

## NATURE CRUISE SERVICE PERFORMANCE, GREEN EXPERIENCE SATISFACTION AND REVISIT INTENTIONS: A SEGMENTATION APPROACH TO KENYIR LAKE FOR ECOTOURISM DESTINATION SUSTAINABILITY

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<https://doi.org/10.46754/umtjur.v7i2.669>

Submitted: 16 February 2025

Revised: 16 July 2025

Accepted: 16 July 2025

Published: 15 October 2025

**Abstract:** The continuing decrease in visitors to Kenyir Lake over the years has impacted the local businesses and stakeholders who depend on tourism. This decline puts the lake's future as a tourist destination at risk and raises questions about how to sustain tourism while preserving the natural environment's sustainability. This study aims to examine tourist perceptions of nature cruise service performance and their relationship with green experience satisfaction and revisit intentions at Kenyir Lake using the Stimulus-Organism-Response (SOR) Theory. The significance of this research lies in its potential to provide evidence-based strategies for reversing tourism decline while promoting sustainable ecotourism practices, which is crucial for the economic survival of local communities and environmental conservation. Hence, a purposive sampling technique was employed to collect data from tourists visiting Kenyir Lake. A total of 634 usable questionnaires were collected from respondents. The data were analysed using Statistical Package for Social Sciences (SPSS) version 26, employing descriptive statistics, reliability analysis, and cluster mean segmentation analysis to examine tourist perceptions and behavioral intentions. The cluster mean segmentation analysis revealed statistically significant moderate levels of tourist satisfaction regarding both nature cruise service quality and green satisfaction construct. Similarly, the findings indicated moderate revisit intentions among tourists towards the destination. All measurement scales demonstrated acceptable reliability. However, no significant differences were observed between different tourist demographic segments in terms of their satisfaction levels. These results suggest that tourist satisfaction level towards the perceived service experience is relatively moderate. While tourists were generally satisfied with their visit experience, there may be opportunities to enhance service delivery and strengthen their intention to revisit the destination. Furthermore, the findings contribute significantly to both industry practice and academic knowledge. For industry practitioners, the results offer actionable insights for ecotourism service providers to refine their service delivery strategies and develop targeted marketing approaches, thereby enhancing tourist satisfaction and loyalty. For educational practitioners and researchers, this study extends the application of SOR Theory in the context of ecotourism, providing a methodological framework for assessing tourist behavior in natural settings. Overall, by focusing on the identified strengths and addressing areas for improvement, destination managers can better position their services to meet the evolving demands of eco-cruise travelers. It can also contribute to the sustainable development of Kenyir Lake as a premier ecotourism destination.

Keywords: Nature cruise service performance, green experience satisfaction, destination sustainability, SOR-theory, revisit intention.

## Introduction

Over the past half-century, the tourism sector has experienced rapid growth, positioning itself as one of the most dynamic industries. Moreover, tourism is progressively assuming a dominant role in the global economy (Chan *et al.*, 2023). The tourism industry actively contributes to preserving, restoring, and promoting both tangible and intangible cultural heritage within local communities (Hosseini *et al.*, 2024). Notably, the current prevailing global trend in tourism is shifting toward a green economy. The United Nations Environmental Programme recognises ecotourism as an environmentally sustainable economic sector that has achieved substantial progress in promoting sustainability and green practices on a global scale (Salman *et al.*, 2024). In essence, ecotourism represents a normative assessment deeply rooted in the intrinsic value attributed to local livelihoods and the preservation of natural and cultural environments (Ulfi *et al.*, 2021).

In contemporary times, ecotourism holds considerable importance, reflecting a growing fascination with nature and increasing environmental concerns (Hamid *et al.*, 2022). According to Constantin *et al.* (2022), ecotourism, a rapidly growing sector within the tourism industry, is defined by The International Ecotourism Society (1990) as responsible travel to natural areas that conserves the environment and enhances the well-being of local communities. These ecotourism destinations play a crucial role in environmental conservation, education, recreation, and job creation. Furthermore, according to Wood (2002), ecotourism encompasses travel to pristine regions, allowing individuals to explore the natural environment and cultural heritage while minimising impact on ecosystems. Simultaneously, it creates economic prospects for environmental conservation and enhances the financial well-being of local communities (Giao *et al.*, 2021).

Malaysia is renowned for its diverse tourist attractions, which include pristine beaches, picturesque islands, and majestic mountains.

Among these, houseboats have emerged as a unique 'aqua-ecotourism' experience, combining water activities with environmental exploration. This innovative concept has garnered appeal from both foreign and domestic tourists, providing an opportunity for families and friends to explore ecotourism destinations while spending nights on board (Mahmud *et al.*, 2021). Houseboats as a tourism attraction refer to a tourism product that utilises houseboat services as a medium for nature-based tourism (ecotourism) and water recreation activities (Mapjabil *et al.*, 2021). As such, houseboats offer a variety of experiences, whether docked at the jetty or exploring the lake area. Accordingly, tourists can engage in various activities, including trekking, nature walks, jungle exploration, fishing, waterfall visits, and wildlife spotting (Ramli *et al.*, 2022).

Tourism based on nature cruises is available in areas with large lakes, long rivers, extensive waterways, and other similar areas (Mapjabil *et al.*, 2021). For instance, a nature cruise at Kenyir Lake, Terengganu, is one of the popular accommodations for tourists. The prosperity and enduring viability of any tourism destination are contingent upon the sustained satisfaction of tourists. Tourists who derive satisfaction from their experiences can contribute to the long-term sustainability of a tourism site through repeated visits and positive intentions. Correspondingly, the assessment of tourist satisfaction is influenced by various existing factors associated with tourism activities (Husain & Ridzuan, 2022). For example, the quality of experience on the Kenyir Houseboat, a nature cruise service, may significantly influence tourists' intention to revisit. This is crucial for the sustainability of this ecotourism destination (Bhuiyan & Darda, 2023). However, it is unclear what aspects of the quality experience are most influential in shaping this intentionally.

The primary issues associated with the operation of houseboats include a lack of infrastructure, problems with houseboat licensing procedures, safety concerns, environmental issues, and service quality weaknesses (Jose &

Aithal, 2020). It is widely acknowledged that the quality of a tourist's experience significantly influences their intention to revisit a destination. Despite this, there is a conspicuous absence of research specifically examining nature cruise services, such as the Kenyir Houseboat (Osnin & Abdul Rahman, 2018). This research gap is particularly evident within the context of sustainable ecotourism destinations. Consequently, there is a pressing need for an in-depth exploration of the elements of the Kenyir Houseboat experience that most powerfully motivate tourists' intention to return.

