



PLANNING MALAYSIA:

Journal of the Malaysian Institute of Planners

VOLUME 23 ISSUE 5 (2025), Page 65 – 80

UNLOCKING ECOTOURISM'S POTENTIAL WITH EXPLORING THE NEXUS OF MOTIVATION, SATISFACTION, AND SUSTAINABLE LOYALTY IN BIOSPHERE RESERVED, PENANG HILL, PENANG, MALAYSIA ECOTOURISM: A TOURIST-CENTRIC PERSPECTIVE

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Abstract

Ecotourism holds immense potential for promoting sustainable development and conservation efforts, making it imperative to explore the underlying factors that drive Pull-external motivation factors and tourist loyalty within this context. Drawing upon a tourist-centric approach, this study investigates the mediating role of tourist satisfaction in the relationship between motivation and sustainable tourism loyalty. This study utilizes a quantitative research methodology to investigate the complex interplay of ecotourism dynamics within the Penang Hill area and its implications for promoting responsible travel and environmental conservation. Utilizing survey data collected from tourists visiting Biosphere Reserved, Penang Hill, statistical analyses, including PLS-SEM employed to analyze the interrelationships among motivation, satisfaction, and sustainable loyalty. Exploring the Pull external motivational factors, such as Nature appreciation, Cultural Heritage, and Recreational factors driving tourists to Biosphere Reserve in Penang Hill ecotourism sites and identifying the components that foster satisfaction, consequently increasing the likelihood of tourists expressing an intention to revisit this ecotourism destination. The findings of this study are expected to provide valuable insights into the mechanisms driving tourist behaviors in ecotourism settings, drawing upon UNESCO's MAB program, thus contributing to the development of effective management strategies for promoting sustainable tourism practices and enhancing visitor experiences at the Biosphere Reserved, Penang Hill ecotourism site. Moreover, the study's contributions extend to the broader discourse on sustainable tourism practices, emphasizing the importance of aligning tourism activities.

Keywords: Pull-external Factors, Motivation, Satisfaction, Sustainable Loyalty, Penang Hill, Ecotourism

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This study aims to explore the nexus of motivation, satisfaction, and sustainable loyalty among tourists visiting the Penang Hill Biosphere Reserve. Specifically, it examines how external pull factors—such as nature appreciation, cultural heritage, and recreational opportunities—influence tourist satisfaction and their subsequent loyalty to the destination. Therefore, ecotourism activities require full consideration of nature and save environmental sustainability (Mukrimah et al., 2015). By focusing on the tourist perspective, this research seeks to contribute to the development of strategies that enhance visitor experiences while promoting sustainable tourism practices.

LITERATURE REVIEW

Ecotourism and Sustainable Development

Generally, ecotourism is defined as a form of tourism that integrates natural resources, rural lifestyles, culture, and local economic activities (Fennell, 2001). Ecotourism, as defined by the International Ecotourism Society (TIES), involves responsible travel to natural areas that conserve the environment and improve the well-being of local people. Sustainable development in ecotourism focuses on balancing environmental conservation with economic benefits and community involvement (TIES, 2015).

On the other hand, there is doubt that ecotourism can make tangible contributions to deliver benefits for the local communities besides conservation (Hunt et al., 2015). According to Riho and Brian (2021) discussions, ecotourism can revitalize the local community by having beneficial economic influences on local businesses and enterprises. Moreover, ecotourism can contribute to the preservation of the nature and environment by raising tourists' concerning environmental conservation (Font et al., 2003). the ecotourism goal is to conserve the existing resources, preserve the environment, bring economic benefits to the destination, and remain sustainable (Mendoza-Ramos & Prideaux, 2018). Ecotourism sites are required to carefully operate and plan their tourism activities, especially if they include local participation (Kiper, 2013). Ecotourism has its principles and those who participate in these activities should adopt some primary and essential notice as follows: respect nature and minimize impacts social, physical, behavioral, and psychological), provide direct financial benefits for both local and industry, cultural awareness, and deliver memorable experiences (Lew, 1998; TIES, 2015). It is important to determine how beneficial is ecotourism in the region socially, economically, and environmentally.

