sample Distribution

For the empirical approach data collection was essential

in the methodology. For this study, the sample distribution of quantitative data was collated through questionnaire-based survey. Respondents were queried directly on the Community perception towards conservation of the Belum Royal State Park, to determine the factors that influence them, and accordingly to estimate the willingness to pay (WTP) for conserving the park by the community. A total of 280 questionnaires were distributed to the respondents. This questionnaire is formatted into four parts; namely, the respondent's socio-demographic information, the list of warm-up questions, the perception of the community, and finally the Contingent Valuation Method (CVM). The Likert scale was used to evaluate respondents' perception of the community; 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

3.2. Contingent Valuation Method (CVM)

Factor analysis is a mathematical tool used to evaluate the interaction between various variables and to explain these variables in the context of complex latent factors (Lockwood et al., 1996). It is a mathematical method used to summarise the details found in each of the initial variables into smaller or more general dimensions. Exploratory factor analysis is a mathematical method that simplifies data to a smaller range of overview variables and investigates the phenomenon's fundamental theoretical structure. In addition, it is used to evaluate the structure of the interaction between the variable and the respondent. This article reports on the development of a self-controlled questionnaire whose items were adjusted according to the need of this study. As a first step to explore and identify the factors influencing the community to conserve the Belum Royal State Park in this context, this study analysed the initial response to the questionnaire inquiry. Such an analysis can serve as a conduit for future investigations into the community's assessment to conserve the Belum Royal State Park.

3.3. DC-CVM – Logistic Models

The Dichotomous Choice Contingent Valuation Approach (DC-CVM) was the most common methodology among contingent valuation practices due to its ease of collecting data. The dichotomous question is a question that may have two possible solutions. Such questions are typically included in a sample that requires a Yes/No, True/False, Fair/Unfair, or Agrees/Disagrees response if they are willing to pay a certain sum (bid) or a maximum price for the more significant benefit. They are used to create a simple dichotomous differentiation between the respondent's attributes, perceptions, or views in distribution.

4. Results

4.1. Descriptive Analysis

Table 1 displays socioeconomic demographic data including gender, age, ethnicity, education, occupation, and household from distribution. The breakdown for each data category was in terms of percentage response from a total of 280 respondents. The gender category elicited 147 responses with the majority (52.5%) from female respondents. In the age group category most of the respondents (39.8%) were in the 18-35 years' age group. They were followed by the 36-45 groups (22.5%), the 46-45 group (17.5%), the 26-35 group (13.9%) and lastly the 56-65 age groups (6.8%). In terms of ethnicity the majority were Malays (237 respondents or 84.6%) followed by Bumiputera Sabah and Sarawak, Brunei, and Punjabi (19 respondents or 6.8%), Chinese (16 respondents or 5.7%) and Indian respondents (8 or 2.9%). In education, most respondents received tertiary education (184 respondents or 65.7%) followed by those with secondary schooling (96 respondents, or 34.3%).

Most respondents in distribution were employed in the government sector (132 or 47.1%). Others were students (46 or 16.4%), private sector employees (4 or 5%), self-employed (11 or 3.9%), and lastly retirees (7 or 2.5%). In household income, most respondents are in the RM4001 – RM5000 bracket (55 or 19.6%). This is followed by those in the non-income group (50 or 17.9%), two household income groups of less than RM2000 (42 or 15%) and in the RM2001-RM3000 bracket (41 or 14.6%), those earning more than RM6001 (13.9%), and others in the income brackets RM3001 - RM4000 (11.8%), and RM5001 - RM6000 (7.1%).

Table 1: Socioeconomics Demographic

Demographic	Category	Frequency	Percentage (%)
Gender	Male	147	52.5
	Female	133	47.5
Age	18 - 25	110	39.3
	26 - 35	39	13.9
	36 - 45	63	22.5
	46 - 55	49	17.5
	56 - 65	19	6.8
Ethnicity	Malay	237	84.6
	Chinese	16	5.7
	Indian	8	2.9
	Other	19	6.8
Education	Secondary education	96	34.3
	Tertiary education	184	65.7
Occupation	Government	132	47.1
	Private employee	46	16.4

	Self-employee	11	3.9
	Retired	7	2.5
	Student	70	25
	Unemployed	14	5
Household income	Less than RM2000	42	15
	RM2001 - RM3000	41	14.6
	RM3001 - RM4000	33	11.8
	RM4001 - RM5000	55	19.6
	RM5001 - RM6000	20	7.1
	More than RM6001	39	13.9
	No income	50	17.9

Table 2 presents results of the BRSP warm-up questions based on responses to Questions 1 through 9 in the questionnaire. Question 1 respondent who gave a 'Yes' answers were required to answer Questions 2 through 7. Conversely, those who responded with a 'No' were required to answer Questions 8 and 9.