Kenyir Lake, located in Terengganu, Malaysia, is the largest man-made lake in Southeast Asia and a significant contributor to Malaysia's tourism industry. One of its unique attractions is the Kenyir Houseboat, which offers an "aqua-ecotourism" experience that combines water activities with environmental exploration. The nature cruise offers several itineraries and a range of activities, including cruising to various locations, exploring prehistoric caves, jungle trekking, swimming, and fishing (Mahmud *et al.*, 2021). However, despite its popularity, there is a lack of specific research focusing on the houseboat's impact on tourist revisit intention and its contribution to ecotourism destination sustainability. Hence, there is a need for a detailed investigation into which aspects of the Kenyir Houseboat experience most strongly drive tourists' intention to revisit (Eranza, 2021).

In academic research, numerous previous studies have focused on predictors such as attitudes and interests towards ecotourism. Thus, their impact on ecotourism behaviors has been empirically substantiated. As noted by Lee *et al.* (2023), while investigating ecotourism attitudes and interests as determinants of behavior remains crucial, there exists a necessity to direct research attention toward their antecedents. Such investigations would

yield valuable insights for formulating strategies aimed at enhancing ecotourism participation (Teeroovengadam, 2019). In addition, one potentially significant antecedent of ecotourism is the utilisation of houseboats or nature cruises. These water-based accommodations and experiences provide a unique opportunity for tourists to engage with natural environments, fostering a deeper connection to the ecological settings. In the context of Malaysia, there exists a limited amount of specific research focusing on houseboats as a tourist attraction (Mapjabil *et al.*, 2021). Therefore, this study aims to explore the key aspects of the Kenyir Lake nature cruise by identifying its service performance in predicting the revisit intention.

Nature cruise experiences offer a unique and captivating way to explore natural environments, especially in serene locations such as Kenyir Lake. Kenyir Lake, situated in Terengganu, Malaysia, is the largest human-made lake in Southeast Asia, spanning approximately 260,000 hectares (Embong *et al.*, 2021). However, according to Ayub (2020), houseboats have faced several issues raised by tourists. One significant concern pertains to the condition of houseboats, specifically related to customer satisfaction with the services provided. Unfortunately, the level of satisfaction often falls below customer expectations, resulting in dissatisfaction among guests. This unfavorable experience impacts individual customers and tarnishes the company's reputation and overall service quality. In line with this, addressing these challenges is crucial for maintaining positive customer perceptions and sustaining a reputable service in the houseboat industry. Since 2018, the number of visitors to Kenyir Lake has been in continuous decline. This ongoing trend, highlighted by KETENGAH (2024), has raised concerns among stakeholders and the local community regarding the sustainability of the destination for future tourism.

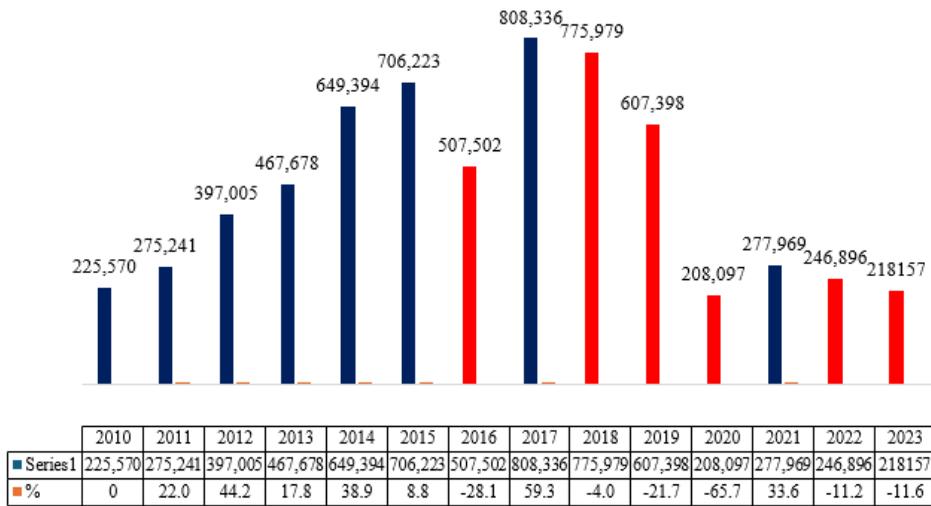


Figure 1: Kenyir Lake tourist arrivals

Source: KETENGAH (2024)

In light of the research objective, this study examines green experience satisfaction with the services offered by Kenyir Lake Nature Cruise. Furthermore, it examines how this satisfaction affects tourists’ revisit intentions using the Stimulus-Organism-Response (SOR) Theory. The SOR Theory posits that external stimuli (such as nature cruise service quality) impact internal psychological processes (organism) that are green experience satisfaction, which in turn influences behavioral responses (revisit intention). Correspondingly, by applying this theoretical framework, the study aims to enhance our understanding of the factors driving tourists’ decisions to revisit the Kenyir Lake Nature Cruise.

**Literature Review**

***Stimulus Organism Response (SOR) Theory***

The SOR model originates from environmental psychology. According to this model, environmental factors serve as stimuli (S) that influence individuals’ behavioral responses (R) through their internal states (O) (Mehrabian, A., & Russell, 1974). In fact, the environment affects an individual’s cognitive and emotional processes, resulting in observable behavioral

outcomes (Chin *et al.*, 2022). In tourism research, the SOR Theory is applied to examine the relationships between factors such as destination reputation, place attachment (A. N. Li *et al.*, 2023), tourist satisfaction (Juliana *et al.*, 2022), and alternative destination search behavior (Zaitul *et al.*, 2022). Moreover, the application of SOR Theory enables researchers to understand the mechanisms underlying tourists’ behavioral patterns and decision-making processes in the context of travel and destination selection. According to Rajput and Gahfoor (2020) the SOR framework demonstrated the utility in investigating how physical environment quality influences customer emotions and subsequent behavioral responses.

