

Nature's Embrace: Enhancing Quality of Life through Ecotourism in Kuala Tahan National Park in the Post-Pandemic Era

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Abstract

Objectives: This study aims to determine the interrelationships between destination image, perceived value, satisfaction, and the quality of life (QoL) of domestic ecotourists at Kuala Tahan National Park (KTNP) and the mediating effect of perceived value and satisfaction.

Methods: A quantitative method is used to uncover significant insights, including surveys analysed via SmartPLS statistical software.

Results: The finding indicates that health and well-being are essential in enhancing QoL in ecotourists. At the same time, social value appears less relevant due to the pandemic's influence on consumption patterns and travel behaviour. This study's originality lies in extending the existing QoL model within the ecotourism domain, introducing novel dimensions to destination image and perceived value variables informed by expectancy-disconfirmation and bottom-up spillover theories.

Conclusions: The findings highlight the transformative potential of ecotourism activities in improving ecotourists' well-being, offering a comprehensive model that distinguishes each variable's unique contributions and effects. This research enriches the academic discourse on ecotourism's impact on QoL and provides practical insights for stakeholders aiming to leverage ecotourism to improve well-being in the post-pandemic era.

Keywords: destination image, perceived value, satisfaction, quality of life, ecotourism.

احتضان الطبيعة: تحسين نوعية الحياة من خلال السياحة البيئية في منتزه كوالا تاهان الوطني في فترة ما بعد الوباء

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ملخص

الأهداف: تهدف هذه الدراسة إلى تحديد العلاقات المتبادلة بين صورة الوجهة والقيمة المدركة والرضا ونوعية الحياة (QoL) للسياح البيئيين المحليين في منتزه كوالا تاهان الوطني (KTNP) والتأثير الوسيط للقيمة المدركة والرضا. الطرق: يتم استخدام الطريقة الكمية للكشف عن رؤى مهمة، بما في ذلك الدراسات الاستقصائية التي تم تحليلها عبر البرنامج الإحصائي SmartPLS.

النتائج: تشير النتائج إلى أن الصحة والرفاهية ضروريان لتعزيز جودة الحياة لدى السياح البيئيين. وفي الوقت نفسه، تبدو القيمة الاجتماعية أقل أهمية بسبب تأثير الوباء على أنماط الاستهلاك وسلوك السفر. تكمن أصالة هذه الدراسة في توسيع نموذج جودة الحياة الحالي ضمن مجال السياحة البيئية، وإدخال أبعاد جديدة لصورة الوجهة ومتغيرات القيمة المتصورة المستنبطة بنظريات عدم تأكيد التوقعات والامتدادات من القاعدة إلى القمة.

الخلاصة: تسلط النتائج الضوء على الإمكانيات التحولية لأنشطة السياحة البيئية في تحسين رفاهية السياح البيئيين، وتقدم نموذجاً شاملاً يميز المساهمات والتأثيرات الفريدة لكل متغير. يثري هذا البحث الخطاب الأكاديمي حول تأثير السياحة البيئية على جودة الحياة ويوفر رؤى عملية لأصحاب المصلحة الذين يهدفون إلى الاستفادة من السياحة البيئية لتحسين الرفاهية في حقبة ما بعد الوباء.

الكلمات الدالة: صورة الوجهة، القيمة المدركة، الرضا، جودة الحياة، السياحة البيئية



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Introduction

Ecotourism is an alternative and nature-oriented type of tourism. Many destinations have identified ecotourism as a less destructive form of tourism that aims to satisfy conservation and economic development goals and promote the preservation of nature and culture (Ghazvini et al., 2020). Ecotourism in protected areas is a type of tourism that aims to provide positive and valuable touristic experiences and enhance the quality of life (QoL) (Nordin & Jamal, 2021). National parks in Malaysia are generally among the ecotourism sites that support these benefits (Yeo, 2021).

