Estimating the visitor's willingness to pay towards biodiversity conservation at Kuala Lumpur Forest Eco Park, Malaysia, using the Contingent Valuation Method

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Abstract. *Musa F, Shahrudin INM. 2023. Estimating the visitor's willingness to pay towards biodiversity conservation at Kuala Lumpur Forest Eco Park, Malaysia, using the Contingent Valuation Method. Biodiversitas 24: 3690-3699.* The Kuala Lumpur Forest Eco Park is within the Bukit Nanas Forest Reserve, Malaysia's oldest and most biodiverse hill dipterocarp forest. The destruction of urban greenery in the heart of Kuala Lumpur has prompted stakeholders to conserve this forest as urban ecotourism areas for recreational, educational, and research activities. Due to the absence of a market, the economic value of biodiversity cannot be quantified in monetary terms from an economic perspective. Therefore, it will be difficult for stakeholders to justify the cost of conservation in their management in the future. This study's objective was to determine the economic value of biodiversity conservation at Kuala Lumpur Forest Eco Park by determining a visitor's Willingness to Pay (WTP) using the Contingent Valuation Method (CVM). A total of 250 questionnaires were distributed randomly to both international and domestic tourists to conduct this study. Five bid prices were chosen for domestic and international visitors based on the Logit Model's estimation of the visitor's WTP for biodiversity conservation. This study indicates that most visitors are willing to pay for biodiversity conservation influenced by religion, marital status, income, employment, and education. Furthermore, the results indicate that the WTP's mean and median per visit are MYR3.81 and MYR2.58 based on domestic visitor data. Consequently, this research may aid decision-makers in managing the financial strategy for biodiversity conservation activities. Thus, the conservation fee that visitors can accept based on their willingness to pay will further boost visitors' future visits to the Kuala Lumpur Forest Eco Park.

Keywords: Biodiversity conservation, Contingent Valuation Method, CVM, Kuala Lumpur Forest Eco Park, willingness to pay, WTP

INTRODUCTION

Significantly, urban forests have positive impacts, such as ensuring healthy living, recreation, environmental education, encouraging the well-being of residents, maintaining biodiversity, and improving the environmental footprint of a community if urban forests are maintained and well-designed (Ostoić et al. 2017; Endreny 2018; van der Jagt and Lawrence 2019). However, urban growth and development have eradicated or degraded existing urban green spaces and failed to preserve large green fields' natural pockets and paths (Rahman et al. 2017). For example, urban forest cover in Kuala Lumpur decreased from $13m^2$ per capita in 2010 to $8.5m^2$ in 2014 due to population growth and urbanization (Kanniah and Siong 2017; Maryanti et al. 2017). Thus, the loss of urban greens in developing countries prompted urban communities to initiate urban forest conservation (Nath and Magendran 2020).

Recently, biodiversity conservation and the preservation of the ecological system have been critical problems worldwide (Wang and Jia 2012). In general, the forest ecosystem's protection is vital to ensure the survival of biodiversity for young generations in the future. The conservation of biodiversity is seen to be increasingly emphasized to prevent the extinction and destruction of these resources. Therefore, the United Nations has initiated

the 17 Sustainable Development Goals (SDGs) to address these global challenges, a matter of grave concern to all countries within a strategic context that offers an integrated guideline for human and planetary growth and harmony (United Nations 2020a). In this sense, Goal 15 of the SDGs insisted on protecting, restoring, and promoting sustainable forest management, preventing land degradation, and avoiding biodiversity loss (United Nations 2020b).

In Malaysia, the government has consented and committed to sustainably increasing the quality of the management, conservation, and development of national forest biodiversity resources, in line with Malaysia's reputation as one of the world's megadiverse countries (Forestry Department of Peninsular Malaysia 2018). However, Malaysia ranks 4th in Asia behind China, India, and Indonesia and 12th in the world in the National Biodiversity Index (Halim et al. 2012). In this context, the continued focus is on the conservation, sustainable use, and equitable and inclusive sharing of natural resources. Notably, Malaysia is rich in natural forests, renowned for the uniqueness and elegance of the landscape that meets the needs of recreation and ecotourism. Thus, the establishment of the Forest Eco Park in the Forest Reserve Area is in line with National Forestry Policy 1978, as amended in 1992, to retain several areas as a place of recreation and ecotourism and raise community awareness of the importance of forest existence (National

Forestry Policy 1978). According to the Forestry Department of Peninsular Malaysia (2018), 109 Forest Eco Parks are developed for all states in Peninsular Malaysia. However, this paper focuses on Kuala Lumpur Forest Eco Park, located in the Bukit Nanas Forest Reserves, listed Class I Forest Reserve in 1906 (Forestry Department of Peninsular Malaysia 2018). This forest is known as a recreation forest that acts as an ecotourism recreation area that promotes the community's general awareness of the value of the forest area (Department of Town and Country Planning Peninsular Malaysia 2014). This type of forest is rich in natural resources, and the cause of biodiversity is that conservation efforts should be carried out to protect the unique value of biodiversity. The study of Salleh et al. (2017) observed that 16 species of Dipterocarpaceae and 425 species were recorded in the Bukit Nanas Forest Reserves, including the local endemic species found in the state of Selangor, *Tarenna rudis* Ridl. (Rubiaceae).