**Research Framework Development**

The research framework for this study was adapted from the original SOR Theory to address the specific context of houseboat ecotourism experiences at Kenyir Lake. The adaptation involved reconceptualising the three core components of the SOR model:

- Stimulus (S): Operational as houseboat service performance, representing the environmental factors that influence tourist experiences.

- Organism (O): Conceptualised as green experience satisfaction, representing tourist cognitive and affective responses to environmentally sustainable service experiences.
- Responses (R): Defined as tourist revisit intention, representing the behavioral outcome resulting from the stimulus-organism interaction.

This theoretical adaptation was necessary to examine sustainable tourism experience in freshwater environments, where service

quality and environmental consciousness interact to influence tourist behavior patterns. The houseboat service performance constructs were adopted from Qu *et al.* (1999), green experience satisfaction measures from Wu *et al.* (2016), and tourist revisit intention scales from (Rasoolimanesh *et al.* (2022). These constructs were integrated within the adapted SOR theoretical framework to cluster the relationships between environmental stimuli (houseboat service performance), tourists' internal states (green experience satisfaction), and behavioral responses (revisit intention) within the context of Kenyir Lake's nature cruise tourism.

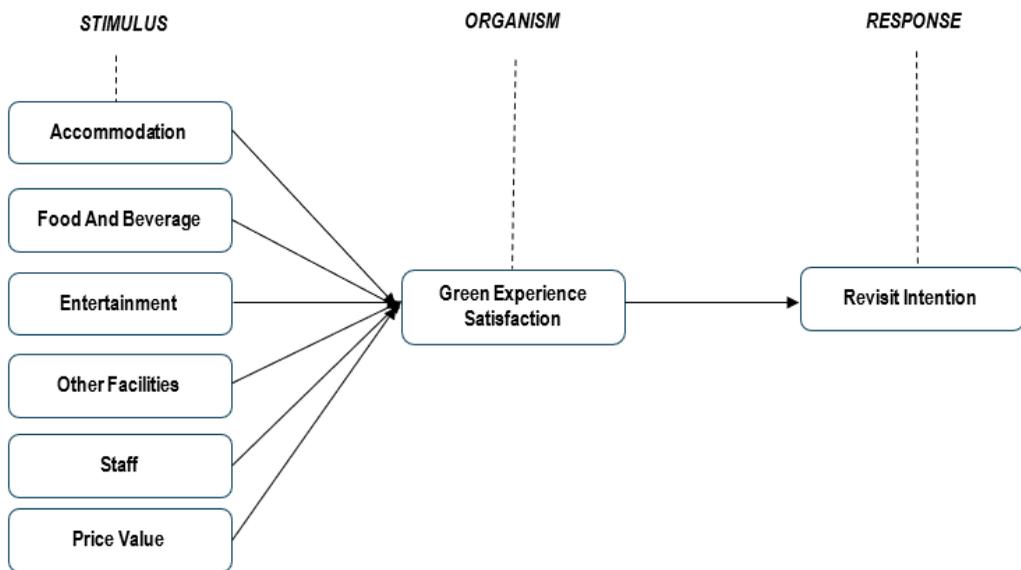


Figure 2: Research Framework  
Source: Author

**Tourist Revisit Intention**

In the context of tourism, revisit intention denotes the likelihood or willingness of a tourist to return to a specific destination for subsequent visits (Baker & Crompton, 2000). Revisit intention has emerged as a pivotal area of investigation within the tourism literature. Numerous scholars concur that returning visitors exhibit prolonged stays at their chosen destinations, engage more actively in wasteful

activities, report higher satisfaction levels, and contribute positively to word-of-mouth promotion. Repeat visitors represent a valuable asset to a tourism destination, generating significantly lower marketing costs compared to first-time visitors (Nguyen Viet *et al.*, 2020). Thus, understanding the revisit intention is crucial for sustainable tourism development and business profitability.

These intentions play a critical role in influencing the sustainability and success of a tourist destination. Notably, distinguished the intention to revisit a destination and the intention to recommend it. While travelers may express an intention to recommend a place to others, they often harbor no intention to revisit the same location (Constantin *et al.*, 2022). As stated by Hutchinson (2009), several empirical studies have documented a direct relationship between service quality and behavioral intentions. Thus, in this study, revisit intention is described as the affirmed likelihood of revisiting the houseboat at Kenyir Lake based on their satisfaction with houseboat quality services.

### ***Green Experience Satisfaction***

The concept of green experience satisfaction in the ecotourism context has been extensively explored, with each contribution offering a unique perspective on its definition and application. According to Li *et al.* (2024), green experience satisfaction refers to the emotional and cognitive evaluation of tourists toward the destination that emphasises environmental sustainability and conservation. The definition highlights the significance of aligning tourist experiences with eco-friendly practices, which enhance overall satisfaction. Similarly, Yu *et al.* (2017) defined it as the fulfillment derived from engaging in environmentally responsible activities during travel, such as wildlife conservation tourism or sustainable lodging services. These definitions highlight the dual focus of ecotourism, which is to provide memorable experiences while promoting environmental sustainability.

A study by Juliana *et al.* (2023) mentioned that tourists who reported high levels of green experience satisfaction were more likely to express the intention to revisit the destination. Meanwhile, Moise *et al.* (2021) reported that green experience satisfaction positively impacts destination loyalty. The findings suggest that ecotourism destinations that prioritise sustainable practices and deliver high-quality tend to services foster long-term tourist loyalty. The literature also emphasises that positive green experiences create lasting impressions,

encouraging repeat visits (Ha *et al.*, 2022). In this study context, the green experience satisfaction was designed to determine the behavioral intention of nature cruise customers towards the Kenyir Lake destination.

### ***Nature Cruise Service Performance***

The concept of nature cruise service performance in the context of ecotourism remains limited, including the commercial cruise (MacNeill & Wozniak, 2018). Cruise tourism refers to a form of travel where tourists experience the services, amenities, and activities on the cruise and visit multiple destinations on the journey (Liu *et al.*, 2020). The experience offers transportation, entertainment, dining, and leisure activities in a single experience. Cruise tourism is often characterised by its all-inclusive experience, offering passengers a variety of activities, including sightseeing, cultural, and adventure tours. Note that cruise tourism is defined as a luxurious and leisurely form of travel that involves traveling on a cruise ship to various destinations (Sandven *et al.*, 2024). The ship itself serves as both a means of transportation and a primary destination.