The majority of respondents (229 or 81.8%) have not visited BRSP. They were then required to answer questions 8 and 9. Most however stated their willingness to visit the park (Question 8: 217 respondents or 94.8%). Only 12 respondents (5.2%) declined. Respondents were also asked on their main reason for not visiting BRSP (Question 9). Most related time constraint (54.6%) while others attributed it to unawareness of the park (31.9%), cost constraint (7.9%), lack of interest (2.6%) and remoteness of the park (3.1%).

In response to Question 1 only 51 respondents (18.2%) answered 'Yes.' They were then required to respond to Question 2 through 7. In terms of visit frequency (Question 2) 39 respondents (76.5%) had visited 1-2 times, while 12 respondents had visited 3-4 times (23.5%). For reason of visit (Question 3) most wanted to view the rare flora and fauna (39 respondents or 76.5%). Others desired to experience other heritage, culture and lifestyle (23 or 45.1%); to visit Orang Asal villages (16 or 31.4%); experience overnight stay at the Royal Belum Camp, including kayaking or rafting activities (23.5%); and finally to stay at the Rainforest Resort (17.6%).

On travelling time (Question 4) the majority of RR took more than three hours to reach the park (29 respondents or 56.9%). Only one made the journey in less than 30 minutes (2%). Most RR (70.6%) travelled in their own vehicles. And most (47.1%) stated that it was their first visit to BRSP. The majority of respondents (54.9%) discovered BRSP via electronic media. Others got to know about the park through family and friends (31.4%), and via promotion (7.8%); since it is relatively near to where they live (3.9%); while some received information through other sources including schools (2%).

Table 2: Warm-up Questions and distribution of sample

No.	Question	Frequency	Percentage (%)
1.	Have you ever visited Belum Royal State Park?		
	a) Yes (proceed to 2 until 7)	51	18.2
	b) No (proceed to 8 until 9)	229	81.8
2.	How many times have you visited Belum Royal State Park?		
	a) 1 – 2 times	39	76.5
	b) 3 – 4 times	12	23.5
3.	What motivates you to visit Belum Royal State Park? (can answer more than 1)		
	a) To discover local heritage culture	23	45.1
	b) To see more extinct flora and fauna	39	76.5
	c) To visit aboriginal villages	16	31.4
	d) Overnight at the Royal Belum camp	12	23.5
	e) To stay at the Rainforest Resort	9	17.6
	f) To do activities such as kayaking or rafting	12	23.5
	g) Want to experience other cultures and lifestyle	23	45.1
4.	How long is the estimated travel time to get to Belum Royal State Park?		
	a) Under 30 minutes	1	2
	b) 31 minutes - 60 minutes	9	17.6
	c) 1 hours - 2 hours	4	7.8
	d) 2 hours - 3 hours	8	15.7
	e) Over 3 hours	29	56.9
5.	The way you came to Belum Royal State Park		
	a) Own vehicle	36	70.6
	b) Follow a tourist trip	9	17.6
	c) Public transport	3	5.9
	d) Other:	3	5.9
6.	Frequency of you to Belum Royal State Park		
	a) First time	24	47.1
	b) Second times	22	43.1
	c) Third times	3	5.9
	d) Over four times	2	3.9
7.	The way you know the existence of Belum Royal State Park		
	a) Electronic media	28	54.9
	b) Friends and relatives	16	31.4
	c) Close to residence	2	3.9
	d) Promotion	4	7.8
	e) Other:	1	2
8.	Would you like to visit Belum Royal State Park?		
	a) Yes	217	94.8
	b) No	12	5.2
9.	Kindly state your MAIN reason for choosing not to visit Belum Royal State Park.		
	a) Did not have time	125	54.6
	b) Not aware of the existence of the Belum Royal State Park	73	31.9
	c) Cost	18	7.9
	d) Did not care or interested to visit the park	6	2.6
	e) Other:	7	3.1

4.2. Factor Analysis

All 20 questions in Section III of the questionnaire were subjected to principal component analysis and reliability testing. EFA was carried out on a total sample of 280 respondents. This outcome satisfies the first objective, which is to examine the community perception towards the conservation of BRSP. The number of factors in an EFA is normally determined through analysing the results using

principle component analysis (by adopting eigenvalues).