Pull-external Motivation in Ecotourism

Pull-external Factors and Tourist Satisfaction

By aligning ecotourism offerings with tourists' motivations, destinations can enhance visitor satisfaction, promote responsible behavior, and contribute to the

conservation of natural and cultural resources (Suhartanto et al., 2020). According to previous scholars, tourism motivations are generally categorized into push and pull factors (Xu & Chan, 2016; Yuan & McDonald, 1990). In particular, push factors are stimulators that drive people to travel who are considered tourists, while pull factors expedite the choice of destination associated with its attributes (Uysal & Jurowski, 1994). Thus, motivations reflect the individual's intrinsic and extrinsic travel needs and wants (Dayour & Adongo, 2015). Therefore, tourist motivation in ecotourism can be driven by various factors, categorized into push and pull factors. Push factors are internal desires prompting a person to travel, while pull factors are external attributes of a destination that attract tourists. This study focuses on pull-external factors such as the natural environment, cultural heritage, and recreational activities.

Many individuals are motivated by the need for relaxation and escape from the stresses of everyday life (Smith, 1993). The recreational factor in ecotourism is a significant pull-external factor that attracts tourists to natural and ecologically sensitive areas (Dmitriyev et al., 2021). By capitalizing on recreational aspects such as nature-based activities, scenic beauty, adventure, health and wellness offerings, local cuisine, and shopping experience as motivation factors, ecotourism destinations can engage and satisfy the diverse interests and desires of tourists while promoting sustainable practices and environmental conservation (Chan & Saikim, 2021).

One of the primary external pull factors in ecotourism is the presence of natural attractions at the destination (Lin, 2019). These include unique landscapes, biodiversity hotspots, rare or endemic species, pristine beaches, waterfalls, caves, and other natural wonders (Abdullah et al., 2018). The appeal of these natural attractions motivates individuals to visit ecotourism destinations to witness and experience the beauty and grandeur of the natural environment (Haukeland et al., 2010).

The cultural and heritage value of a destination can also serve as a significant pull factor in ecotourism (Kiper, 2013). The blend of natural beauty and cultural richness creates a unique and compelling appeal for tourists. This combination allows visitors to not only enjoy the natural environment but also engage with the local traditions, history, and customs, enriching their overall travel experience (Barna et al., 2011; Su et al., 2020). According to Khoshtaria and Chachava (2017) findings, protection of natural diversity and prospects of cultural, and heritage value in tourism and supports interests of local communities, in terms of ecotourism promotion creates a positive environment with new capabilities.

Consequently, the first hypothesis in this research is proposed as follows:

H1: Pull-external motivation factors have a direct effect on tourist satisfaction.

Pull-external Factors and Sustainable Tourist Loyalty

According to the Salleh-Mukri and Shuhaida (2021), UNESCO's Man and the Biosphere (MAB) Program is a global initiative designed to advance sustainable development and conserve natural and cultural resources within designated biosphere reserves. Ecotourism as a sub-sector of sustainable tourism (Sarhan et al., 2016) includes visiting the natural and cultural regions to obtain knowledge or discover environmental-friendly activities (Salman et al., 2022), understanding natural surroundings and landscape, such as flora and fauna, and cultural heritage to provide nature-based experience besides social-economic growth (Kiper, 2013). According to the existing scholars, ecotourism includes the main goals as follows: It should be nature-based, focus on learning, and based on the practices and values linked with environmental, cultural, and economic sustainability (Morgera & Razzaque, 2017; Trouwborst, 2009; Walter, 2013). On the other hand, the concern of environmental sustainability in ecotourism is a long-term maintenance process (Huang & Liu, 2017). Ecotourism operators are suggested to promote ecological facilities such as the green path to motivate tourists while they should consider tourists' convenience as well (Lin, 2019).

Sustainable loyalty refers to a tourist's intention to revisit a destination and recommend it to others, influenced by their satisfaction with previous experiences. In ecotourism, fostering sustainable loyalty is crucial for maintaining visitor numbers while ensuring that tourism practices do not compromise environmental and cultural resources (Carvache-Franco, Contreras-Moscol, et al., 2022). The pull-external motivation factors towards this kind of tourism destination in existing literature have been explained as the cultural and heritage identity of the place (Zhang & Walsh, 2021), nature beauty, and habitat, besides comfortable and convenient leisure services and facilities (Beh & Bruyere, 2007; Moscardo et al., 1996; Wang, 2004). Therefore, the second hypothesis was proposed to investigate this relationship:

H2: Pull-external motivation factors have a direct effect on tourist loyalty.