Cruise tourism has experienced significant growth in recent decades, emerging as a major segment of the global tourism industry. It appeals to a wide range of travelers from families and couples to solo adventurers and retirees due to its flexibility, variety, and the opportunity to visit multiple destinations in a single trip (Klein, 2011). However, the industry also faces challenges related to environmental sustainability, over-tourism at destination visits, and the need to balance economic benefits with ecological and social impacts (Radic *et al.*, 2020). In the context of this research, the focus differs slightly from commercial cruises available on the market, as the study focuses on a nature-based destination environment in a lake-based tourism context. The study defined the nature cruise service performance as the quality of services provided during the tour in a natural environment, emphasising environmental sustainability, wildlife conservation, and immersive nature experiences.

## Research Methodology

This study adopted a quantitative research design to address the proposed hypotheses and align with the research framework. As the unit of analysis was at the individual level, a self-administered survey questionnaire was employed as the primary instrument for data collection. The questionnaire consisted of two main sections. The first section captured demographic information, including age, gender, educational qualifications, occupation, and monthly income of the respondents. Meanwhile, the second section contained items measuring the variables of interest in this study, namely, the independent variables of nature cruise service quality and green experience satisfaction, as well as the dependent variable, tourist revisit intention.

Data collection was conducted at Kenyir Lake using a survey questionnaire. At the same time, a dual approach was employed, whereby the researchers distributed the questionnaire face-to-face and through houseboat operators to reach the target respondents. This approach ensured coverage of a diverse population relevant to the study's objectives. Due to the unavailability of a complete sampling frame, a purposive sampling technique was utilised to select participants. Moreover, the sample size was predetermined to be a minimum of 103 respondents, as determined by G\*Power analysis to achieve the desired statistical power for hypothesis testing. Of the collected responses, 463 were usable, while 50 responses were incomplete.

The study instruments were designed to measure the variables effectively. In particular, nature cruise service quality and tourist satisfaction, as independent variables, were measured on a five-point Likert scale, ranging from one (strongly disagree) to five (strongly agree). In contrast, tourist revisit intention, the dependent variable, was measured on a seven-point Likert scale, ranging from one (strongly disagree) to seven (strongly agree). The use of distinct Likert scales for the independent and dependent variables ensured clarity in differentiating between the constructs. In line

with this, the constructs and items for this study were adopted and adapted from validated scales in previous research to ensure content validity.

The data were analysed using Statistical Package for Social Sciences (SPSS) Version 26, employing various statistical techniques. Factor analysis was conducted to validate the constructs and ensure their dimensionality. The reliability of the measurement instruments was assessed using Cronbach's Alpha (CA). Additionally, mean value analysis was performed to summarise central tendencies, and k-means clustering was applied to segment the respondents into meaningful clusters based on their characteristics and responses. Overall, this comprehensive methodological approach provided robust and reliable results, contributing to a deeper understanding of tourist behavior in the context of nature cruise experiences at Kenyir Lake.

## Findings and Analysis

The demographic analysis of respondents ( $n = 463$ ) reveals key insights into their background characteristics. All the data of the respondents are summarised in Table 1. The sample population is predominantly male, representing 67.82% ( $n = 314$ ), while female respondents make up 32.18% ( $n = 149$ ). Notably, this imbalance may reflect travel preferences or roles in decision-making within households. The higher representation of male respondents could also indicate a cultural or social tendency where men participate in certain tourism activities or surveys more actively than women. Additionally, the age distribution reveals that the majority of respondents are within the younger age groups. Nearly half (46.87%,  $n = 217$ ) are aged 18 to 28, followed by 29.59% ( $n = 137$ ) in the 29 to 38 age group. Respondents aged 39 to 48 account for 14.69% ( $n = 68$ ), while the 49 to 58 age group represents 8.86% ( $n = 41$ ). The predominance of younger age groups suggests that the destination appeals primarily to millennials and younger travelers, who may prioritise leisure activities and social interactions over relaxation.

This finding aligns with global trends indicating higher travel engagement among younger populations. A substantial majority of respondents (79.05%,  $n = 366$ ) reported a monthly income of RM500.00 to RM1,500.00, suggesting a largely low-income group. Meanwhile, 18.14% ( $n = 84$ ) earn RM1,501.00 to RM2,500.00, and only 2.81% ( $n = 13$ ) have incomes between RM2,501.00 to RM3,500.00. This data indicates that the majority of tourists visiting the destination belong to economically modest backgrounds. In response, budget-conscious tourism products, such as affordable accommodations and activities, would be vital in attracting and satisfying this segment. The educational background of the respondents reveals that 53.35% ( $n = 247$ ) have secondary-level qualifications (SPM/STPM/High School), 12.53% ( $n = 58$ ) possess a diploma or certificate, and 29.16% ( $n = 135$ ) hold a bachelor's degree. However, advanced degrees are less common, with 2.16% ( $n = 10$ ) of respondents holding a master's degree and 2.81% ( $n = 13$ ) having a doctorate. This suggests that most respondents have a basic to moderate level of formal education, which may influence their travel preferences and decision-making processes.

The largest occupational group is self-employed individuals, comprising 50.32% ( $n = 233$ ). Students are the next significant group at 18.79% ( $n = 87$ ), followed by government employees at 16.63% ( $n = 77$ ). Private sector employees account for 5.40% ( $n = 25$ ), while business owners (7.13%,  $n = 33$ ) and housewives (1.73%,  $n = 8$ ) represent smaller segments. This distribution indicates a dominance of independent or flexible-income earners, which may influence

trip planning based on income variability and time availability. Furthermore, the respondents' travel characteristics provide insights into their preferences, including the length of stay, travel companions, and expenditure patterns. The majority of respondents prefer short trips, with 61.56% ( $n = 285$ ) staying for three days and two nights. Another 24.41% ( $n = 113$ ) stay for two days and one night. Only a small percentage (8.64%,  $n = 40$ ) opt for longer stays of four days or more, while day trips are the least common (5.40%,  $n = 25$ ).

