



VISITORS' WILLINGNESS TO PAY FOR IMPROVED SOLID WASTE MANAGEMENT AT BATU HITAM BEACH

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Abstract

Batu Hitam Beach is a growing tourism site in Pahang that offers an aesthetic view, particularly its black volcanic stones along the shoreline. However, the rising number of visitors and the expansion of beach activities have increased solid waste generation. It creates challenges for the current solid waste management at Batu Hitam Beach. This study aims to estimate the visitors' willingness to pay and to analyse the factors influencing visitors' willingness to pay for improved solid waste management at Batu Hitam Beach. This study employs a questionnaire survey using the Contingent Valuation Method with integration of the Theory of Planned Behaviour. This study focuses on how sociodemographic factors and behavioural determinants, which are attitude and perceived behavioural control influences willingness to pay. A questionnaire survey was conducted among 166 visitors, and the data were analysed using descriptive statistics and logistic regression. The estimated average willingness to pay is RM2.12 per visit for improved solid waste management provides a useful reference for designing a small visitor contribution scheme to strengthen solid waste management services. The findings also show that visitors' willingness to pay was positively influenced by their perceived behavioural control, while attitude was not found to be a significant factor. It suggests the management strategies to prioritise strengthening visitors perceived ease and confidence to contribute through clear information on fund use, simple payment options, and visible improvements in cleanliness and facilities.

Keywords: Contingent Valuation Method, Perceived Behavioral Control, Coastal Tourism, Visitor Contribution

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INTRODUCTION

Solid waste management (SWM) refers to the systematic handling of solid waste from generation to final disposal, including storage, collection, transport, treatment, and disposal, supported by administrative, financial, legal, planning, and technical functions (UNEP, 2016). In Malaysia, more than 38,000 metric tons of solid waste are generated daily, with an annual growth of 3% (SWCorp, 2022). Malaysia's heavy reliance on landfilling raises long-term concerns related to land scarcity, pollution, and greenhouse gas emissions (Afroz & Masud, 2011; Fauziah & Agamuthu, 2012). This creates greater pressure on SWM including in critical tourism-growing areas, where there are rising solid waste generation due to tourism activities.

The coastal tourism sector further intensifies these challenges. Common beach activities such as picnicking, swimming, and street vending generate considerable amounts of solid waste, particularly plastics and food packaging. In addition, inadequate infrastructure, such as insufficient bins, and limited recycling facilities, together with weak enforcement against littering can further deteriorate beach conditions (Saengsupavanich et al., 2024). These conditions add pressure on local authorities responsible for SWM, especially as many already face financial constraints that limit their ability to cope effectively with rising solid waste generation (Yusof et al., 2025).

This issue is particularly relevant in Pahang coastline, a growing coastal tourism destination in Malaysia. This includes Batu Hitam Beach, a popular coastal attraction that experiences increasing visitor arrivals, especially during weekends and public holidays. This trend intensifies pressure on the existing SWM due to increasing solid waste generation. Kamarudin et al., (2021) found that most marine litter, including Batu Hitam Beach shoreline, originated from land-based sources with plastics being the dominant component.

Despite the clear link between tourism and solid waste, empirical evidence on visitors' willingness to pay (WTP) for improved SWM at Malaysian coastal sites is limited. This study addresses the gap by assessing Batu Hitam Beach visitors' WTP to support improved SWM by employing the Contingent Valuation Method (CVM), together with the Theory of Planned Behaviour (TPB). As applied in previous studies, CVM is used to value non-market environmental improvements and estimate WTP through hypothetical scenarios (Carson et al., 2001; Mitchell & Carson, 2005; Afroz & Masud, 2011; Subhan et al., 2020; Haron et al., 2023; Girma et al., 2023).

The objectives of this study are to analyse the factors influencing WTP for improvements in SWM at Batu Hitam Beach and to estimate the value of WTP for such improvements. The findings are expected to provide insights into visitors' demand for improved SWM to support the development of practical and publicly supported SWM strategies by the local authority. Given the financial

constraints often faced by local authorities, evidence on visitors' WTP may provide a useful basis for more targeted and feasible SWM improvements at Batu Hitam Beach.