However, the economic value of biodiversity, classified as a non-market commodity, is challenging to quantify in monetary terms due to the absence of a market for these resources. Consequently, biodiversity's value is not widely available on the open market. In this scenario, researchers typically use an economic valuation technique to determine the economic value of forest goods and services (Hasan-Basri et al. 2020). Numerous recent studies have examined the ability of tourists to contribute to biodiversity conservation and environmental protection (Wang and Jia 2012; Platania and Rizzo 2018; Bamwesigye et al. 2020; Musa et al. 2021; Truong 2022). Interestingly, previous studies have indicated that tourists are Willing to Pay (WTP) more than the current fees for biodiversity conservation and environmental protection (Sobhee 2008; Kamaludin et al. 2021; Mohd-Asri et al. 2021; Musa and Darman 2022). Recently, in 2019, Kuala Lumpur Forest Eco Park implemented an entrance fee of MYR10 for locals and MYR40 for foreigners. The National Forestry (Federal Territories) Rules 2019 govern the determination of this entrance fee. In this regard, the economic valuation methods could be used to determine the entrance fee to Kuala Lumpur Forest Eco Park to assess biodiversity's economic value.

In this sense, the Stated Preference Approach consists of two specific methods: the Contingent Valuation Method (CVM) and the Choice Experiment (CE). Due to the limitations of the survey period, the CVM was chosen over the CE because it was more suitable for the study. The CVM is a questionnaire-based valuation that allows respondents to make an economic judgement on forest goods and services for which the market does not exist (Arrow et al. 1993; Carson 2000; Heal 2000; Dickinson and Whitehead 2015; Johnston et al. 2017; Jin et al. 2018; Penn and Hu 2018). Jin et al. (2018) discovered that the CVM had a higher valid response rate and average Willingness to Pay (WTP) than the CE. In addition, Hasan-Basri et al. (2020) emphasized the absence of specific guidelines dictating the preference between CVM and CE. According to Carson et al. (2001), many of the purported problems with CVM can be resolved through careful design and implementation of studies. On the other hand, Adamowicz et al. (1998) argued that CVM is more applicable to studies that do not emphasize multidimensionality and that its trade-off is irrelevant. Due to the consistently large numbers obtained by CVM for environmental benefits, previous research demonstrated that it had become a popular valuation method among policymakers committed to implementing environmentally beneficial policies (Hanley et al. 1998). In this scenario, the economic valuation approach focuses the attention of policymakers on conservation and directly and indirectly increases community awareness (Musa and Darman 2022).

In this context, this policy needs to be reviewed using economic valuation approaches to understand the acceptable entrance rate and be embraced by visitors. This scenario is intended to ensure that the payment mechanism through the implementation of entry fees can assist in planning conservation programs in the study areas. Therefore, this study aims to provide access to the economic value of biodiversity through the Willingness to Pay (WTP) among visitors to Kuala Lumpur Forest Eco Park using the Contingent Valuation Method (CVM).

MATERIALS AND METHODS

Study area

This study was undertaken in the Kuala Lumpur Forest Eco Park, Malaysia (Figure 1), once recognized as the Bukit Weld Forest Reserve (Forestry Department of Peninsular Malaysia 2018). Kuala Lumpur Forest Eco Park is located at 3°8'59.64" U latitude and 101°42' 8.28" longitude, 3 km from Kuala Lumpur City Center, adjacent to Kuala Lumpur Tower. This park is Hill Dipterocarp Forest, located in the Bukit Nanas Forest Reserve (Department of Town and Country Planning Peninsular Malaysia 2014), one of the oldest Permanent Reserved Forest in Peninsular Malaysia (Forestry Department of Peninsular Malaysia 2018). Bukit Nanas Forest Reserve encounters a tropical atmosphere that is hot and humid all year round, with an average daily temperature of 26.7°C-33°C and a night temperature of 24°C (Salleh et al. 2017). Kuala Lumpur Forest Eco Park is managed by the Forest Department of Peninsular Malaysia. It had a surface area of 9.37 hectares and was gazetted as a forest reserve in 1906 (Forestry Department of Peninsular Malaysia 2018). Kuala Lumpur Forest Eco Park is the only forest reserve in Malaysia's heart of urban areas. Kuala Lumpur is a "green lung" and is acknowledged as a home to a wide variety of flora that flourishes within the forest (Salleh et al. 2017) and could enhance the quality of its living environment and develop a sustainable strategy for the expansion of urban green space (Karuppannan et al. 2014). The park is also set up under three main categories: recreation, research, and learning (Mohd-Hafiz 2019).
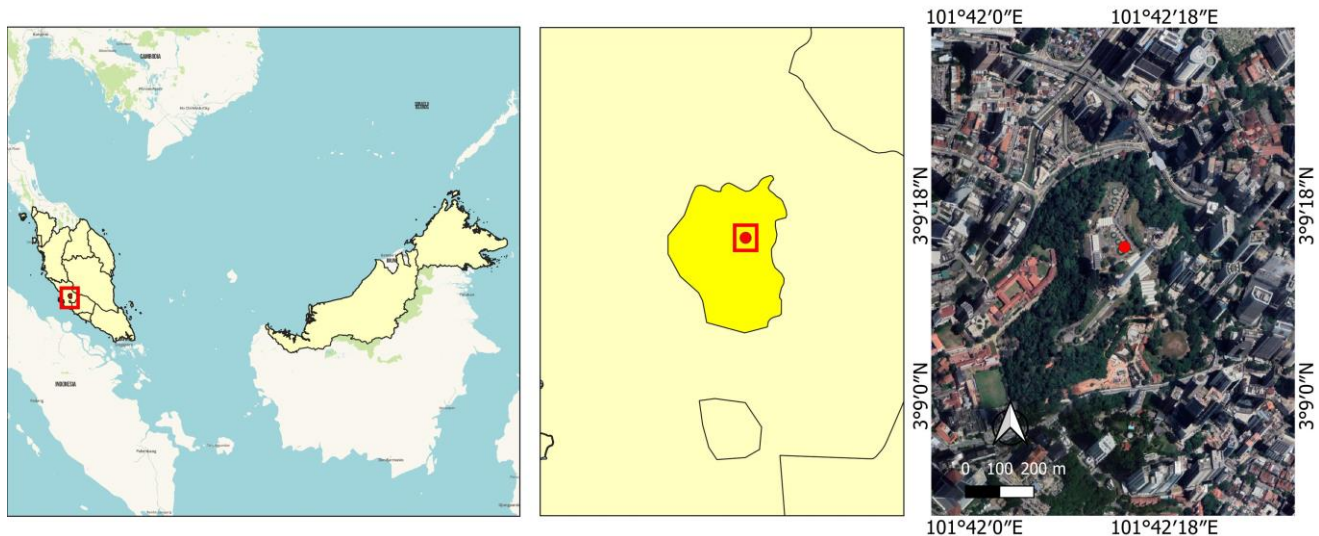
Figure 1. Map of Kuala Lumpur Forest Eco Park, Malaysia