The Malaysia National Ecotourism Plan 2016-2025 addresses developing and conserving ecotourism destinations within the country, ensuring sustainable growth that benefits local communities, preserves natural and cultural heritage, and contributes to the economy (Ministry of Tourism, Arts and Culture, 2017, pg.3). A deviation from traditional ecotourism goals, the plan also presents a strategy to offer tourists a deeper, more immersive experience in Malaysia's natural and cultural heritage, enriching their visit and fostering a closer connection to the local environment and communities. The Kuala Tahan National Park (KTNP) could be repositioned as a sustainable tourist destination for eco-wellness by investigating the effect of nature on human health (Buckley, 2010) and the role of the national park in designing tourism experiences that enhance ecotourists' Quality of Life (QoL) and well-being after the COVID-19 pandemic. Thus, an investigation is needed to confirm the impact of nature exposure–response value experiences on ecotourists' health and well-being, especially at premier ecotourism destinations such as the KTNP.

Unfortunately, the recent COVID-19 pandemic has significantly impacted tourist arrivals and citizens' well-being worldwide (Doe & Smith, 2020). The KTNP recorded a significant decline in tourist arrivals of 15.3% in 2019 and 32.5% in 2020. (Department of Statistics Malaysia, 2019; Tourism Pahang, 2021). Studies have shown that lower tourist arrivals can be caused by negative images of a destination and poor perceived value performance relative to initial expectations (Huwae et al., 2020; Mutanga et al., 2017). Tourist decision-making on destination choices is based on current images of a destination and other behaviours, including value perception, satisfaction, and future consumption (Cheng et al., 2018).

The literature highlights destination image as one of the most examined antecedents to tourist satisfaction (Afshardoost & Eshaghi, 2020; Ladeira et al., 2016), followed by perceived value (Ladeira et al., 2016). The effect of tourists' perceived value of services on satisfaction has been documented in heritage tourism (Gallarza et al., 2021; Hussein & Hapsari, 2020), event tourism (Jeong & Kim, 2019), adventure tourism (Jiang et al., 2019; Prebensen & Xie, 2017), cruise tourism (Ahn & Back, 2019; Calza et al., 2020), community-based tourism (Jamal et al., 2011; Rasoolimanesh et al., 2016), and island tourism (Aliman et al., 2016), few studies have attempted to examine how a multi-dimensional perspective of perceived value influence the future outcomes of ecotourism in national parks.

The importance of Quality of Life (QoL) in ecotourism has been increasingly recognised for its role in sustainable development and enhancing community and visitor well-being (Do et al., 2021). This concept balances environmental conservation with socio-economic benefits, emphasising the preservation of natural habitats (Sivakami et al., 2023) and biodiversity alongside ensuring air and water quality for future generations (Vinaya & Binoy, 2020). It also highlights the social aspects of QoL, such as cultural preservation, community engagement, and equitable benefits distribution, which are essential for resilient communities in ecotourism areas. The link between ecosystem health and individual well-being, through the therapeutic benefits of nature, underscores the need for understanding QoL from a tourist perspective.

The first gap in tourism research is the absence of an integrative study on the effects of these variables (destination image, perceived value, and satisfaction) on ecotourists' QoL (Campon-Cerro et al., 2020) in a single study, although studies have pointed out the importance of tourism experiences and activities (Uysal et al., 2015; Uysal & Sirgy, 2019; Uysal et al., 2020) in shaping the future of tourism demand. The second gap is the absence of an empirical study to reinvestigate the satisfaction in the KTNP during the pandemic and examine the current perspective of domestic ecotourists to ensure business longevity, especially in a competitive market.

This study addresses the first gap in the literature by establishing a theoretical model that has already been validated by previous researchers (Chen & Li, 2018; Rohman, 2020) and introduces a new dimension in the destination image, namely perceived value variables that are linked to expectancy-disconfirmation theory (Oliver, 1980) and bottom-up spillover

theory (Sirgy et al., 2001). By including all the variables in a single model, it is possible to identify each variable's contribution and isolated effect under the control of all the other variables based on well-established theoretical constructs. To address the second research gap, this study examines the differences between two destination image measures and four perceived value measures (emotional, functional, economic, and health and wellbeing) regarding the significant determinants of QoL in ecotourism.