LITERATURE REVIEW

Solid Waste Management

SWM remains a critical global environmental challenge due to its implications for public health, environmental sustainability, and overall quality of life (Nik Ab Rahim et al. 2024). The issue is especially pronounced in coastal tourism areas, where recreational activities contribute to rising volumes of solid waste. Poorly managed solid waste, particularly plastics, food packaging, and other non-biodegradable materials, can significantly degrade coastal ecosystems and reduce the aesthetic value of beach destinations. Effective SWM is therefore essential to preserve environmental quality, protect public health, and sustain tourism appeal (UNEP, 2016). In Malaysia, these challenges are intensified by rapid tourism growth, while limited financial resources and public participation continue to constrain effective implementation (Agamuthu & Fauziah, 2011).

Willingness to Pay for Solid Waste Management

WTP refers to the maximum amount individuals or households are prepared to spend for improved SWM and is widely used in environmental economics to value non-market goods (Mitchell & Carson, 2005). Previous studies showed positive public support for improved SWM in Sri Lanka, Ethiopia, and India, with WTP influenced by income, awareness, and service quality (Yohannes et al., 2021; Wana & Ali, 2024). In Malaysia, studies similarly reported household willing to pay for better solid waste collection, recycling, and disposal systems. However, WTP declines as proposed charges increase (Othman, 2006; Haron et al., 2023; Nik Ab Rahim et al. 2024).

Factors Influencing Willingness to Pay

Various factors influence people's WTP for improved SWM, including socio-economic aspect. Household income is one of the most consistently identified factors. Households with higher income typically show greater WTP, as they have more financial flexibility to pay for SWM. Boateng et al. (2019) found that households with higher monthly income were more likely to pay additional charges for solid waste collection. Similarly, Wana and Ali (2024) reported that households in Srinagar, India, with stable and higher income levels had a greater likelihood of paying for improved SWM. These findings are consistent with economic theory, which suggests that affordability influences both the ability and WTP for non-market services.

Educational level also significantly influences WTP. Individuals with higher levels of education are generally more willing to financially support SWM improvements. It is because they tend to be more environmentally aware and better informed about the consequences of improper SWM. Alam et al. (2010) and Zhang et al. (2016) found that respondents with higher educational attainment were more likely to support and pay for SWM. This suggests that education can enhance public trust in government and service providers, thereby increasing compliance with user-funded schemes, including visitors' payments for SWM at beach destinations.

Integration of Contingent Valuation Method with Theory of Planned Behaviour

CVM is a stated preference technique widely used in environmental economics to estimate the value of non-market goods and services. In this method, individuals are presented with a hypothetical market in which they are asked their maximum WTP for a specific environmental improvement or to avoid a potential loss. As formalised by Mitchell and Carson (2005), CVM is particularly useful for valuing public goods without observable market prices, such as SWM, water supply, or sewage treatment. In the context of SWM, CVM has been widely applied to assess public support for SWM improvements in both developed and developing countries. Mitchell and Meade (2001) noted that CVM remains a reliable valuation method for policy analysis, while Whittington (2010) highlighted its relevance in low- and middle-income countries where formal pricing systems for public services are often limited.

To complement the economic focus of CVM, this study draws on selected elements of TPB, a psychological framework developed by Ajzen (1991) to explain deliberate behaviour. Although TPB consists of attitude towards behaviour, subjective norm, and perceived behavioural control, this study focuses only on attitude and perceived behavioural control for conceptual and practical reasons. In the context of Batu Hitam Beach, WTP for a small parking-fee mechanism is mainly an individual, on-site economic decision. Therefore, visitors' personal evaluation of the benefits and their perceived affordability are expected to be more influential than social pressure from others.

Attitude towards behaviour refers to an individual's positive or negative evaluation of performing a behaviour, which it relates to visitors' views on paying for better SWM services at Batu Hitam Beach. Visitors who believe that such contributions will improve beach cleanliness and environmental quality are more likely to report positive WTP. Subjective norm refers to an individual's perception of social pressure from important others to perform or not perform a behaviour. In this context, it reflects whether visitors feel encouraged by family, friends, or society to support or contribute financially to improved SWM services.