Tourist Satisfaction and Sustainable Tourist Loyalty

According to the existing literature, satisfied tourists are more likely to develop positive attitudes, emotions, and intentions toward the destination. When tourists' expectations are met or exceeded, they feel a sense of fulfillment and contentment, leading to a higher likelihood of repeat visits (Suhartanto et al., 2020). Chi et al. (2020) examined the relationship between tourist satisfaction and loyalty in the context of nature-based tourism and confirmed a positive association, highlighting those higher levels of satisfaction lead to increased

loyalty intentions and behaviors. The findings from previous studies revealed that tourist satisfaction mediates the relationship between motivation and loyalty, suggesting that satisfaction acts as a crucial mechanism through which motivation factor influences loyalty (Hermawan et al., 2019). Understanding and enhancing tourist satisfaction is crucial for destination managers and tourism operators in ecotourism sites such as Biosphere Reserves in Penang Hill as it plays a vital role in fostering sustainable loyalty, attracting repeat visitors, and creating a positive reputation for the destination (Hermawan et al., 2019; Pham & Chen, 2015).

H3: Tourist satisfaction has a direct effect on tourist loyalty.

Mediating Role of Tourist Satisfaction

Tourist satisfaction is a key indicator of the quality of the visitor experience and a critical determinant of repeat visitation and positive word-of-mouth (Yoon & Uysal, 2005). When tourists have satisfying experiences that meet or exceed their expectations in terms of the natural surroundings, cultural immersion, recreational offerings, and opportunities for food and shopping, they tend to form a stronger emotional bond with the destination (Fenitra et al., 2022). This emotional attachment cultivates sustainable loyalty, instilling a desire to continue engaging with the destination like Penang Hill ecotourism over time (Carvache-Franco, Carvache-Franco, et al., 2022). On the other hand, tourists' perception of the environmental attributes and their satisfaction with the level of environmental protection and sustainability practices significantly impact their overall satisfaction (Zulvianti et al., 2022).

Therefore, the following hypothesis is proposed in this research to examine the indirect and mediating effects of tourist satisfaction between Pull-external motivation factors and tourist loyalty:

H4: Tourist satisfaction mediates the relationship between Pull-external motivation factors and tourist loyalty.

Underpinning Theory

Self-Determination Theory (SDT) is extensively used to examine factors that drive or hinder human behaviors (Ryan & Deci, 2017). SDT has been widely applied in various fields, including tourism and ecotourism, to understand tourists' motivations and satisfaction (Dodds et al., 2022). Self-Determination Theory (SDT) is chosen for the study of Penang Hill ecotourism due to its relevance to the ecotourism context, its emphasis on intrinsic motivation and psychological well-being, and its potential to offer valuable insights into tourists' motivation factors and their relationship with satisfaction and loyalty (Buzinde, 2020). Applying SDT can help researchers and destination managers understand

the underlying psychological processes and develop strategies to promote sustainable and satisfying ecotourism experiences at Penang Hill. Therefore, in the context of Penang Hill ecotourism, researchers can explore how tourists' satisfaction and engagement with the natural environment, cultural experiences, and sustainable practices contribute to their psychological well-being and intention to revisit (Vaghefi, 2019).

Based on the above literature and discussion, an initial framework is proposed (see Figure 1).

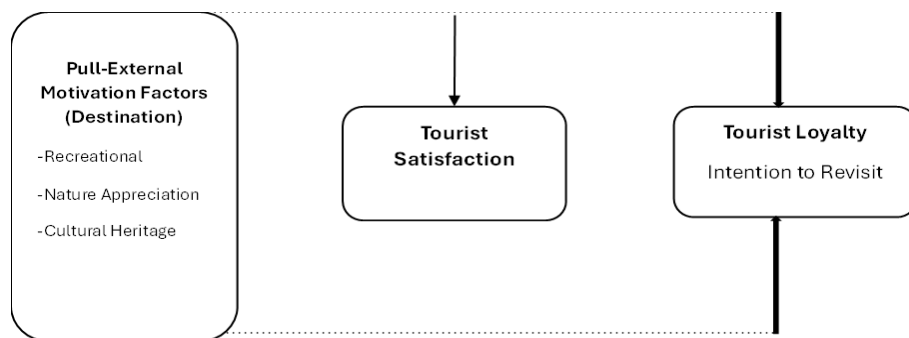


Figure 2: Research Framework

RESEARCH METHODOLOGY

Research Design and Data Collection

This study employs a quantitative research design using survey data collected from tourists visiting the Penang Hill Biosphere Reserve. The survey instrument includes measures of motivation, satisfaction, and loyalty, with items adapted from established scales in tourism research. In this study, a causal research design has been employed using a cross-sectional sample survey (Kazi & Khalid, 2012).

Data were collected from a sample of 505 tourists through a structured questionnaire administered on-site at various points within the Penang Hill Biosphere Reserve (Pallant, 2013; Westland, 2010). The questionnaire included sections on demographic information, pull-external motivation factors, satisfaction levels, and loyalty intentions, developed using a 7-point Likert scale, to achieve the research objectives.