These findings suggest that the destination is perceived as suitable for short getaways rather than extended vacations. Short-trip preferences could be attributed to limited budgets or time constraints. Family travel dominates this sample, with 57.02% ( $n = 264$ ) of respondents reporting traveling with family members. Travel for company incentive trips is also significant, accounting for 25.27% ( $n = 117$ ). Trips with friends are less common, comprising 17.71% ( $n = 82$ ). In particular, the high prevalence of family-oriented travel highlights the significance of providing family-friendly attractions, services, and accommodations. On the other hand, expenditure patterns reveal that most respondents (75.38%,  $n = 349$ ) spend between RM251.00 and RM400.00 on their trips. A smaller proportion (15.12%,  $n = 70$ ) report expenditures of RM100.00 to RM250.00, while 9.50% ( $n = 44$ ) spend RM401.00 to RM550.00. In essence, these findings indicate that most respondents are budget-conscious travelers, likely seeking value-for-money experiences. The availability of affordable tourism products is crucial for this segment.

Table 1: Demographic characteristics and respondents' background (N = 463)

Construct	Item	Frequency (n)	Percentage (%)
Gender	Male	314	67.82
	Female	149	32.18
	Total	463	100.00
Age	18-28	217	46.87
	29-38	137	29.59
	39-48	68	14.69
	49-58	41	8.86
Monthly income	RM500.00 - RM1,500.00	366	79.05
	RM1,501.00 - RM2,500.00	84	18.14
	RM2,501.00 - RM3,500.00	13	2.81
Level of education	SPM/STPM/High School	247	53.35
	Certificate/Diploma	58	12.53
	Bachelor's degree	135	29.16
	Master's degree	10	2.16
	PhD/Doctorate degree	13	2.81
Occupation	College/University student	87	18.79
	Government sector	77	16.63
	Private sector	25	5.40
	Business owner	33	7.13
	Self-employed	233	50.32
	Housewife	8	1.73
Length of stay	Daytrip	25	5.40
	2 days 1 night	113	24.41
	3 days 2 nights	285	61.56
	4 days and 3 nights above	40	8.64
Travel partner	Friends	82	17.71
	Family	264	57.02
	Company incentive trip	117	25.27
Trip expense	RM100.00 - RM250.00	70	15.12
	RM251.00 - RM400.00	349	75.38
	RM401.00-RM550.00	44	9.50

The data reveal that the Herbs Garden (380 visitors) is the most visited attraction, followed closely by Lasir Waterfall (354 visitors) and Saok Waterfall (347 visitors). These three sites collectively explain a significant amount of tourist activity at Kenyir Lake, highlighting the strong appeal of natural and serene environments,

particularly gardens and waterfalls. The popularity of these sites could be attributed to their accessibility, scenic beauty, and suitability for relaxation and leisure activities. Waterfalls, in particular, are known for their appeal to nature enthusiasts and photographers, which may explain their high visitor numbers.

Other attractions that garnered moderate attention include the Orchid Garden (328 visitors), Fishing Spot (129 visitors), and Kelah Fish Sanctuary (134 visitors). These attractions likely appeal to specific niches of tourists, such as those interested in botany, angling, and wildlife experiences. Their relatively high visitor numbers underscore their role as secondary attractions that complement the main hotspots. Similarly, several attractions received significantly fewer visitors, including the Butterfly Park (90 visitors), Melunak Tree Hiking (57 visitors), Bewah Cave (26 visitors), Elephant Village (72 visitors), and Taat Cave (33 visitors). Considering their popularity, sites such as the Herbs Garden, Lasir Waterfall, and Saok

Waterfall should be prioritised for maintenance and enhancement.

Investing in infrastructure, such as viewing platforms, eco-friendly pathways, and interpretive signage, can further improve the visitor experience while preserving the natural environment. The relatively low visitor numbers at attractions such as the Butterfly Park, Bewah Cave, and Melunak Tree Hiking highlight the need for targeted promotional efforts. Thus, marketing campaigns could emphasise these sites' unique features, such as biodiversity or adventurous experiences, to attract specific tourist segments such as ecotourists or adventure enthusiasts. Offering guided tours, adventure packages, or educational programs could also boost their appeal.

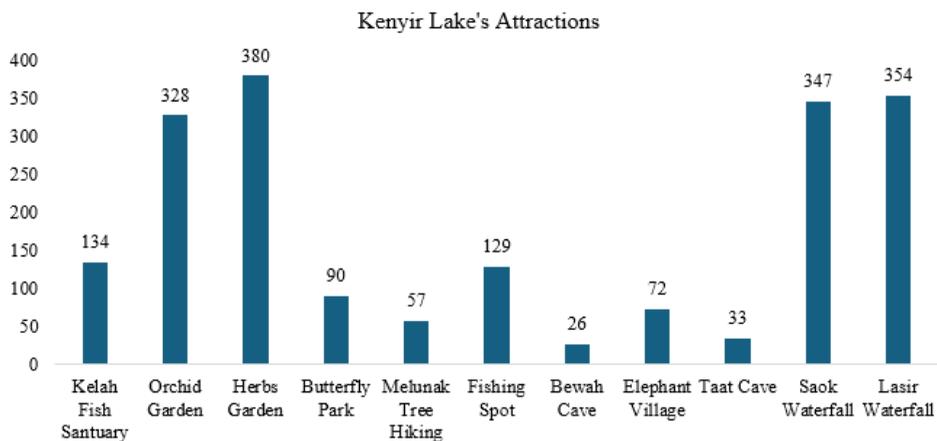


Figure 3: Frequencies of tourists who visited Kenyir Lake's attractions

The Nature Cruise Service Performance evaluates tourist satisfaction through five primary dimensions: Accommodation, Food and Beverage, Entertainment, Other Facilities, and Staff, along with the overarching construct of Price Value. Note that each dimension is assessed based on loading values, mean values, and CA, providing a comprehensive understanding of the factors influencing service quality and overall satisfaction. The findings highlight key strengths and areas for improvement, offering valuable insights into the dynamics of tourist experiences in eco-cruise settings. Conversely,

the Accommodation dimension exhibits high internal consistency (CA = 0.923) and demonstrates positive satisfaction across all constructs, with mean values ranging from 4.00 to 4.20. Among the constructs, Room Atmosphere and Comfort (4.19) and Room Services (4.20) emerged as the strongest contributors to satisfaction, emphasising the importance of comfort, cleanliness, and adequate services in meeting tourist expectations. These results align with prior research that underscores the critical role of accommodation quality in shaping the overall travel experience.