Literature and Conceptual Framework

Ecotourism

Ecotourism refers to responsible travel to natural areas that conserves the environment and improves the well-being of local people (Ceballos-Lascuráin, 2008), focusing on the conservation of biodiversity and cultural diversity through ecosystem protection, promoting sustainable use of resources, and generating economic opportunities that benefit local communities. On the other hand, the International Ecotourism Society (TIES) describes ecotourism as travelling to natural destinations that conserve the environment, sustain the well-being of the local people, and involve interpretation and education. TIES prioritised the education element of ecotourism, aimed at both the tourist and the local community, to foster environmental and cultural understanding, appreciation, and conservation. Ecotourism emphasises the local community's QoL and well-being by promoting beneficial and sustainable tourism that aligns with the United Nations' sustainable development goals (SDGs) (Nordin and Jamal, 2020). Ecotourism supports several SDGs by promoting sustainable tourism practices (SDG 12), creating economic opportunities (SDG 8), reducing poverty (SDG 1), preserving the environment (SDG 11), and fostering partnerships between different stakeholders (SDG 17).

Bottom-up spillover theory emphasises that tourism activities are essential for improving QoL (e.g., Sirgy et al., 2011; Uysal et al., 2015). The bottom-up spillover theory in tourism posits that individual tourist satisfaction from engaging experiences can lead to wider community benefits. Positive tourist feedback can increase tourism, boost the economy, create jobs, and encourage local infrastructure investment. This, in turn, enhances the QoL, illustrating how micro-level tourist experiences can lead to macro-level community improvements. Ecotourism offers many benefits to ecotourists, including a deeper appreciation of the natural world and an understanding of diverse cultures (Do et al., 2021), personal growth and development, education and learning opportunities (Hunt et al., 2015), and promoting environmental sustainability (Sivakami et al., 2023). Nature experiences enhance psychological well-being through positive emotions, such as enjoyment, happiness, satisfaction, and contentment (Nordin & Jamal, 2021). In addition, spending time in a natural environment contributes to personal health and well-being (Brymer & Lacaze, 2013; Ferrari & Gilli, 2017).

Destination image

Echtner and Ritchie (1993) suggest that attribute-based and holistic components define the overall destination image, whereas Tan and Wu (2016) measure it using two cognitive and affective components. The current study uses Echtner and Ritchie's (1993) attribute-holistic approach to identify the attributes of destination images. It assumes these attributes can be combined linearly or additively to provide an overall evaluation.

Destination image is an essential factor influencing tourists' decision-making processes when selecting a destination (Cheng et al., 2018). However, the COVID-19 pandemic has impacted destination image in a way that may influence future destination selection (Casali et al., 2020). As Seyfi and Hall (2020) highlighted the importance of understanding the impact of COVID-19 on destination image, this study examines individual perceptions of factors in the pandemic environment that could affect a destination's image, which has not yet been tested in the context of ecotourism. The COVID-19 pandemic has made it crucial for destinations to project a safe and virus-free environment, as previous studies have indicated (Abubakar & Ilkan, 2017; Becken et al., 2017; Wike et al., 2020). Thus, the following hypotheses are proposed:

H₁: Destination image has a significant impact on ecotourists' perceived value.

H₂: Destination image has a significant impact on ecotourists' satisfaction.

Satisfaction

The expectancy-disconfirmation theory, widely applied in consumer satisfaction research, including tourism, complements the bottom-up spillover theory by delving into how individual tourist satisfaction is formed and subsequently contributes to broader community benefits. This theory suggests that tourist satisfaction results from comparing their pre-trip expectations and actual experiences during the trip. Tourist satisfaction is a critical factor in destination selection (Domínguez-Quintero et al., 2019) and relates to a post-trip assessment based on experiences, how a destination measured up to expectations, needs, or demand (Carvache-Franco et al., 2020a; Trinanda & Sari, 2020). In ecotourism, satisfaction refers to contentment with a nature-based tourism experience. It is based on the images developed of a destination and the tourists' perceived value (Castellanos-Verdugo et al., 2016).

Prior studies have focused on the local community and QoL, but few have examined ecotourists' satisfaction with their QoL (Castellanos-Verdugo et al., 2016). Studies have discovered a positive and significant correlation between satisfaction and overall QoL with tourism services/experiences (Sirgy et al., 2011). Chen and Petrick (2013) have shown that tourists' experiences impact the emotional and physical dimensions, contributing to overall life satisfaction. Thus, the following hypotheses are proposed:

H₃: Perceived value has a significant impact on ecotourists' satisfaction.