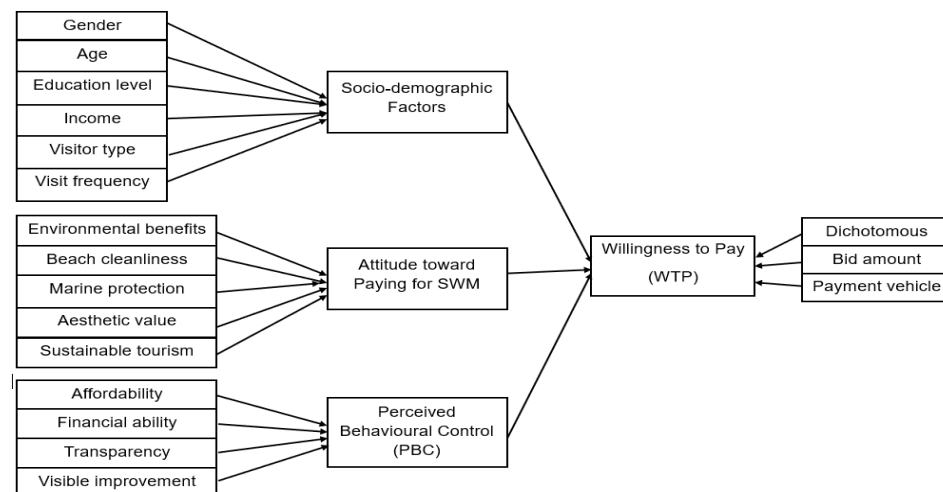
Perceived behavioural control refers to an individual's perception of their ability to perform the behaviour, including whether they feel financially capable of contributing through voluntary fees or environmental charges.

These two TPB elements help explain the psychological factors underlying stated WTP responses. Previous studies have shown that positive environmental attitudes and stronger perceived control can significantly increase WTP for environmental improvements (Chen & Tung, 2010; Ramayah et al., 2012; Irfan et al., 2020). Studies such as Subhan et al. (2020) and Girma et al. (2023) further demonstrated that attitude and perceived control were significant predictors of WTP for improved SWM. By combining CVM with these selected TPB constructs, this study provides a more comprehensive basis for understanding and promoting community-supported SWM at Batu Hitam Beach.

Research Gap

Despite increasing research on WTP for improved SWM, several gaps remain. Most previous studies were conducted in urban residential settings, limiting their applicability to coastal tourism areas such as Batu Hitam Beach, where waste generation patterns, visitor behaviour, and environmental pressures are different. Behavioural factors are also often underexplored, as many studies do not integrate established frameworks such as the TPB. Therefore, this study addresses these gaps by focusing on a semi-urban coastal tourism site and integrating the CVM with selected TPB constructs.

RESEARCH METHODOLOGY



This study develops a conceptual framework based on the TPB and the CVM to examine visitors' WTP for improved SWM at Batu Hitam Beach, Kuantan. The framework focuses on how sociodemographic and behavioural factors shape visitors' WTP for environmental management initiatives. Although TPB comprises attitude towards behaviour, subjective norms, and perceived behavioural control, this study includes only attitude and perceived behavioural control. This is because WTP is largely an individual and hypothetical economic decision, where subjective norms often show weaker or less consistent influence than other TPB constructs (Liu et al., 2018; Irfan et al., 2020). Attitude towards behaviour refers to visitors' evaluation of paying for improved SWM, including perceived benefits such as cleaner beaches, better environmental quality, and support for sustainable tourism. Perceived behavioural control refers to visitors' perceptions of affordability, financial capability, and confidence in the effectiveness of their contribution. Previous studies have shown that both constructs significantly influence WTP for environmental improvements (Chen & Tung, 2014; Subhan et al., 2020; Girma et al., 2023).