Similarly, the Food and Beverage dimension also demonstrates strong reliability (CA = 0.923) and consistently high satisfaction levels. The constructs related to the Quality of Services (4.30) and the Variety of Menu (4.28) achieved the highest mean scores, reflecting tourists' preferences for diverse and high-quality culinary experiences. These findings support the notion that food services play a pivotal role in enhancing the perceived value of eco-travel packages, particularly in nature-based tourism settings. Moreover, the Entertainment dimension demonstrates satisfactory reliability (CA = 0.857) and positive satisfaction ratings across its constructs. Organisation (4.35) and Karaoke (4.34) received the highest scores, indicating that well-structured and engaging activities are central to a memorable travel experience. In contrast, Movies scored the lowest mean value (4.28) within this category, suggesting potential for improvement in diversifying or enhancing entertainment options to cater to broader tourist preferences. Other Facilities, with a CA of 0.817, reflects moderate reliability and mixed performance across its constructs. While the Power Supply (4.45) and Living Hall (4.26) were positively rated, the Bathroom construct scored the lowest mean value (4.12).

These findings underscore the need for targeted improvements in sanitation and bathroom facilities, as these amenities are essential to providing a satisfactory guest experience. Note that addressing these concerns could significantly contribute to enhancing the perceived quality of the overall travel package. The Staff dimension, although achieving high mean scores, recorded the lowest reliability among all dimensions (CA = 0.637). Constructs such as Problem Handling Skills (4.89) and Helpfulness (4.85) were particularly strong, demonstrating the importance of courteous and well-trained staff in enhancing tourist satisfaction. However, the lower reliability score suggests potential inconsistencies in staff performance, highlighting an area for managerial attention. Thus, ensuring consistent training and monitoring of staff performance could help address these challenges and enhance

overall satisfaction. The Price Value construct performed exceptionally well, with a high reliability score (CA = 0.882) and strong mean values across all constructs. The perception that the eco-travel package offers value for money (4.62) and is economical (4.81) highlights the critical role of affordability and perceived value in influencing tourists' satisfaction.

The Green Experiential Satisfaction construct, with a CA of 0.721, suggests moderate internal consistency. The mean values for its items range from 4.50 to 4.73, indicating overall positive experiences among tourists. The highest-rated item, "Today is really a nice day" (4.73), highlights the significance of the immediate and pleasant experiences of tourists in the eco-destination. Additionally, items such as "This eco-friendly destination goes beyond my expectations" (4.68) and "I feel that I have contributed to environmental protection and sustainable development" (4.69) underscore the role of sustainability and personal contribution in enhancing experiential satisfaction. These findings align with previous research emphasising the importance of aligning ecotourism offerings with tourists' environmental values and expectations. Notably, the lower CA value indicates potential variability in responses, suggesting that individual perceptions of green experiential satisfaction may differ based on specific aspects of their visit.

These findings align with previous studies that emphasise the significance of perceived value as a key driver of customer satisfaction in tourism and hospitality contexts. Overall, the Nature Cruise Service Quality Model demonstrates that tourist satisfaction is driven by a combination of tangible and intangible factors, with Accommodation, Food and Beverage, and Price Value emerging as the strongest contributors. While the findings highlight several areas of strength, such as room atmosphere, food quality, and affordability, they also identify opportunities for improvement in dimensions such as Staff and Other Facilities. Hence, addressing these gaps through targeted enhancements in sanitation, entertainment, and staff consistency could significantly enhance

the overall tourist experience. Building on this, these results provide valuable insights for ecotourism providers seeking to align their offerings with the expectations of their target audience. As such, by focusing on the identified

strengths and addressing areas for improvement, destination managers can better position their services to meet the evolving demands of eco-cruise travelers. This ultimately fosters higher levels of satisfaction and loyalty among tourists.

Table 2: Validity and reliability analysis for nature cruise service quality

No.	Construct/Item	Loading Value	Mean Value	CA
<b>Accommodation</b>			<b>4.15</b>	<b>0.923</b>
1	Room Space	0.836	4.11	
2	Room Facilities	0.770	4.10	
3	Room Cleanliness	0.907	4.13	
4	Room Services	0.935	4.2	
5	Room Atmosphere and Comfort	0.936	4.19	
6	Overall Satisfaction	0.931	4.18	
<b>Food And Beverage</b>			<b>4.33</b>	<b>0.923</b>
7	Variety menu	0.931	4.28	
8	Quality of F&B	0.899	4.29	
9	Quality of Services	0.944	4.30	
10	Seating Space	0.927	4.37	
11	Atmosphere and Comfort	0.915	4.37	
12	Cleanliness	0.971	4.31	
13	Overall Satisfaction	0.967	4.42	
<b>Entertainment</b>			<b>4.30</b>	<b>0.857</b>
14	Variety	0.909	4.19	
15	Attractiveness	0.946	4.28	
16	Organisation	0.954	4.35	
17	Karaoke	0.929	4.34	
18	Movies	0.885	4.28	
19	Overall Satisfaction	0.927	4.37	
<b>Other Facilities</b>			<b>4.28</b>	<b>0.817</b>
20	Kitchen	0.908	4.14	
21	Bathroom	0.813	4.12	
22	Living Hall	0.947	4.26	
23	Power Supply	0.962	4.45	
24	Cleanliness	0.891	4.43	
<b>Staff</b>			<b>4.67</b>	<b>0.637</b>
25	Courtesy	0.896	4.69	
26	Neatness	0.926	4.17	

27	Communication	0.941	4.76	
28	Helpfulness	0.967	4.85	
29	Problem Handling Skill	0.867	4.89	
<b>Price Value</b>			<b>4.67</b>	<b>0.882</b>
30	This eco-travel package is reasonably priced	0.943	4.62	
31	This eco-travel package offers value for money	0.944	4.58	
32	This eco-travel package is a good product for the price	0.989	4.69	
33	This eco-travel package would be economical	0.935	4.81	
<b>Green Experiential Satisfaction</b>			<b>4.65</b>	<b>0.721</b>
34	This destination goes beyond my expectations	0.974	4.68	
35	Today is really a nice day	0.920	4.73	
36	It is worthwhile to stay in this green destination	0.870	4.50	
37	I feel that I have contributed to environmental protection and sustainable development	0.869	4.69	

Revisit intention emerges as a highly robust construct, with a CA of 0.965 and exceptionally high mean values ranging from 6.14 to 6.22. The highest-rated item, “The likelihood of my return to this nature site for another holiday experience” (6.22), signifies a strong inclination among tourists to revisit the destination. Similarly, items such as “If given the opportunity, I would return to this place” (6.14) and “I will return to this place” (6.14) indicate a consistent and strong intent to return, highlighting the destination’s ability to foster loyalty among its visitors. These results suggest that positive eco-experiences have a significant influence on tourists’ future behavioral intentions, with sustainability and satisfaction playing key roles in fostering repeat visits.