Data collection

The Contingent Valuation Method (CVM) was used as a research instrument in the form of a questionnaire in this study and focused on research questions. In particular, the application of CVM in a hypothetical situation relies on persons asking for the economic value of non-marketed forest goods and services to be measured (Johnston et al. 2017; Jin et al. 2018; Hasan-Basri et al. 2020). The Willingness to Pay (WTP) among visitors to conserve biodiversity at the Kuala Lumpur Forest Eco Park was assessed in this study's scope, using CVM, one of the stated preference approaches identified in the economic valuation method. Data collection was obtained from July to August 2019. The Slovin formula (Tejada and Punzalan 2012) determined the respondent's sample size at a 93% confidence level. The estimated population size was rendered, with 80,261 tourists visiting the Kuala Lumpur Eco Forest Park in 2018. The initial sample size for this study was determined to be 204 respondents based on the Slovin formula. However, 250 respondents were selected for this study to eliminate any biases and ensure the integrity of the questionnaire. This strategy is intended to mitigate any risks connected with respondents not answering all questions entirely or not complying with the instructions provided. Out of 250 questionnaires, only 231 data were included in the data analysis since 19 respondents could not react to the questionnaire holistically. Visitors were categorized using a random sampling method, and questionnaires were circulated randomly to local and foreign visitors on weekends and public holidays because most visitors came to Kuala Lumpur Eco Forest Park at that time.

The reliability test was conducted for this study to ensure the data collection was acceptable. Regarding this, reliability refers to the degree to which a measurement of a phenomenon provides stable and consistent results (Carmines and Zeller 1979). Testing for reliability is crucial because it refers to the uniformity of a measuring instrument's components (Huck 2007). The Cronbach Alpha coefficient is the most widely used internal consistency measure (Taherdoost 2016). The Likert scale is considered the most appropriate measure of reliability (Whitley 2002; Robinson 2009). There are no absolute rules regarding internal consistencies; however, the consensus is that a minimum internal consistency coefficient of 0.70 is required (Whitley 2002; Robinson 2009). Hinton et al. (2004) propose four cut-off points for reliability, including excellent reliability (0.90 and above), high reliability (0.70-0.90), moderate reliability (0.50-0.70), and low reliability (0.50 and below). Consequently, the reliability test for this study yielded a value of 0.854, indicating a high degree of dependability.

Besides, the booklet, providing photos and information on biodiversity, has helped tourists understand and enhance awareness of biodiversity at Kuala Lumpur Eco Forest Park before answering the questionnaire during data collection. The questionnaire consists of five sections, Part A (general knowledge of biodiversity conservation), Part B (visitors' perception of the significance of biodiversity conservation), Part C (visitors' satisfaction with the management and facilities of Kuala Lumpur Eco Forest Park), Part D (visitors' willingness to pay for conservation fees) and Part E (visitors' socio-demographic). The closed-question method in Part D1 of the questionnaire states the bid value set and whether the value offered is equal to or lower than the bid value. Next, followed by an open-ended questioning method, respondents were asked to state the maximum value of the conservation fee they would pay in the Kuala Lumpur Eco Forest Park for biodiversity conservation stated in Part D2 of the questionnaire. For example, the following questions were asked of respondents at Kuala Lumpur Eco Forest Park:

"If you pay as much as MYR1 per visit for biodiversity conservation in Kuala Lumpur Eco Forest Park, are you willing to pay?"