The framework also incorporates sociodemographic variables, including age, gender, education, income, visit frequency, and visitor type, as control variables due to their influence on environmental awareness and payment behaviour (Afroz et al., 2011; Han et al., 2019). WTP is measured using a dichotomous choice CVM, in which respondents accept or reject a specified bid amount, allowing the study to estimate WTP while examining its factors.

Following the framework, the study was conducted at Batu Hitam Beach, a growing coastal tourism site known for its black volcanic rocks, which are naturally embedded along the shoreline. The beach has become increasingly popular leading to a noticeable surge in visitor volume and associated solid waste generation. The beach starts to face overflowing waste bins and littering along the coastal edge and recreational zones that contributes to coastal pollution and ecosystem degradation at Batu Hitam (Baharuddin et al., 2024). Moreover, there is currently no formal entry fee implemented at the site, placing the financial burden of SWM solely on the local authorities. This context makes Pantai Batu Hitam an appropriate case study location for assessing visitors' WTP for improved SWM.

This study adopts a quantitative research design using a structured questionnaire survey. The use of the CVM further supports this design by enabling the estimation of WTP for non-market environmental goods through hypothetical scenarios. The questionnaire was developed as the main research instrument. Content validation was conducted with three subject matter experts using the Content Validity Index (CVI), while a pilot test involving 15 respondents was carried out to assess the clarity, structure, and practical suitability of the instrument in the field. Reliability testing indicated acceptable

to good internal consistency, with Cronbach's Alpha values of 0.770 for attitude towards improved solid waste management and 0.821 for perceived behavioural control. The final instrument consisted of four sections covering socio-demographic profile, attitudes towards improvement of solid waste management, perceived behavioural control, and WTP. The WTP section presented a hypothetical beach SWM programme funded through a parking fee mechanism, followed by a dichotomous choice bid question.

A parking-fee mechanism was selected because most visitors access Batu Hitam Beach by vehicles and pass through designated parking areas, making fee collection practical and non-intrusive. Respondents were informed that the fee would be collected at the parking area and the fund will be managed by the local authority to support SWM improvements. The fund would support improvements such as additional bins and more frequent solid waste collection during peak periods, with routine auditing and public reporting to ensure transparency and visitor trust. In the dichotomous choice question, respondents were randomly assigned RM1.00 or RM3.00 per visit. These bids were based on an open-ended pretest with Batu Hitam visitors, which identified realistic and affordable WTP values. Following these procedures, the questionnaire was finalised in both English and Malay and included ethical elements such as informed consent, confidentiality assurance, and voluntary participation prior to data collection.

The target population of this study comprises visitors aged 18 years and above who visit Batu Hitam Beach during weekends and public holidays. This age criterion was used to make sure they can make independent financial decision regarding their willingness to pay for improved SWM. A non-probability convenience sampling technique was employed due to the transient nature of beach visitors and there is no formal visitor registry or sampling frame that would allow probability-based selection. Since no official published visitor data were available, the estimated population of 1,000 visitors per weekend day was derived from simple field observations conducted at Batu Hitam Beach during weekends and public holidays. Visitors were counted at different times of the day, and the daily total was estimated based on these counts. Based on this estimated population and using the Krejcie and Morgan (1970) formula with an 8% margin of error at the 95% confidence level, the minimum required sample size was 131 respondents. Although lower margins of error are generally preferred, higher values are acceptable for transient populations with limited sampling frames and fieldwork constraints (Memon et al., 2020; Deepa & Anwar, 2023). To account for non-response and incomplete questionnaires, the target sample was increased to 166 respondents. The adoption of an 8% margin of error is considered acceptable in applied social science research and is also supported by similar

beach-based CVM studies including a study by Setiawan and Saptutyningsih (2022).

Survey data were analysed using descriptive statistics and logistic regression analysis to estimate visitors' WTP for improved SWM at Batu Hitam Beach. Descriptive statistics were used to summarise respondents' socio-demographic characteristics, attitudes, perceived behavioural control and payment responses. To examine the determinants of WTP, logistic regression was applied, as it is appropriate for dichotomous contingent valuation responses in which respondents either accept or reject a proposed bid amount. The model estimates the probability of a "yes" response based on variables such as sociodemographic characteristics, attitude, and behavioural factors. Following Getinet, (2024), the mean WTP was then estimated from the logistic regression coefficients using the standard formula proposed by Hanemann, (1984).