H₄: Satisfaction has a significant impact on ecotourists' QoL.

Perceived Value

Sweeney and Soutar (2001) introduced a multidimensional construct of perceived value that includes four dimensions: emotional, social, functional, and economic. This study extends previous dimensions by incorporating a new dimension: health and wellbeing (Ferrari & Gilli, 2017; Mele et al., 2023). The concept of health and well-being includes emotional values that recognise protected parks as a way to promote tourists' physical and mental health. The study mainly focuses on a hedonic perspective, where feelings like fun, happiness, relaxation, stress relief, and escapism are the outcomes of experiencing protected parks. These emotional values are aligned with the dimension of well-being. The current study contends that emotional values, such as 'make me feel happy', 'positive feeling', 'enjoyable', 'gave me a feeling of wellbeing', 'was exciting', and 'happiness', is more harmonised and coherent in the wellbeing value dimension.

The current study excluded social value because earlier studies showed that social value is less significant for ecotourists (Caber et al., 2020; Prebensen et al., 2012). Ecotourists tend to perceive the social value of ecotourism trips as less critical. They are more inclined to engage in all the new experiences that eco sites offer rather than socialising with others (Li et al., 2020a). Tourism studies have consistently reported a positive relationship between perceived value and satisfaction (Hapsari et al., 2017). Hussein and Hapsari (2020) found that perceived value has a positive, partial mediation effect on destination image and satisfaction. Therefore, we hypothesise the following:

H₅: Ecotourists' perceived value mediates the relationship between destination image and satisfaction.

Quality of Life

Improving QoL is the ultimate life goal of human beings (Kim et al., 2020). Ecotourism in protected areas offers positive touristic experiences and improves QoL (Brymer & Lacaze, 2013; Nordin & Jamal, 2021). QoL refers to the general wellbeing of individuals and societies, outlining life's positive and negative features (Parsons et al., 2019). Many studies have emphasised residents' QoL or subjective well-being at tourism destinations, but very few have investigated the contribution of specific tourism activities to tourists' QoL (Campon-Cerro et al., 2020; Kim et al., 2016). Uysal et al. (2015) observed that less than 6% of studies represent visitor QoL in tourism research. Uysal et al. (2020) indicated that one of the fundamental principles of satisfaction in tourism experiences is the QoL of tourists, which integrates the physical attributes of the destination and tourism activities.

Destination image affects satisfaction significantly (Ma et al., 2018) and directly predicts QoL (Chen & Li, 2018; Hernandez-Mogollon et al., 2020). Studies have also suggested that perceived value stimulates tourist satisfaction (Hapsari

et al., 2017; Hussein & Hapsari, 2020), and tourist satisfaction is a predictor of ecotourists' QoL (Hapsari et al., 2017; Rohman, 2020). The current study emphasises the importance of ecotourists' QoL in destination competitiveness, focusing on satisfaction from tourism experiences. It identifies that lower tourist arrivals often result from negative destination images and perceived value not meeting expectations. The study suggests that destination image significantly influences perceived value and visitor satisfaction levels, proposing to explore how destination image impacts tourist satisfaction directly or indirectly through perceived value. Therefore, we hypothesise the following:

H₆: Ecotourists' satisfaction mediates the relationship between destination image and QoL.

H₇: Ecotourists' satisfaction mediates the relationship between perceived value and QoL.

Conceptual Framework

Our theoretical framework extends Oliver's (1980) expectancy-disconfirmation theory (EDT). As per Zhang et al. (2020), this study emphasises that satisfaction results from meeting or exceeding expectations. To enrich this framework, we have incorporated the bottom-up spillover theory, which suggests that specific satisfactions in life domains, such as travel or tourism experiences, contribute cumulatively to overall life satisfaction. This perspective argues that positive experiences in these areas of life 'spill over' and enhance the general quality of life (QoL), providing a more detailed pathway through which individual experiences shape broader life satisfaction metrics. By merging EDT with the bottom-up spillover theory, this holistic approach to examining QoL allows us to explore the direct effects of travel and tourism experiences on an individual's overall life satisfaction, echoing these experiences' significant impact, as Sirgy (2019) suggested. Figure 1 illustrates destination image's direct and indirect effects on tourist QoL and the relationship between perceived value, satisfaction, and QoL variables.