Yes (   )   No (   )

"If 'No', what is the maximum amount you are willing to pay?" MYR _____

The questionnaire was presented in the English and Malay languages. Separate bid rates were given to visitors according to local tourist categories (MYR1, MYR5, MYR10, MYR15, and MYR20) and foreign visitors (MYR30, MYR35, MYR40, MYR45, and MYR50). Previously conducted studies in Malaysia on the CVM also used a bid price range of MYR1 to MYR50 (Abdullah et al. 2015; Ramli et al. 2017; Hasan-Basri et al. 2020). Different bid prices are set to prevent the risk of starting the bid price that the respondents cannot agree on (Azlina et al. 2018).

Data analysis

This study's data were analyzed using IBM SPSS Statistics Software Version 25, which provided a descriptive and statistical analysis. Information on visitors' Willingness to Pay (WTP) for biodiversity conservation was generated using descriptive analysis. Meanwhile, statistical analysis using the Logit regression model has been shown to determine the mean WTP for biodiversity conservation. The correlation analysis used the bid prices and socio-demographic parameters to assess the factors that led to the respondents' WTP. Thus, this study concluded that religion, marital status, occupation, education level, and income influenced the WTP of Kuala Lumpur Eco Forest Park visitors.

The general model in this study is as follows:

$$Prob\,(Yes) = f(\text{religion, marital status, job, education level, and income}) \quad (1)$$

The Logit Model is as follows:

$$Log\left[\frac{Prob(Yes)}{1-Prob(Yes)}\right] = a + \beta_1 Bid_i + \beta_2 REL_i + \beta_3 MS_i + \beta_4 JOB_i + \beta_5 EDU + \beta_6 INC_i + \varepsilon_i \quad (2)$$

Where:
Prob (Yes): Probability of accepting the bid price
1 - Prob (Yes): Probability of not accepting the bid price
i : Index of observation
$\alpha, \beta_1, \beta_2, \ldots \beta_6$: Parameters
εi : Error
BID : Bid (0: No, 1: Yes)
REL : Religion (1: Islam, 0: Others)
MS : Marital status (1: Single, 0: Others)
JOB : Job (1: Public servant, 0: Others)
EDU : Education level (1: No formal education, 2: Primary school, 3: Secondary school, 4: University/ College/ Polytechnic, 5: Others)
INC : Income (MYR)
For instance, the estimated probability is as follows:

$$Prob(Yes) = \frac{1}{1+\rho^{(a+\beta_1 Bid+\beta_2 REL+\beta_3 MS+\beta_4 JOB+\beta_5 EDU+\beta_6 INC+e)}} \quad (3)$$

Mean and Median WTP can be analyzed based on the following equation:

$$Mean\ WTP = : \frac{\overline{\ln(1+exp^{\alpha+\beta i X i})}}{-\beta_i} \quad (4)$$

$$Median\ WTP = \overline{\left|\frac{a+\beta_i x_i}{-\beta_i}\right|} \quad (5)$$

Where:
α : Constant
β_i : Coefficient of variable
Xi : Mean of the respective explanatory
βi : Coefficient of estimate on the bid price

RESULTS AND DISCUSSIONS

Respondent's socio-demographic profile

Table 1 displays the socio-demographic characteristics of visitors to Kuala Lumpur Eco Forest Park. Based on this study, domestic respondents (75.8%) are more prevalent than foreign respondents (24.2%). According to Wang and Jia (2012), domestic respondents are typically more numerous than international respondents because data collection for this study is conducted every weekend and public holiday, indicating that Malaysians prefer recreational activities. In addition, most international visitors originated from European nations like Belgium, France, and the United Kingdom. In this regard, foreign tourists prefer to visit Malaysia due to the unique and special character of its tourist areas (Ramli et al. 2017). Interestingly, Kuala Lumpur Eco Forest Park was a popular tourist destination due to its rich biodiversity. Based on this study, 80.5% of respondents who visit Kuala Lumpur Eco Forest Park are females. Females place a higher value on most destination characteristics than males, particularly natural scenery, and recreational activities with friends (Collins and Tisdel 2002).

This study revealed that most respondents were Malay and Muslim. This result is consistent with a study by Musa and Nadarajah (2023). According to Kawangit et al. (2012), Malaysia is multiracial and multireligious, with large Malay, Chinese, and Indian populations. Most visitors to the Kuala Lumpur Eco Forest Park are between 21 and 30 years old and possess a higher education. According to studies by Wang and Jia (2012) and Ali et al. (2012), younger individuals are more Willing to Pay (WTP) for conservation fees. This study's findings differ from previous studies in that the elderly are more willing to pay a certain amount for the entrance fee (Togridou et al. 2006; Baral et al. 2008; Adamu et al. 2015). In addition, it demonstrated that those with a higher level of education are more aware of the significance of biodiversity conservation and are willing to spend a certain amount for conservation purposes (Boo 2019; Musa et al. 2021). According to the findings of this study, most respondents, primarily students, have an income of MYR1,000 or less due to their lack of a source of income. The findings of this study reported that 78.4% of tourists are single.