ANALYSIS AND DISCUSSION

Descriptive Analysis

Table 1: Visitors' Socio-Demographic Information

Variables	Items	Frequency	Percentage (%)
Gender	Male	72	43.4
	Female	94	56.6
Age	<19	6	3.6
	20-24	70	42.2
	25-29	20	12.0
	30-34	8	4.8
	35-39	11	6.6
	40-44	9	5.4
	45-49	14	8.4
	50-54	19	11.4
	55-59	6	3.6
	>60	3	1.8
Highest education	Secondary school	18	10.8
	Professional Certificate/ Diploma	48	28.9
	Bachelor's degree	99	59.6
	PhD	1	0.6
Estimated gross income (RM)	<2500	83	50.0
	2501-4850	56	33.7
	4851-10,970	24	14.5
	>10,971	3	1.8
Visitor type	Local resident	34	20.5
	Domestic visitor	132	79.5
Visiting frequency	First time visit	19	11.4
	Every day	6	3.6
	Every week	2	1.2
	Every month	14	8.4
	Few times a year	125	75.3

Table 1 shows that the 166 respondents were slightly dominated by females (56.6%) compared to males (43.4%). Most respondents were young adults, particularly those aged 20–24 years (42.2%), indicating that Batu Hitam Beach is especially popular among younger visitors. In terms of education, the majority held a bachelor's degree (59.6%), followed by a diploma or professional certificate (28.9%), reflecting a relatively well-educated sample. Half of the respondents (50.0%) earned below RM2500 per month, while 33.7% earned between RM2501 and RM4850, suggesting that most visitors were from low- to middle-income groups. Most respondents were domestic visitors (79.5%), and the majority visited the beach only a few times a year (75.3%), indicating mainly occasional visitation.

Table 2 shows that respondents had highly positive attitudes towards improving solid waste management at Batu Hitam Beach, with mean scores ranging from 4.34 to 4.87. The highest mean score was recorded for the statement that beaches with proper solid waste management attract more visitors (mean = 4.87), followed by items related to coastal beauty and support for sustainable tourism. Although still positive, the lowest mean score (4.34) was related to personal responsibility for payment, suggesting that individual obligation was slightly less strongly recognized. Overall, the findings indicate a favourable attitude towards contributing to improved solid waste management at the beach consistent with UNEP (2016), which emphasises that effective SWM is important for protecting environmental quality and public health.

Table 2: Visitors' Attitudes towards paying for improvement of Solid Waste Management

Attributes	Mean	Std. Deviation
Paying for solid waste management at the beach is beneficial for improving beach cleanliness.	4.42	0.825
Paying for solid waste management at the beach helps protect marine life.	4.43	0.834
Paying for solid waste management at the beach keeps the coastline beautiful.	4.51	0.769
My payment for solid waste management at the beach can help reduce litter.	4.39	0.830
My payment for solid waste management at the beach supports sustainable tourism.	4.49	0.863
Beaches with proper solid waste management improve my recreational experience.	4.47	0.695
Beaches with proper solid waste management attract more visitors.	4.87	0.629
I feel responsible for paying for solid waste management at the beach to keep it clean.	4.34	0.857

Table 3 shows that respondents generally reported moderate to high perceived behavioural control towards paying for improved SWM, with mean

scores ranging from 3.90 to 4.41. The highest mean scores were recorded for affordability and transparency of the payment system, indicating that respondents' willingness to contribute was strongly influenced by how the payment mechanism was structured. In contrast, the lowest mean score was related to the ability to pay on every visit, suggesting that financial capability may vary depending on personal circumstances and visit frequency. Overall, the findings indicate that visitors generally felt capable of contributing, particularly when the payment system was perceived as affordable and transparent. Similar findings were reported by Subhan et al. (2020) and Girma et al. (2023), who found that perceived control and confidence can significantly influence WTP for improved SWM.