The Kaiser-Meyer-Olkin (KMO) value is 0.861, which exceeded the recommended minimum value of 0.5, obtained in the study. The high KMO values thus suggest that factor analysis may be beneficial for the data analysis. The value of 2350.77 for Bartlett's Test of Sphericity shows a significant connection between the variables. Additionally, it also verifies the null hypothesis on whether the correlation matrix is an identity matrix (Ofori-Kuragu et al., 2016). The high

significant value ($p\text{-value} = 0.000$) indicated a strong connection between the variables, thus signifying that factor analysis was acceptable.

Next, Table 3 presenting the results of Factor Analysis on Community Perceptions towards BRSP Conservation are shown five factors have eigenvalues of 3.567, 3.421, 2.149, 1.884, and 1.562, respectively, which are higher than one in

distribution. These factors can thus be utilized; namely Factor 1 (The role of BRSP), Factor 2 (Protection of BRSP), Factor 3 (Management of BRSP), and Factor 4 (Effect of Ecotourism), given their Cronbach Alpha values exceeding 0.600. The exception is Factor 5 (BRSP as Park) with its Cronbach Alpha value of 0.598 (see Table 3).

Table 3: Factor Analysis of Community Perception towards Conservation of BRSP

Item	F1	F2	F3	F4	F5
4. Belum Royal State Park is the place to protect endangered species of flora, fauna, and wildlife habitat	0.857				
5. Belum Royal State Park is a place to protect nature and wildlife	0.801				
6. The Belum Royal State Park is a place to protect the beautiful natural beauty	0.724				
7. Protecting the environment and wildlife should be the priority of the Belum Royal State Park	0.628				
9. Belum Royal State Park is a natural resource reserve for future use	0.704				
8. Belum Royal State Park is a place that will be protected for the enjoyment of future generations		0.588			
10. The forests in the Belum Royal State Park are essential to ensure continued use		0.614			
12. People who do illegal exploration and logging must be punished		0.623			
13. I think the Belum Royal State Park was established to benefit the community		0.538			
14. Ecotourism has a positive impact on the economic sustainability of Belum Royal State Park		0.729			
15. Massive ecotourism and an uncontrolled number of visitors have a negative impact on nature and indigenous peoples		0.692			
16. Belum Royal State Park assists in the development of various tourism activities such as hospitality and accommodation, food, souvenirs, and transportation			0.733		
17. Belum Royal State Park provides local economic benefits such as employment to the local community			0.676		
19. The facilities provided by the management of Belum Royal State Park are in a good condition			0.723		
3. Belum Royal State Park does not provide economic benefits				0.788	
11. Ecotourism in the Belum Royal State Park has negatively affected local culture and increased the cost of living				0.733	
20. The economic benefits of ecotourism are more important than the environmental benefits of nature				0.625	
1. Belum Royal State Park is famous among tourists					0.79
2. Belum Royal State Park contributed to the country's economy					0.755
Eigenvalue	3.567	3.421	2.149	1.884	1.562
% of variance	17.836	17.105	10.745	9.42	7.81
Cumulative % of Variance	17.836	34.941	45.686	55.106	62.196
Reliability (Cronbach's Alpha)	0.857	0.778	0.717	0.625	0.598

Note: Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; a. Rotation converged in 9 iterations

4.3. Contingent Valuation Method

The study adopted the contingent valuation method (CVM) survey method with a total of 280 questionnaires distributed in the distribution of Selangor respondent's area to gauge the long-term sustainability of the BRSP ecosystem and the natural environment. The dichotomous choice contingent valuation technique was employed to gather responses (DC-CVM). Table 4 presents their responses to

five bid prices, namely RM3, RM5, RM10, RM13, and RM15. A total of 257 respondents (92%) expressed their willingness to pay and agreed to spend a specific amount of money for the future to protect the environment and natural habitat. The corresponding 8% from distribution of respondents however disagreed. The overwhelming majority of the public surveyed were therefore conscious of the significance for the need of conservation for forest ecosystems and natural habitats.