Willingness to pay for biodiversity conservation

A total of 175 local and 56 foreign visitors were selected for this study to estimate the economic value of biodiversity among the Kuala Lumpur Forest Eco Park visitors. This study indicated that most respondents (53.7%) were

Willing to Pay (WTP) for biodiversity conservation (Figure 2). Ghous and Siddiqui (2022) and Truong (2022) discovered identical results when most respondents agreed to pay due to their awareness of preserving and conserving biodiversity. Moreover, according to a study by Fadhlin et al. (2021), respondents' attitudes significantly affected their WTP for conservation fees. The WTP is significantly influenced by the level of awareness regarding biodiversity conservation, as human attitudes and preferences shape it, indicating their sensitivity toward the issues arising from the possible extinction of these biodiversity resources (Musa and Nadarajah 2023). The findings from our survey questionnaire revealed that most tertiary education students were familiar with biodiversity. In this regard, formal education is crucial for increasing the public's awareness of biodiversity conservation (Kamri 2013). In addition, Kuala Lumpur Eco Forest Park is a popular tourist destination due to its location in the city's heart. It offers a respite from the bustle of the city, with a pleasant, verdant atmosphere for visitors to enjoy. This scenario reached the same conclusion as the study by Nelson et al. (2021) that environmental knowledge and preferences influence tourists' WTP. Therefore, biodiversity conservation is essential for ensuring future generations can utilize these resources. Moreover, visitors with a high education guarantee a good job and a high income. Thus, the WTP among tourists towards the entrance fee for conservation purposes increases with increased human income (Ali et al. 2012). Furthermore, this study found that foreign respondents were more likely to pay than local respondents due to higher currency factors (Adamu et al. 2015).

Besides, the purpose of providing bid prices to visitors is to estimate their WTP for biodiversity conservation: MYR1, MYR5, MYR10, MYR15, and MYR20 (local visitors) and MYR30, MYR35, MYR40, MYR45, and MYR50 (foreign visitors). Forest Department of Peninsular Malaysia recently implemented entry fees for visitors who have entered Kuala Lumpur Forest Eco Park since September 2019 on the criteria of these categories, MYR10 and MYR40 for local and foreign visitors, respectively. Previously, visitors coming to Kuala Lumpur Forest Eco Park could enjoy the scenery with various activities, such as jogging, bird watching, and other leisure activities. This admission fee is determined based on the National Forestry (Federal Territories) Rules 2019 (Mohd-Hafiz 2019). The results of these studies indicate that the bid price of MYR1 and MYR5 received a favourable response of 92.5% and 82.9%, respectively (Figure 3.A), among local tourists when asked to pay for biodiversity conservation. In this case, the correlation value of the bid price is negative, which means that the higher the bid price given to visitors, the lower their ability to pay in a hypothetical scenario (Iasha et al. 2015). These results are consistent with previous research in which the analysis outcomes showed a decreasing WTP among humans with rising bid prices (López-Mosquera and Sánchez 2012).

Meanwhile, the WTP among foreign visitors reveals that their WTP marginally declined when they received a higher bid amount (Figure 3.B). However, the MYR40 bid prices reflect a modest rise in their WTP for biodiversity

conservation. Despite that, in terms of visitors' maximum WTP to conserve biodiversity, most of the local and foreign respondents are more WTP a maximum of MYR5 and MYR20 per person, respectively, in this study, lower than the newly introduced entrance fees at Kuala Lumpur Forest Eco Park, MYR10 (local visitors) and MYR40 (foreign visitors). The new entrance fees introduced to visit the Kuala Lumpur Forest Eco Park are to coordinate the entrance fees to all the Federal Territory Forest Reserves (Mohd-Hafiz 2019, pers. comm.).

Table 1. Socio-demographic characteristics of respondents

Variable	Frequency	Percentage (%)
Origin		
Local	175	75.8
International	56	24.2
Gender		
Male	45	19.5
Female	186	80.5
Race		
Malay	164	71.0
Chinese	4	1.7
Indian	7	3.0
Bumiputera	3	1.3
Others	53	22.9
Religion		
Muslim	178	77.1
Buddhists	8	3.5
Hindus	5	2.2
Christians	23	10.0
Others	17	7.4
Age		
< 20 years old	35	15.2
21-30 years old	146	63.2
31-40 years old	16	6.9
41-50 years old	21	9.1
> 51 years old	13	5.6
Marital status		
Single	181	78.4
Married	48	20.8
Divorced	2	0.9
Education		
No formal education	0	0.0
Primary School	1	0.4
Secondary School	30	13.0
Certificate/Diploma/ Degree/Master/PhD	196	84.8
Others	4	1.7
Occupation		
Student	96	41.6
Civil Servant	28	12.1
Private Sector	85	36.8
Self Employed	13	5.6
Retired	2	0.9
Others	7	3.0
Salary		
<MYR999	114	49.4
MYR1,000-MYR2,499	67	29.0
MYR2,500-MYR3,499	17	7.4
MYR3,500-MYR4,499	9	3.9
MYR4,500-MYR5,499	7	3.0
>MYR5,500	17	7.4

Reason for willingness to pay for biodiversity conservation

Biodiversity typically leads to ecological, sociological, and economic advantages in human life. Figure 4.A and Figure 4.B showed respondents' perceptions of why certain people are Willing to Pay (WTP) and not WTP for biodiversity conservation. This study's result showed that most respondents (43%) indicated people's WTP to ensure that biodiversity at Kuala Lumpur Forest Eco Park could be preserved and sustained in the future (Figure 4.A). Malaysia is substantially rich in diverse biological resources, and an increased understanding of nature has encouraged the creation of biodiversity-based ecotourism in Malaysia (Mosbah and Saleh 2014). Besides, the results indicate that the people's ability to pay is due to the conservation of biodiversity (27%) and, at the same time, the enrichment of biodiversity (23%). This scenario is closely linked to most respondents knowing that biodiversity resources are threatened. Therefore, respondents are also WTP to ensure that biodiversity resources in the study area are not depleted and remain protected for future generations.