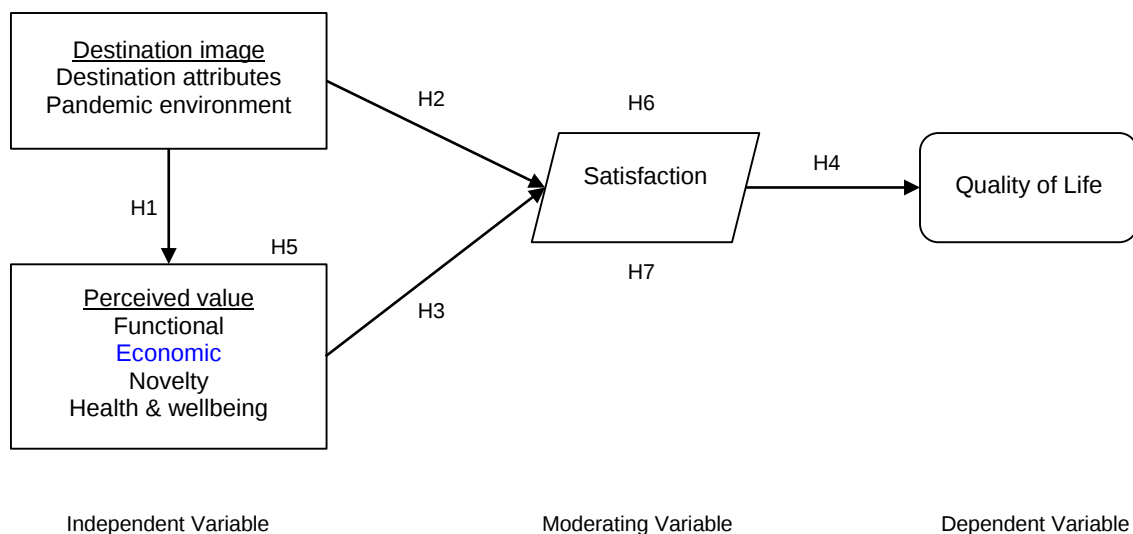


Figure 1: Research conceptual model

Methods

Study area

This empirical study focuses on the KTNP in Malaysia. The Kuala Tahan National Park (KTNP) in Malaysia is a prime example of conservation and ecotourism, home to over 2,000 plant species and 200 animal species, including the Asian elephant, Malayan tiger, and Sumatran rhinoceros (Ministry of Natural Resources and Environment, 2014). Recognised by the International Union for Conservation of Nature (IUCN) as a Category II protected area, KTNP highlights the importance of ecosystem protection and recreation. As Malaysia's largest and oldest protected area, it annually attracts numerous visitors, especially during the dry season from February to September (Mohamad et al., 2014). The park provides various accommodations, from campsites to eco-friendly lodges, catering to different visitor preferences. KTNP also offers a variety of outdoor activities like jungle trekking and river cruises, making it a model for sustainable tourism and a vital part of

Malaysia's natural heritage (Azlizam et al., 2018).

Survey Instrument Design

A 47-item structured questionnaire on a 10-point scale (1=strongly disagree; 10=strongly agree) was developed to present participants with many response options (Hoque et al., 2017). Using first- and second-order variables is a helpful technique to model complex constructs with multiple dimensions and can help provide a more comprehensive understanding of the underlying construct, reduce measurement error, and provide a more parsimonious model. The content of modified instruments was validated by three experts (two tourism experts and one QoL expert in Environmental Science from a local university). The analysis of the individual content validity index (I-CVI) and modified kappa coefficient (k^*) confirmed that all 47 items had high content validity. In a pilot study conducted with 38 participants, the questionnaire exhibited strong internal consistency, as evidenced by all items scoring above the accepted threshold of 0.70 on Cronbach's alpha (Nunnally & Bernstein, 1994). The survey was administered in Bahasa Malaysia and English to reduce language barriers.