Convenience sampling is employed in this study which is the most suggested technique in existing tourism literature which is not truly representative of the tourist population in Biosphere Reserve Penang Hill in general and in Habitat sites particularly (Preacher & Hayes, 2008; Sharma, 2017).

ANALYSIS AND DISCUSSION

Data Analysis

As recommended by Hair et al. (2014), content validity was confirmed before testing the theory. To establish validity, the significance and magnitude of factor loadings were examined. Furthermore, the Average Variance Extracted (AVE) was calculated to ensure that the measurement variables adequately represented the related constructs. According to Pallant (2020), the reliability test assesses the degree to which a variable or item is reliable for hypotheses testing. As stated by Sekaran and Bougie (2016), it is crucial to evaluate the reliability of the research instrument to ensure consistent measurement across multiple research items. Therefore, to verify the reliability of the instrument items, Cronbach's alpha (α) was computed, ensuring a minimum value of 0.7. This measure allows us to assess the internal consistency of the items and determine their reliability (Fornell & Larcker, 1981).

Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to analyze the relationships among the variables. PLS-SEM is suitable for this study due to its ability to handle complex models and its robustness in exploratory research contexts.

Descriptive Statistics

This study examined 505 responses, utilizing frequency analysis to characterize the demographic profile of the participants and assess the reliability of the data, as detailed in **Table 1**. The demographic profile of the respondents indicated a diverse mix of ages, nationalities, and travel group compositions.

Table 1: Respondents' Demographic Profile

	Demographic	Frequency	Percentage
Gender	Male	255	50.5%
	Female	250	49.5%
	Prefer not to mention	0	0.0%
Age	19 years old and below	77	15.2%
	20-29 years old	171	33.9%
	30-39 years old	141	27.9%
	40-49 years old	72	14.3%
	50 years old and above	44	8.7%
Race	Malay	204	40.4%
	Chinese	124	24.6%
	Indian	100	19.8%
	Bumiputra	77	15.2%
Education Level	High school and below	109	21.6%
	Diploma/ Certificate	258	51.1%
	Bachelor's degree	138	27.3%
	Postgraduate degree	0	0.0%

	Demographic	Frequency	Percentage
Occupation Sector	Academic/ Education	107	21.2%
	Business/ Enterprise/	90	17.8%
	Manufacture	140	27.7%
	Service/ Sales	168	33.3%
	Self-employed		
Visit Penang Hill	1 to 3 times	205	40.6%
Biosphere	3 to 5 times	191	37.8%
Reserved	More than 5 times	109	21.6%

Note: Total sample size is 505

ANALYSIS AND DISCUSSION

Testing Measurement Model

The measurement model was evaluated for reliability and validity. Composite reliability and Cronbach's alpha values exceeded the recommended thresholds, and convergent and discriminant validity were established (Hair et al., 2014; Henseler & Fassott, 2010). All the variables in this study were treated as reflective latent variables. SmartPLS Version 4.0 was used for both the measurement and structural model analysis. Additionally, the bootstrapping method with 1,000 resamples was employed to evaluate the significance of tourist satisfaction's mediating role between pull-external motivation factors and tourist loyalty (Streukens & Leroi-Werelds, 2016). Additionally, the current study calculated the effect size (f^2) to assess the magnitude of a predictor variable's impact on the dependent constructs. The f^2 result was derived from the variation in the R^2 value (Cohen, 1988).

The loadings for all reflective items, except four items from the Pull factor, three items from tourism satisfaction, and four items from tourist loyalty that were deleted exceeded the recommended value of 0.5. Composite reliability values (see **Table 2**), which exhibited the degree to which the items indicated the latent construct, ranged between 0.875 and 0.951 and exceeded the recommended value of 0.7. The average variance extracted was in the range of 0.504 to 0.724, which exceeded the recommended value of 0.5.

Discriminant validity was determined by comparing the correlations between variables and the square root of the AVE for that particular variable (Fornell & Larcker, 1981). **Table 3** presents the inter-construct correlations (below the diagonal) and the square roots of the average variance extracted (on the diagonal) of the constructs. This table shows that the square root of the average variance extracted for all factors appeared to be higher than their shared variances. This finding reaffirmed the discriminant validity of the model constructs.