In addition, approximately 43% of respondents stated that people did not agree to pay for biodiversity conservation, as the government should bear the cost of conservation (Figure 4.B). They perceived that all taxes levied by the government to the individual should be used to preserve and conserve natural resources, including biodiversity. Almost 29% of the respondents indicated they were WTP, but not as much as the amount stated in the bid price on biodiversity conservation. The same observation has occurred in previous studies by Yeo et al. (2013) and Musa et al. (2020). However, this study also suggests that respondents (22%) are unwilling to pay for biodiversity conservation. In this context, the bid price contributes to determining the degree of willingness of the respondents to pay (Matthew et al. 2019).
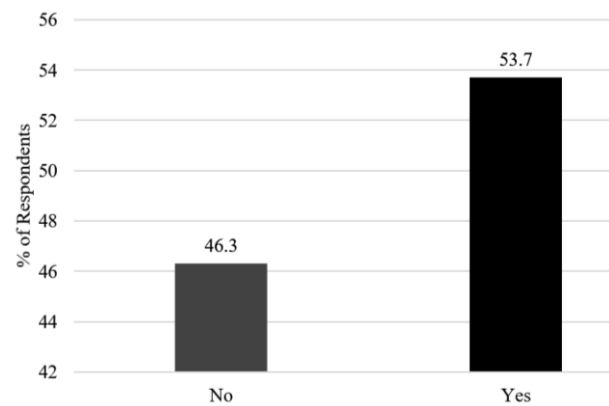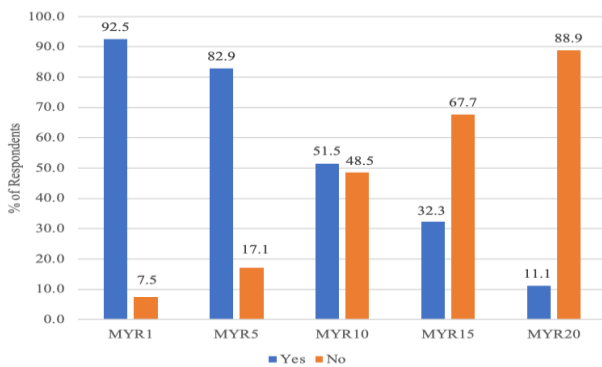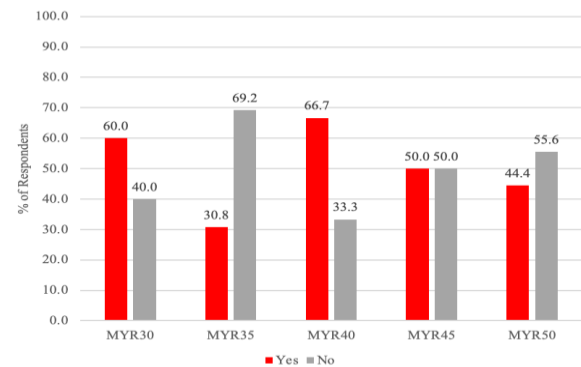

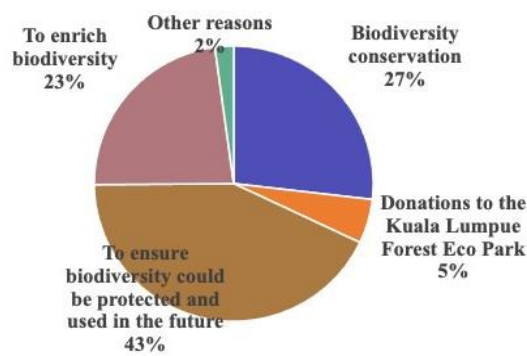**Figure 2.** Biodiversity conservation's WTP among visitors
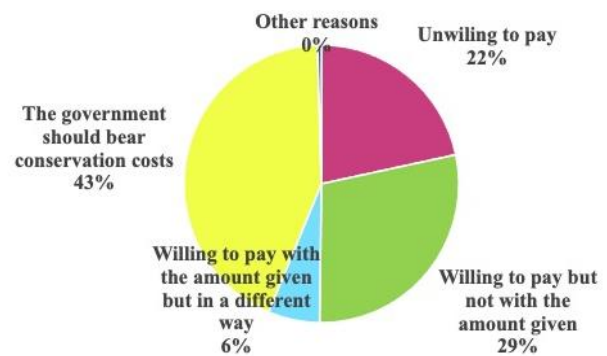

Figure 3. WTP based on bid price: A. Local visitors, B. Foreign visitors towards biodiversity conservation