Table 4: Number Respondent to the Bid Price

		WTP		
		Yes	No	Total
Bid Price	RM3	49	1	50
	RM5	46	5	51
	RM10	48	3	51
	RM13	44	9	53
	RM15	70	5	75
		257 (92%)	23 (8%)	280

4.4. Regression Logistic Model

The logistic regression model was used to evaluate the influence of essential factors on the explanatory variable. The model will assist in elucidating the second study objective; namely to determine the factors that influence the community in order to conserve the BRSP. Table 5 contains the results of a binary logistic regression of the dichotomous responses to the CVM enquiry on willingness to pay. This model will assess the probability that respondents from distribution in each category will pay for the maximum park entry fee in exchange for better management and conservation services. In conducting the binary logistic regression, socioeconomic characteristics such as gender, age, ethnicity, education, occupation, and household income are also considered. It will also include a factor analysis on community perceptions toward conservation of the BRSP with regards to its role, protection; management and the impact of ecotourism.

Table 5: Regression of Logistic Model

	Coefficient	p-value
Constant	-1.643	0.642
Maximum price WTP for BRSP's entry permit fee charges	0.338	0.000**
Gender	0.621	0.368
Age	-0.043	0.877
Ethnicity	-0.119	0.674
Education	0.842	0.266
Occupation	-0.431	0.026**
Household Income	0.305	0.023**
The Role of the BRSP (F1)	0.02	0.969
Protection of BRSP (F2)	-0.571	0.386
The Management of the BRSP (F3)	0.676	0.216
The Effect of Ecotourism on BRSP (F4)	-0.664	0.05**
Log-Likelihood		90.326
Chi squared		68.698
Nagelkerke R square		0.502
Percentage correct		93.6

Note: ** denotes significant at 5% level respectively

Results of regression coefficients for the Logistic Model were significant ($p < 5\%$) with respect to respondent's

occupation, household income, effect of ecotourism on BRSP (F4), and the maximum price for the entry fee (see Table 5). The association for entry fee and household income is positive, but conversely negative for occupation and effect of ecotourism. From distribution, a one per cent increase in the number of visitors will lead to an RM0.338 rise in the maximum fee price that the public is willing to pay.

The results reveal that the higher the respondent's income level, the greater will be his willingness to pay for the park entry permit charges, a trend which is consistent with the earlier findings by Nuva et al. (2009). The authors established that respondents' income level is an essential element that would influence their willingness to pay for the entry fees. The higher the income, the more willing are the visitors to pay. The present study also reveals that increasing visitors' frequency will tend to elicit negative impact of the park environment. This finding differ in terms of method used (Leh et al., 2020). By utilising the Total Cost Method (TCM), the findings suggest that the tourists who could afford the total cost (TC) of their re-visited to the area, it was in line with their monthly income. The low cost and tourist's affordability have made a repeat visit possible and increased the number of tourists to the area. However, the current study reliable with the findings of Mokhtar et al. (2020). It is however Critical to evaluate the overall fit of a regression model. The chi-squared model used in this study has a value of 68.698. The Nagelkerke R-square is 0.502, indicating that the model adequately accounts for roughly 50.2% of the findings. In comparison the Logistic Model properly categorized 93.6% of the results in the study.

4.5. Willingness to Pay Estimation

In this section the last study objective will be addressed; namely to estimate the community's willingness to pay (WTP) in order to conserve BRSP. The following equations were used in the analysis;

$$VWTP = \frac{\beta_0 + (-\beta_{OCC} \times OCC + \beta_{INC} \times INC - \beta_{F4} \times F4)}{B_{Max\ price}}$$

$$= \frac{-1.643 + (-0.431 \times OCC + 0.305 \times INC - 0.664 \times F4)}{-0.338}$$

The results in Table 6 gave the estimated mean of WTP at RM9.68 from distribution, indicating the price respondents are willing to pay annually to conserve the BRSP. Directly, it is the entry permit fee of RM9.68 per person, the amount that Selangor publics' is willing to pay for improving the management and conservation services of the park.