The findings demonstrate a strong linkage between experiential satisfaction and revisit intention, reinforcing the significance of delivering a high-quality ecotourism experience that integrates environmental sustainability with positive emotional and functional outcomes. From a managerial perspective, these results suggest that enhancing the perceived value of eco-destinations through innovative green initiatives, effective communication of sustainability practices, and creating meaningful guest experiences can significantly strengthen revisit intentions. Furthermore, the high reliability of the Revisit Intention construct underscores the importance of targeting return tourists, who are likely to serve as ambassadors for the destination through word-of-mouth and positive recommendations.

Table 3: Validity and reliability analysis for revisit intention

No.	Construct/Item	Loading Value	Mean Value	CA
<b>Revisit Intention</b>			<b>6.17</b>	<b>0.965</b>
38	If given the opportunity, I would return to this place	0.941	6.14	
39	I will return to this place.	0.925	6.14	
40	The likelihood of my return to this nature site for another holiday experience	0.858	6.22	

The first cluster, identified as the High-Satisfaction Segment, comprises 89 respondents (19.2% of the sample). Respondents in this cluster expressed the highest satisfaction across almost all dimensions, including room space (4.58), cleanliness (4.60), variety of food and beverages (4.78), and quality of services (5.00). Particularly high satisfaction is observed in the attractiveness of the destination and the eco-friendly nature of the package, both scoring a perfect 5.00. The staff's problem-handling skills also received the highest rating of 5.00. In addition, these respondents strongly agreed (5.00) that they contributed to environmental protection and sustainable development during their stay. This cluster represents highly satisfied customers who perceive the nature cruise package as exceeding their expectations in value, service quality, and environmental contributions.

The second cluster, labeled the Moderate-Satisfaction Segment, includes 232 respondents (50.1% of the sample). Satisfaction scores in this cluster are consistently moderate, with most ratings at 4.00. Slightly higher scores are noted in areas such as variety of food and beverage (4.23) and communication of staff (4.23). Conversely, the lowest scores in this cluster are associated with the value for money aspect of the package, indicating room for improvement. While respondents agree that the destination is eco-friendly, their perception of sustainability is lower compared to Cluster 1 (4.61). While this cluster represents customers who are generally satisfied, they do not exhibit the same level of enthusiasm as those in Cluster 1. Correspondingly, enhancing perceived value and pricing could improve their satisfaction.

The third cluster, referred to as the Value-

Oriented Segment, consists of 142 respondents (30.7% of the sample). Respondents in this cluster prioritise value for money and reasonableness of pricing, with these aspects receiving the highest score (4.84). Similar to Cluster 2, satisfaction scores are generally moderate yet slightly higher in areas such as room facilities (4.42) and staff helpfulness (4.47). Nonetheless, ratings for entertainment options and overall experience are lower, averaging around 4.00. The perception of contributing to environmental protection and sustainable development is also lower (4.13) compared to other clusters. This cluster includes customers who value affordability and practical benefits. Their experience could be enhanced by offering more entertainment and emphasising the eco-friendly aspects of the package.

Overall, the distribution of cluster sizes indicates that the Moderate-Satisfaction Segment (Cluster 2) represents the largest proportion of respondents, highlighting a need to focus on converting these customers into high-satisfaction advocates. Notably, high ratings for staff courtesy, cleanliness, and problem-handling skills are consistent strengths of the nature cruise package across all clusters. Nevertheless, while Cluster 1 highly values eco-friendly aspects, Clusters 2 and 3 demonstrate a lower perception of sustainability contributions. A greater emphasis on communicating the environmental benefits could enhance these scores. Additionally, scores for entertainment facilities such as karaoke and movies are consistently low across clusters, indicating a potential area for improvement. However, pricing and perceived value remain critical differentiators for Clusters 2 and 3, suggesting the importance of transparent pricing strategies and package customisation.

Table 4: Cluster segmentation for nature service quality and green satisfaction

Item	Clusters means		
	1 High	2 Moderate	3 Low
Room space	4.58	4.00	4.00
Room facilities	4.49	4.00	4.00
Room cleanliness	4.60	4.00	4.06
Room services	4.60	4.00	4.28
Room atmosphere and comfort	4.70	4.00	4.19
Overall satisfaction with accommodation	4.70	4.00	4.15
Variety menu	4.73	4.00	4.45
Quality of F&B	4.80	4.00	4.44
Quality of services	5.00	4.00	4.35
Seating space	4.80	4.00	4.70
Atmosphere and comfort	5.00	4.00	4.58
Cleanliness	4.80	4.00	4.51
Overall satisfaction with food and beverage	5.00	4.00	4.73
Variety	4.53	4.00	4.28
Attractiveness	5.00	4.00	4.30
Organisation	5.00	4.00	4.50
Karaoke	5.00	4.00	4.47
Movies	4.80	4.00	4.41
Overall satisfaction with entertainment	4.80	4.00	4.70
Kitchen	4.60	4.00	4.09
Bathroom	4.49	4.00	4.09
Living hall	5.00	4.00	4.22
Power supply	5.00	4.00	4.83
Cleanliness	4.80	4.00	4.89
Courtesy of the staff	4.53	5.00	4.30
Neatness of staff	4.80	4.00	4.06
Communication of staff	4.73	5.00	4.37
Helpfulness of staff	5.00	5.00	4.50
Problem-handling skills of staff	5.00	5.00	4.63
This eco-travel package is reasonably priced	4.70	4.84	4.19
This eco-travel package offers value for money	4.63	4.84	4.13
This eco-travel package is a good product for the price	4.73	4.84	4.41
This eco-travel package would be economical	5.00	4.84	4.63
This eco-friendly destination goes beyond my expectations	4.80	5.00	4.06
Today is really a nice day	5.00	5.00	4.13
It is worthwhile to stay in this green destination	4.80	4.61	4.13

I feel that I have contributed to environmental protection and sustainable development	5.00	4.61	4.63
Number of N in each cluster	89	232	142
<b>Valid</b>		<b>463</b>	

The data presented in Table 5 provides an analysis of revisit intentions segmented into three clusters based on their mean scores. This clustering reflects varying levels of revisit likelihood among respondents, with the clusters categorised as follows: Cluster 1 represents respondents who are highly likely to revisit. The mean scores for all variables are close to the maximum possible value of 7, indicating strong agreement. Specifically, the scores are 7.00 for “If given the opportunity, I would return to this place”, 6.87 for “I will return to this place”, and 7.00 for “The likelihood of my return to this nature site for another holiday experience”. This group consists of 140 respondents, accounting for 30.2% of the total sample. In essence, these results suggest that individuals in this cluster are highly satisfied with their experience and are very motivated to revisit the site in the future.