Table 3: Visitors' Perceived Behavioural Control towards improvement of Solid Waste Management

Attributes	Mean	Std. Deviation
I can afford to pay the small contribution for solid waste management at the beach.	4.10	0.945
I am financially able to pay for solid waste management at the beach.	3.93	1.048
I can make the payment for the solid waste management if I know its benefits.	4.20	0.929
I can pay for solid waste management at the beach whenever I visit.	3.90	1.031
I can pay for solid waste management if the improvements are visible.	4.21	0.933
Easy payment methods would make paying for solid waste management at the beach simple.	4.38	0.806
A transparent system makes paying for solid waste management at the beach easier.	4.40	0.793
Affordable pricing makes paying for solid waste management at the beach possible.	4.41	0.763

Table 4 summarises respondents' WTP for the proposed improvement of SWM at Batu Hitam Beach. A large majority of respondents a total of 91.6%, expressed willingness to pay for the improvement program, while only 8.4% indicated unwillingness. This reflects strong overall support for the proposed initiative. The high "yes" rate is also consistent with the finding that perceived behavioural control is a strong positive predictor of WTP, indicating that many surveyed visitors felt both able and willing to contribute within the proposed bid range; however, this does not eliminate the possibility that responses were inflated by hypothetical and social desirability effects. The finding is consistent with previous CVM studies showing that respondents are willing to pay when the proposed environmental improvement is clear and relevant to their daily or recreational experience (Afroz & Masud, 2011; Haron, 2023; Girma et al., 2023).

Table 4: Visitors' Willingness to Pay

WTP	Frequency (n)	Percentage (%)
Yes	152	91.6
No	14	8.4

Logistic Regression

Table 5 shows that the logistic regression model explaining how the selected variables influence visitors' WTP for improved SWM at Batu Hitam Beach. Among the variables tested, perceived behavioural control was the only significant predictor at the 1% level, suggesting that visitors who felt more financially capable and confident about the payment mechanism were much more likely to be willing to pay consistent with the results from previous related studies (Ajzen, 1991; Subhan et al., 2020; Girma et al., 2023). Visiting frequency showed a marginally significant negative relationship, indicating that more frequent visitors may be less willing to pay than occasional visitors. In contrast, socio-demographic factors and attitude, were not statistically significant, implying that WTP was influenced more by perceived affordability than by demographic characteristics. The insignificant findings may be due to the respondents relatively dominated by younger, educated, domestic visitors and low- to middle-income groups. This may have reduced variation across socio-demographic characteristics.

The positive but statistically insignificant coefficient for bid price also contradicts standard WTP theory. In this study, this result is likely due to the relatively low and narrow bid range (RM1 and RM3), where most respondents considered the proposed amounts affordable, leading to a high acceptance rate of 91.6%. Therefore, the bid coefficient is interpreted as a statistical artefact arising from the bid structure and high overall support for the SWM programme, rather than as a substantive price effect. Similarly, although the logistic regression model was statistically significant (Model $\chi^2 = 65.309$, $p < 0.001$), the high Nagelkerke R^2 value of 0.740 should be interpreted with caution. This high value may reflect the high proportion of "yes" responses, the narrow-bid range, and limited variation across several predictors, which may cause quasi-complete separation or overfitting. The Hosmer–Lemeshow test was not significant, $\chi^2(8) = 1.505$, $p = 0.993$. This suggests that the model fits the data adequately, with no major difference between the predicted and observed WTP responses. Overall, the findings should be used mainly to highlight perceived behavioural control as the main determinant of WTP ($B = 3.709$, $p = 0.002$, $\text{Exp}(B) = 40.817$), while suggesting that affordable, transparent, and outcome-oriented payment mechanisms are important to strengthen public support for improved coastal SWM.