Sampling and Data Collection

Data were collected within four months between August and November 2021. They consisted of domestic ecotourists older than 18 who had experienced at least a one-night stay at the KTNP during the COVID-19 pandemic (2020). This study opted for a non-probability sampling technique due to the unavailability of the full population frame, and a purposive sampling design was chosen to select the sample from the target population. The minimum required sample size was 19 respondents following the G*Power analysis. A total of 270 participants were surveyed via a self-administered online questionnaire, which included a single-response mode with screening questions (i.e., 'Have you visited Kuala Tahan National Park in 2020 or anytime this year?'). The final usable data were 150- and 5,000-times bootstrap samples performed with SmartPLS to examine the mediating effect of perceived value and satisfaction. A partial least squares (PLS) model examined the relationships between the predictor and response variables.

Results and Discussions

Demographic Analysis

Table 1 summarises the respondents' demographic characteristics.

Table 1. Demographic Profiles of Respondents (N = 150)

Demographic	Categories	Frequencies (N)	Percentage (%)
Gender	Female	91	60.7
	Male	59	39.3
Age	18-39	111	74.0
	40-59	39	26.0
Marital Status	Single	75	50.0
	Married	73	48.7
	Others	2	1.3
Race	Malay	143	95.3
	Chinese	5	3.3
	Indian	2	1.3

Demographic	Categories	Frequencies (N)	Percentage (%)
Education	SPM	13	8.7
	STPM/Matriculation	3	2.0
	Diploma	27	18.0
	Bachelor	69	46.0
	Master/ PhD	38	25.3
Occupation	Student	16	10.7
	Unemployed	10	6.7
	Self-Employed	23	15.3
	Government Sector	57	38.0
	Private Sector	44	29.3
Income	Below MYR2000	38	25.3
	MYR2000 – 5000	58	38.7
	MYR5001 – 8000	28	18.7
	MYR8001 – 11000	10	6.7
	Above MYR11000	16	10.7
Duration	Short trip (3 days maximum)	115	76.7
	Long trip (4 days and above)	35	23.3
Companion	Alone	10	6.7
	Friend	98	65.3
	Family	42	28.0

Descriptive Statistics Analysis

The mean scores (M) for all the construct items ranged from 7.87 to 9.73; standard deviations (SD) ranged from 1.813 to 0.557. The highest mean for the destination image construct was for the destination attribute dimension (AT6): 'this attraction has beautiful nature' (M=9.73; SD=0.566). The highest mean for the perceived value construct was for health and wellbeing (HW7): 'This attraction helps me to forget work-related activities' (M=9.49, SD=0.766). The highest mean for the satisfaction construct is for (ST2): 'I feel happy having decided to visit this attraction' (M=9.49, SD=0.673). The highest mean for the QoL construct was for (QL6): 'I felt happy after participating in the activities' (M=9.35, SD=0.794).

Common Method Variance (CMV) Test

The results showed that all the values in R^2 were below the suggested threshold. Harman's single-factor analysis revealed that the first factor explained 41.896% of the total variance, below the threshold (>50%), thus confirming that CMV was not an issue. The mention of R^2 values being "below the suggested threshold" implies that the independent variables may not capture a substantial part of the variance in the dependent variables. This explains that the research

upholds principles of transparency and rigour in empirical investigation.

Reliability and Validity Test

The Cronbach's alpha values ranged from 0.817 to 0.946, indicating good internal consistency for the instrument. All the values were above 0.7 (Hair *et al.*, 2017). However, five items (AT1, AT2, AT3, AT9, and EV5) were removed as their values were below 0.708. This removal likely improved the reliability and validity of the instrument. A discriminant analysis in Table 2 presented that the value of the off-diagonal elements was smaller than the square root of the average variance extracted (AVE). This confirmed that each latent construct measurement discriminated against the other (Fornell & Larcker, 1981).