Table 6: Value of Willingness To Pay (VWTP)

Mean	RM9.68
Minimum Value	RM3
Maximum value	RM20
Population in Selangor	6,530,000 Source: Department of Statistics Malaysia Official Portal, 2019
Value of WTP (Mean x Population)	RM63,210,400.00

5. Discussion and Conclusions

This study was conducted to determine the economic values and factors that influence the community's decision to preserve Belum Royal State Park. The contingent valuation method (CVM) determines the economic value of the ecosystem and environmental services, emphasizing protected areas (for ecotourism). Due to its accuracy, this method is the most commonly employed for predicting non-use values from distribution. However, it is the most controversial of the various non-market valuation techniques. The CVM method in this study survey involved bidding on the park entry fee and directly enquires on how much the community is willing to pay to maintain the BRSP. Based on the bid price options of RM3, RM5, RM10, RM13, and RM15, the vast majority (92%) of survey respondents stated willingness to pay to conserve the park. The main underlying motivation was the desire to contribute to ecotourism in the BRSP for the benefit of future generations and also to assist the wellbeing of the local community.

The first objective of this study was to examine the community's perception of the BRSP conservation in sample distribution. This was met through using factor analysis on responses to the 280 questions posed in the questionnaire survey. Five essential factors (Factor 1 to Factor 5) were identified in the study that needs to be considered prior to conducting the Reliability TEST from distribution.

The second objective was to determine the factors that influence the community to the need of conserving the BRSP. This was accomplished via adopting the Logistic Model regression, which identified the factors influencing the community's willingness to pay (WTP) to support park conservation. Subsequent testing on the various factors revealed the cost of entry fee the respondents were willing to pay. The factors of maximum WTP fee permit, occupation household income and impact of ecotourism on the park, were found significant at the 5% level.

The final objective was accomplished through using the value of willingness to pay (VWTP). The study showed that the average value of respondents' VWTP was RM9.68 per person which is RM0.32 less than the initial RM10 fee proposed for the local public. However, the magnitude of the

fee demonstrates that the community continues to harbour a poor understanding on the significance of conserving the environment.

Ecotourism is defined as any tourism activities that both benefit the environment and support the local economy and it is crucial to ensure community engagement to sustain ecotourism sites, as well as activities, particularly BRSP. Sustaining local economies via conservation and development may help to increase community involvement. Additionally, ecotourism facilitates those who want to learn about the attraction of wildlife in natural settings. The linkage of levying park entry fee and the necessity for biodiversity preservation should enable conservation efforts to be more effective. It is also essential to ensure that an area is preserved for the long-term prior to promoting tourism-related activities. The frequency of visitors need to be strictly regulated, based on carrying capacity, especially access to designated sensitive areas. Infrastructural amenities, such as hiking trails and other non-consumptive wildlife usages should be developed to facilitate and sustain tourism. Outdoor activities such as tourism will have greater significant impact on the local communities if conducted primarily for short-term economic gains. Only proper and effective protection of sensitive areas will ensure long-term positive benefits from local tourism.

To complement the above initiatives stricter rules on forest management need to be considered. Increased enforcement of anti-illegal logging laws and strict prohibition on import of illicit timber may help alleviate the issue. The relevant environmental protection authorities should take action by establishing rules and regulations prohibiting such activities. Additionally, efforts should be made to improve action plans to assist forest law enforcement officers. Finally, lessening severe sanctions, such as huge fines and penalties, with an extended statute of limitations may aid in managing the issue.

Monetary value can also be placed on rainforest services besides its traditional products such as timber and non-timber resource. Through proper management, intangible products and services, in particular ecotourism, can enhance rainforest net worth much more than the economic value of traditional timber and other commodities. Selective logging can be practised in timber production forest areas with minimal impact on its ecotourism potential. With further refinement selective logging can ensure this through innovative and controlled removal of a restricted number of pre-selected timber trees. In short, the harvesting system can potentially harmonise the integrated management for both timber and leisure in distribution area.

Lastly, surveillance and patrols in protected areas should be expanded. The extra expense for ensuring safety can be offset through income from ecotourism that should also benefit the local community. Forest management should

consider involving the community as vested stakeholders in jointly undertaking safety measures for the park area including monitoring and patrolling.

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