Figure 4. A. Reason WTP, B. Reason not WTP towards biodiversity conservation

Table 2. The coefficient for mean and median WTP in the Logit model

Parameter		β	Mean	Std. error	Sig.
Constant	α	0.124		2.429	0.959
Bid	β_1	-0.305	2.93	0.175	0.081
Religion	β_2	1.150	0.97	1.239	0.353
Marital status	β_3	-0.235	0.81	0.602	0.696
Job	β_4	0.556	0.1	0.828	0.502
Education level	β_5	-0.033	3.86	0.553	0.953
Income	β_6	-0.00016	1169.03	0.00023	0.486
N	175				
2 log-likelihood		98.899			
Cox & Snell R^2		0.064			
Nagelkerke R^2		0.85			
% of right prediction		62.7			

Note: Foreign visitors are not included due to the lack of data

Estimated WTP for biodiversity conservation among visitors

According to Schutgens et al. (2019), the dependent parameter has a significant relationship with the independent parameter that could be shown using the Logit regression model. Numerous studies have discovered that the socio-demographic characteristics of respondents influence their Willingness to Pay (WTP) (Adamu et al. 2015; Tabachnick et al. 2007). It may access the WTP mean and the WTP contribution factor. Based on this analysis, the variables included in the Logit model were religion, marital status, jobs, educational level, and income (Table 2). In addition, Amirnejad et al. (2006) highlighted that bid and income were the most influential factors for WTP, followed by education and age, but not household size. Our findings were associated with other variables relating to the willingness to pay, such as educational level, occupation, and income (Yu et al. 2018; Pedroso and Kung'u 2019). Nearly 62.7% of respondents correctly answered 'yes' or 'no' to the WTP prediction in the model, as shown in Table 2, indicating a relatively good fit with the data (see also Cox and Snell R^2 and Nagelkerke R^2). In this instance, the model's sensitivity is good, as the model correctly predicted that 63.9% of respondents would choose 'yes' rather than 'no'.

Significantly, the estimated coefficient of the bid price, the primary explanatory variable of WTP probability, exhibited the expected negative sign and was statistically significant. This indicates that as the offer price increases, the WTP probability of "yes" decreases in the hypothetical market scenario and vice versa (Lee and Han 2002). In addition, economic theory and empirical evidence suggest that income positively influences WTP estimates (Amirnejad et al. 2006). However, this study revealed a significant negative relationship between income and WTP. Nonetheless, several studies have shown that income does not predict WTP (Nguyen and Hoang 2017; Wen and Huang 2018).

In general, the higher an individual's level of education, the more likely they are to be WTP (Fadhlin et al. 2021). Witt (2019) and Zaiton et al. (2019) found a positive correlation between education levels. Surprisingly, our research uncovered a negative indicator for education level. Our results mirror those of Hasan-Basri et al. (2020) and Sica et al. (2022), which indicate that respondents with a higher level of education are less willing to pay than those with a lower level of education. According to our study, several respondents with a higher level of education were unwilling to pay for the conservation of natural resources. Interestingly, most less-educated respondents were willing to pay for our study.

In addition, marital status revealed a negative sign, indicating that unmarried individuals are more WTP than their married counterparts. The study's findings showed that most respondents who were more likely to pay were single, 30 years of age and below, and continued their studies until tertiary education. The young generation is mindful of the conservation activities they represent more environmentally consciously (Aseres and Sira 2020). Besides, through education, biodiversity ecosystems will widely recognise and value the future generation (Ariyo et al. 2018; Truong 2022). This scenario is expressed in the previous study by a society that is more concerned with contemporary environmental problems and the importance of biodiversity (Ezebilo et al. 2012; Challcharoenwattana and Pharino 2016) and is motivated to pay more for conservation efforts (Baral and Dhungana 2014; Ariyo et al. 2018). Moreover, Samdin et al. (2010) reported that the gender of tourists affects their WTP. However, our research indicates that gender does not affect the willingness of tourists to pay. This finding is also supported by research on Musa and Nadarajah (2023).

Thus, the mean and median WTP for the conservation of biodiversity in Kuala Lumpur Forest Eco Park is as follows:

$$\text{Mean WTP} = \frac{\ln\left(1+exp^{a+\beta_i X_i}\right)}{-\beta_i}$$

$$\text{Mean WTP} = \frac{\ln\left(1+exp^{a+\beta_2 REL_i+\beta_3 MS_i+\beta_4 JOB_i+\beta_5 EDU_i+\beta_6 INC_i}\right)}{-\beta_i}$$

$$= \frac{\ln\left(1+exp^{0.124+(1.150 \times 0.97)+(-0.235 \times 0.81)+(0.556 \times 0.10)+(-0.033 \times 3.86)+(-0.00016 \times 1169.03)}\right)}{-(-0.305)}$$

$$= \frac{1.162358}{0.305}$$

Mean WTP = MYR3.81 per visit

$$\text{Median WTP} = \frac{a+\beta_i x_i}{-\beta_i}$$

$$= \frac{a+\beta_2 REL_i+\beta_3 MS_i+\beta_4 JOB_i+\beta_5 EDU_i+\beta_6 INC}{-\beta_i}$$

$$= \frac{(0.124+(1.150 \times 0.97)+(-0.235 \times 0.81)+(0.556 \times 0.10)+(-0.033 \times 3.86)+(-0.00016 \times 1169.03))}{-(-0.305)}$$