Table 2: Composite reliability values

Construct	Items	Loading	CR	AVE
Pull-external Factors (PF)	PF1	0.756	0.875	0.587
	PF2	0.845		
	PF3	0.662		
	PF4	0.876		
	PF5	0.665		
Tourism satisfaction	TS1	0.867	0.882	0.714
	TS2	0.836		
	TS3	0.832		
Tourism Loyalty	TL1	0.834	0.887	0.724
	TL2	0.883		
	TL3	0.835		

Table 3: inter-construct correlations

	Pull-external Factor	TS	TL
PF	0.766		
TS	0.604	0.845	
TL	0.653	0.562	0.851

Testing The Structural Model

According to Hair *et al.* (2017), the prime criteria for assessing the structural model are beta values, generated p-values (based on bootstrapping procedure with resample of 5000), the value of R^2 (coefficient of determination), the f^2 values (measure of the effect sizes) and the value of Q^2 (measure of the predictive relevance). The results of the structural model are displayed in Tables 3 and 4. The predictive accuracy (R^2) of the proposed framework was calculated utilizing the proportion of variance explained. The R^2 values for tourism satisfaction and tourism loyalty were 0.817 and 0.431, respectively (Table 5). By conducting the blindfolding test in PLS, the results affirm that the Q^2 values for tourism satisfaction and tourism loyalty were 0.814 and 0.420, respectively, which are greater than zero, indicating a satisfactory level of predictive relevance for the study's endogenous constructs.

The bootstrapping with 5,000 resamples was used to examine the significance of relationships within the proposed framework (Jalali et al., 2020). Table 4 summarizes the structural model generated by SmartPLS 4.0. As illustrated in Table 4, the main model only assesses the direct effect. Based on the findings, Pull-external factors ($\beta=0.904$, $p\leq 0.05$) and ($\beta=0.793$, $p\leq 0.05$) displayed a significant positive effect on tourism satisfaction and tourism loyalty.

Hence, H1, was supported. While the influence of tourism satisfaction ($\beta=-0.154$, $p>0.05$) on tourism loyalty is not significant. Thus, H4 was not supported. The indirect effect was determined by using the bootstrap approach, as recommended by Preacher and Hayes (2008). The result of the assessment of the mediating effect demonstrated that tourism satisfaction did not mediate the relation between the pull factor and tourism loyalty ($\beta=-0.140$, $p \leq 0.05$). Hence, H3 was not supported.

Table 4: Assessment of Structural Model Results

Effect	Beta (β)	Direct (P value)	Indirect (P Value)
PF -> TS	0.904	0.000	-
PF -> TL	0.793	0.000	-
TS -> TL	-0.154	0.356	-
PF -> TS -> TL	0.140	-	0.356

Table 5: Results of R Square (R^2) Adjusted Values, and Predictive Relevance Based on Q^2

Construct	R Square (R^2)	Q^2
Tourism satisfaction	0.817	0.814
Tourism Loyalty	0.431	0.420

Implications for Management

The findings underscore the importance of managing and enhancing key pull factors to boost tourist satisfaction and loyalty. For Penang Hill Biosphere Reserve, this involves preserving natural attractions, promoting cultural heritage, and providing diverse recreational opportunities. The Penang Hill management and stakeholders should prioritize the conservation of its unique biodiversity, scenic landscapes, and pristine environments. This involves implementing robust environmental protection measures, such as controlling visitor numbers to prevent over-tourism, ensuring waste management systems are efficient, and promoting conservation education among visitors. Penang Hill can attract different tourist segments, including adventure seekers, families, and wellness tourists, thus boosting overall satisfaction and sustainable loyalty. Furthermore, creating engaging and informative content as an effective marketing and communication strategy that showcases natural beauty, cultural heritage, and recreational opportunities can entice potential visitors.

CONCLUSION

This study highlights the importance of understanding the interplay between motivation, satisfaction, and sustainable loyalty in ecotourism settings. By focusing on the tourist-centric perspective, the research provides valuable insights for developing strategies that enhance visitor experiences while promoting sustainable tourism practices. These findings can inform the development and management of ecotourism activities and programs at Penang Hill, leading to more satisfying and meaningful experiences for visitors.

The study findings also suggest that managing Pull-external factors effectively can lead to higher satisfaction and loyalty among tourists, contributing to the sustainable development of the Penang Hill Biosphere Reserve. Future research could extend this framework to other ecotourism destinations to validate and refine the proposed model, ultimately supporting broader efforts to align tourism activities with conservation goals and sustainable development.

This paper outlines the potential of ecotourism in Biosphere Reserved in Penang Hill, providing a comprehensive understanding of tourist motivations, satisfaction, and loyalty. It offers practical insights for managing ecotourism destinations, contributing to the sustainable tourism discourse.

ACKNOWLEDGMENT

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Received: 4th February 2025. Accepted: 19th May 2025