Table 5: Logistic Regression Results

Variable	Coefficient (B)	Significance (p)	Exponential (B)
Gender	0.664	0.553	1.943
Age	0.013	0.795	1.014
Education	1.782	0.134	5.942
Income	1.073	0.475	2.923
Visitor type (VT)	1.956	0.178	7.070
Visiting frequency (VF)	-1.368	0.100	0.255
Attitude towards solid waste management (A)	-1.048	0.143	0.351
Perceived behavioural control (PBC)	3.709	0.002	40.817
Bid price	2.772	0.139	15.984
Constant	-12.667	0.036	0.000
Model χ^2 (Omnibus test)	65.309	< 0.001	
Nagelkerke R ²	0.740		
Hosmer and Lemeshow Test	1.505	0.993	

Willingness To Pay Estimation

The estimated average WTP of RM2.12 shows that surveyed visitors are willing to make a small financial contribution to improve SWM at Batu Hitam Beach. However, the RM2.12 estimate should be viewed as an indicative mean WTP for the surveyed visitors, given the relatively small, non-probability convenience sample and its dominance by younger, well-educated domestic visitors who visit Batu Hitam only a few times a year. This suggests that they support better environmental quality, although the level of contribution can be considered moderate. In this study, “moderate” means that the WTP value is positive but relatively small. It may be affordable for visitors but may not be sufficient to fully cover the cost of improved SWM services. In practice, such a contribution could help the local authority co-finance improved waste bins, more frequent collection, cleaner visitor areas, and other basic facilities, while reinforcing environmental governance through transparent fund management and visible service improvements. In CVM studies, WTP is usually interpreted based on the payment context, the proposed environmental improvement, and comparison with similar studies. For instance, Setiawan and Saptutyningsih (2022) reported an average WTP of IDR15,000, approximately RM3.34, for beach destination quality improvement, while Chea (2019) found WTP values of RM2.60 and RM2.30 for heritage conservation in Melaka and George Town. Compared with these studies, the RM2.12 estimated in this study reflects moderate public support. This may be influenced by visitors’ expectation that SWM should be funded mainly by local authorities, especially among non-local visitors. The finding also suggests that affordability and perceived value are important in shaping payment decisions.

$$WTP = - \left(\frac{\beta_{\text{constant}} + \beta_{\text{gender}} + \beta_{\text{age}} + \beta_{\text{education}} + \beta_{\text{income}} + \beta_{VT} + \beta_{VF} + \beta_A + \beta_{PBC}}{\beta_{\text{bidprice}}} \right)$$

$$WTP = - \left[\frac{(-12.667) + (0.664) + (0.013) + (1.782) + (1.073) + (1.956) + (-1.368) + (-1.048) + (3.709)}{2.772} \right]$$

$$WTP = RM2.12$$

LIMITATIONS

This study has several limitations. First, convenience sampling limits representativeness because respondents were selected from available visitors during the survey period. Since the sample mainly consisted of younger, educated domestic visitors who visit only occasionally, other visitor groups may be under-represented. Therefore, the findings reflect surveyed respondents rather than the whole Batu Hitam Beach visitor population. Second, the high WTP acceptance rate of 91.6% may have reduced variation in the dependent variable and contributed to the high Nagelkerke R^2 (0.740) in the logistic regression model. Third, the insignificant bid price effect may reflect the low and narrow bid range, which may not capture price sensitivity. Finally, subjective norm was excluded from the TPB framework. Future studies may improve logistic regression model robustness by using wider bid ranges, including full TPB constructs, and applying systematic visitor sampling.

CONCLUSION

This study examined visitors' WTP for improved SWM at Batu Hitam Beach, Kuantan, and identified the main factors influencing their payment decisions. Using the logistic regression analysis, the study found that perceived behavioural control was the most significant determinant of WTP, while socio-demographic factors were not statistically significant. The estimated average WTP of RM2.12 indicates that visitors are generally willing to make a modest financial contribution to support better SWM, reflecting positive public support for environmental improvements in a coastal tourism setting. From a policy perspective, the findings suggest that local authorities may consider introducing a small and affordable parking-based contribution as a part of broader coastal tourism planning. The mechanism is transparent, practical, and clearly linked to visible improvements such as cleaner beach areas, additional waste bins, and more frequent solid waste collection. Overall, the study highlights the importance of integrating behavioural considerations with economic valuation in designing publicly supported coastal SWM strategies.

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Received: 4th June 2026. Accepted: 13th June 2026