$$= \frac{0.787304}{0.305}$$

Median WTP = MYR2.58 per visit

Thus, the mean and median WTP for biodiversity conservation in Kuala Lumpur Forest Eco Park per visit were MYR3.81 and MYR2.58, respectively. Intriguingly, the survey questionnaire for this study revealed that the maximum value of WTP conservation fees at Kuala Lumpur Eco Forest Park is MYR5 for local visitors and MYR20 for international visitors. Previous studies on

biodiversity conservation in Malaysia observed that the mean WTP for domestic tourists was MYR6.32 in Taman Negara National Park, Pahang (Samdin 2008), MYR7.38 at Gunung Gading National Park, Sarawak (Kamri 2013), MYR16.87 in Pulau Redang Marine Park, Terengganu (Mamat et al. 2013), MYR4.20 at Gelam Forest, Kelantan (Hassin et al. 2020) and MYR4.69 at Bukit Larut Forest Recreation Area, Perak (Musa and Nadarajah 2023). This study's findings indicate that the WTP was the lowest of all previous studies. This scenario may have occurred because Kuala Lumpur Forest Eco Park recently implemented entrance fees of MYR10 for local visitors and MYR40 for international visitors during the data collection for this study. The National Forestry (Federal Territories) Rules 2019 govern the entrance fees. Previously, visitors to the Kuala Lumpur Forest Eco Park were not required to pay an admission fee. Therefore, to comprehend the acceptable entrance fee and garner visitor support, this policy must be reevaluated by utilizing economic valuation approaches, ensuring that the payment mechanism through the implementation of entry fees can effectively aid in planning conservation programs in the study areas. Thus, sustainable tourism initiatives support the expansion of nature-based tourism (Karjoko et al. 2020).

In addition, survey results revealed that visitors to Kuala Lumpur Forest Eco Park have a moderate level of satisfaction with the food stores and parking, as well as with the cleanliness of the restrooms. This scenario occurred because the park neglected to properly maintain the food stands, resulting in their abandonment and cessation of operation. Therefore, visitors cannot consume food while enjoying the park. In the meantime, the parking area for park visitors is limited because it is shared with those who wish to visit the Kuala Lumpur Tower. Additionally, park visitors are unsatisfied with the cleanliness of the restrooms, as this service typically receives low marks for visitor satisfaction (Sapari et al. 2013). In this context, the level of visitor satisfaction may influence their WTP. According to Tverijonaite et al. (2018) and Sisto et al. (2022), improved accessibility and infrastructure at a tourist destination will increase the demand for additional infrastructure development to meet the needs of more tourists visiting the area and mitigate their environmental impact. Thus, it influences visitor behavior and, consequently, the type of tourism practiced at a destination.

In conclusion, biodiversity positively affects the environment and society holistically. Findings stated that most tourists are more Willing to Pay (WTP) for biodiversity conservation at Kuala Lumpur Eco Forest Park. This park is vital in urban areas to ensure biodiversity survival, which is becoming more vulnerable due to the rapid growth and technological revolution that threatens biodiversity. The desire to pay for biodiversity among the visitors to this study is significantly affected by religion, marital status, educational level, income, and job. This study found that the mean and median WTP for biodiversity conservation among the local visitors in Kuala Lumpur Forest Eco Park was MYR3.81 and MYR2.58, respectively, per visit. This study's findings indicate that the value is lower than the current entry fees, MYR10, for local visitors to Kuala Lumpur Eco Forest Park. Therefore, this study should also inspire Kuala Lumpur Forest Eco Park to revise the existing pricing policy that is appropriate for the willingness of visitors to pay for better management in the future.

In addition, the Contingent Valuation Method is one of the economic methods that can be used to determine non-market environmental goods and services. This method can not only estimate the economic value of biodiversity but also be applied to all forest goods and services. Indeed, applying the Contingent Valuation Method (CVM) could be a valuable tool for providing important information for decision-makers and policy purposes in managing any forest park, nature-based tourism site, or protected area. In this context, the scholar advocates that the role of economics is to assist in designing institutions that provide incentives for the conservation of vital natural systems and mitigate human impacts on the biosphere to ensure sustainability.

Nonetheless, future research can be enhanced by considering this study's limitations. According to this study, there are insufficient data on foreign tourists due to time constraints in data collection, so statistical analysis is limited to domestic tourists. Consequently, only results regarding the willingness to pay domestic tourists are obtained for this study. Therefore, it is recommended that future research determine the willingness to pay international visitors. Thus, the stakeholder will be able to determine the entrance fee among international visitors for Kuala Lumpur Eco Forest Park. Currently, international visitors pay an entrance fee of MYR40. Additionally, it is proposed that the "entrance fee" be replaced with "conservation fee." This is because, from the previous studies, the "conservation fee" will encourage visitors to donate more money for conservation than the "entrance fee." Aware of the significance of biodiversity to human life, most visitors are willing to contribute to its preservation for future generations.

Moreover, this study's economic value may help policymakers implement conservation initiatives and strengthen public funding to sustain biodiversity for long-term planning. In this case, public funding is vital for sustainable tourism management. Additionally, previous researchers propose using collected premiums to fund local and sustainable initiatives, thereby supporting the tourism industry and improving the infrastructure. In this regard, biodiversity should be included in future national planning to avoid the depletion of biodiversity caused by various causes, such as habitat destruction, unchecked agriculture, and illegal hunting. Thus, the mutual involvement of governments, stakeholders, NGOs, and communities could achieve biodiversity sustainability.

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