Cluster 2 represents respondents with the lowest scores for revisit intention. The mean scores for all variables are 4.00, reflecting minimal interest in returning to the site. With only one respondent in this cluster, it represents an outlier group. This highlights the significance of understanding unique or negative feedback to address potential areas for improvement. Moreover, Cluster 3 displays moderate levels of revisit intention, with mean scores lower than Cluster 1 yet higher than Cluster 2. The scores are 5.77 for “If given the opportunity, I would

return to this place”, 5.83 for “I will return to this place”, and 5.90 for “The likelihood of my return to this nature site for another holiday experience”. This cluster includes 322 respondents, accounting for 69.5% of the total sample. In other words, these individuals are somewhat likely to revisit, though they may have reservations or unmet expectations compared to Cluster 1.

Overall, the majority of respondents fall into Clusters 1 and 3, indicating an overall positive revisit intention for the nature site. The segmentation emphasises varying levels of satisfaction and motivation, which could guide targeted marketing strategies or site improvements. Furthermore, the presence of a single outlier in Cluster 2 further highlights the need to investigate specific issues to enhance satisfaction. In terms of implications for management, Cluster 1 respondents can be engaged by leveraging their enthusiasm through personalised communication, rewards programs, or exclusive offers. For Cluster 2, it is crucial to investigate the reasons behind their low satisfaction and address those issues. For Cluster 3, understanding their moderate scores and implementing strategies to convert them into loyal visitors, similar to Cluster 1, can prove beneficial. Overall, this analysis underscores the importance of tailored strategies to enhance overall revisit intentions and ensure sustained interest in the natural site.

Table 5: Cluster segmentation for revisit Intention

Item	Clusters Means		
	1 High	2 Low	3 Moderate
If given the opportunity, I would return to this place	7.00	4.00	5.77
I will return to this place	6.87	4.00	5.83
The likelihood of my return to this nature site for another holiday experience	7.00	4.00	5.90
Number of N in each cluster	140	1	322
<b>Valid</b>	<b>463</b>		

**Discussion**

The study offers valuable insights into the dynamic relationship between the nature cruise service performance, green satisfaction, and revisit intention in ecotourism, with a focus on nature cruise experiences at Kenyir Lake. The findings confirm that the sustainability and success of ecotourism destinations rely heavily on delivering high-quality tourist experiences. This highlights the same result obtained by Kusumah (2024), who emphasised that positive service encounters are key drivers of tourist satisfaction and revisit intention in natural heritage settings.

By applying the SOR Theory, this research demonstrates how external factors, such as accommodation quality, food and beverage services, entertainment options, and overall service delivery influence tourists’ psychological state (satisfaction), which in turn influences revisit intention. The findings are consistent with those of Juliana *et al.* (2022), who reported that memorable service experience predicts satisfaction and behavioral intentions. Unlike many previous studies that have focused primarily on service delivery experiences, such as accommodation and natural scenery, this study highlights the additional importance of entertainment on a cruise that could enhance satisfaction.

Green experience satisfaction in this study was primarily shaped by tangible elements (comfort, cleanliness, food quality, and affordability), aligning with (J. Wang *et al.*,

2023). The study noted that perceived product quality and price fairness are essential in forming satisfaction and revisit intention. Additionally, the importance of intangible factors such as staff courtesy, problem-solving abilities, and communication is effectively supported by the findings of S. Wang *et al.* (2023). The authors identified these elements as critical contributors to positive tourist evaluations. Similarly, our study identifies sanitation, entertainment variety, and staff training as areas for improvement, aligned with (Foster & Sidharta, 2019), who emphasised that addressing the service shortfall could significantly enhance visitor satisfaction and revisit intentions.

Although tourist generally appreciate the eco-friendly practices at Kenyir Lake, their level of environmental awareness remains moderate. This contrasts with Ramkissoon *et al.* (2013), who revealed that environmental interpretation and visitor education significantly enhanced satisfaction and pro-environmental behavior. Therefore, increasing visitors’ awareness of sustainable practices could further enhance their experiences.

Cluster analysis in this study reveals diverse tourist segments, ranging from highly satisfied to moderately satisfied and value-conscious, which aligns with Chow *et al.* (2019). The study identified multiple satisfaction segments among ecotourists and recommended tailored marketing. Managers should maintain high service standards and provide personalised

communication to highly satisfied segments, while increasing perceived value and addressing unmet expectations for other segments to foster revisit intention.

From management perspectives, this study highlights the importance of aligning service quality with ecotourists' evolving expectations. Similar recommendations were offered by Ashraf *et al.* (2020), who urged continuous service improvement in eco-friendly infrastructure, staff development, and innovative green initiatives to strengthen long-term destination appeal.

In conclusion, the study contributes to the ecotourism literature by confirming that both tangible and intangible service elements play vital roles in shaping tourist satisfaction and revisit intention. Thus, addressing identified weaknesses while leveraging strengths can help ecotourism destinations, such as Kenyir Lake, deliver memorable, sustainable experiences that encourage repeat visits and support conservation. Nevertheless, future research could explore the long-term effects of revisit intention on sustainability outcomes and investigate strategies for deepening tourist engagement with environmental sustainability.

### Acknowledgements

The authors would like to thank Universiti Malaysia Terengganu (UMT) for the research funding (UMT/TAPE-RG-2022/55403) and express their deepest appreciation to all the respondents who devoted their time and effort to completing the surveys. The authors would also like to extend gratitude to KETENGAH Tourism Unit, local tourism industry players, and the community for their participation and outstanding assistance during the data collection process and site visit in Kenyir.

### Conflict of Interest Statement

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts, and declare the absence of conflicting interests with the funders.

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