The table's diagonal elements (Destination Image 0.809, Perceived Value 0.856, Quality of Life 0.820, Satisfaction 0.889) represent the Average Variance Extracted (AVE), highlighting the strong internal consistency and reliability of each construct in capturing its respective variance against measurement error. This indicates a robust construct validity. The off-diagonal elements, reflecting construct correlations, are significantly lower, demonstrating distinctiveness among constructs. Relationships like Destination Image and Perceived Value (0.765) show positive correlations, but the constructs remain unique. Lower correlations with Quality of Life (0.510 with Destination Image, 0.571 with Perceived Value) underscore its distinct perception, emphasising the discriminant validity among constructs and highlighting their unique contribution to the destination's appeal and satisfaction.

Table 2. Fornell-Larcker Discriminant Assessments of Second Order Measurement Model

	Destination Image	Perceived Value	Quality of Life	Satisfaction
Destination Image	0.809			
Perceived Value	0.765	0.856		
Quality of Life	0.510	0.571	0.820	
Satisfaction	0.668	0.813	0.589	0.889

Research Hypothesis Testing

Table 3 and Figure 2 show that the data supported three out of four direct relationships and two out of three mediating relationships. Hypothesis 1 (H₁) suggests that how ecotourists see a destination significantly affects how much value they think it offers. This idea is backed by a high beta coefficient ($\beta = 0.767$) and a t-value (20.254), demonstrating a strong connection between destination image and perceived value among ecotourists. This empirical finding aligns with other national park studies (Hossain *et al.*, 2021; Matolo *et al.*, 2020).

On the other hand, Hypothesis 2 (H₂) looks at whether the destination image directly makes ecotourists feel satisfied. The findings do not support this, as shown by a low beta coefficient ($\beta = 0.117$) and a t-value (1.213), indicating that the relationship between destination image and satisfaction might be more complicated or affected by other factors not considered in this direct relationship. This differed from the results from earlier studies (Aliman *et al.*, 2016; Ghorbanzadeh *et al.*, 2020; Sharma & Nayak, 2018). Despite the importance of destination image, other factors, such as the quality of the ecotourism experience, level of environmental sustainability, and impact on wellbeing, may be more critical in determining ecotourist satisfaction.

Hypothesis 3 (H₃) and Hypothesis 4 (H₄) explore how perceived value affects satisfaction and how satisfaction impacts the quality of life, respectively. Both hypotheses are well-supported, highlighting the important role of perceived value in increasing satisfaction, which positively influences ecotourists' quality of life. The results are in line with similar studies conducted in Bangladesh (Hossain *et al.*, 2021), the Dominican Republic (Castellanos-Verdugo *et al.*, 2016), Spain (Carracosa-Lopez *et al.*, 2021), and Zambia (Thapa & Lee, 2016). The direct relationship (H₄) between satisfaction and

QoL was significant, thus validating earlier findings (Aziz et al., 2020; Campon-Cerro et al., 2020; Rohman, 2020).

Furthermore, Hypothesis 5 (H₅) confirms that perceived value mediates the relationship between destination image and satisfaction, shown by a substantial beta coefficient ($\beta = 0.556$) and a t-value (7.470). However, Hypothesis 6 (H₆), which suggested a mediating role from destination image to quality of life through satisfaction, does not find support, as indicated by a minimal beta coefficient ($\beta = 0.039$) and a t-value (1.088), suggesting a negligible effect in this pathway.

Lastly, Hypothesis 7 (H₇) investigates the combined mediating effect of perceived value and satisfaction on quality of life, finding evidence of their sequential and compounded influence, as indicated by a beta coefficient ($\beta = 0.256$) and a t-value (2.692), underscoring the importance of both perceived value and satisfaction in enhancing the quality of life for ecotourists.

Table 3. Summarised Results for Direct and Indirect Effects

	Hypothesis	β	Std. Error	t-value	p-value	Decision
H ₁	Destination image has a significant impact on ecotourists' perceived value	0.767	0.038	20.254**	***	Supported
H ₂	Destination image has a significant impact on ecotourist satisfaction	0.117	0.116	1.213**	0.113	Not Supported
H ₃	Perceived value has a significant impact on ecotourist satisfaction	0.724	0.086	8.397**	***	Supported
H ₄	Satisfaction has a significant impact on ecotourists' quality of life	0.595	0.046	12.997**	***	Supported
H ₅	Destination image → Perceived value → Satisfaction	0.556	0.074	7.470	***	Supported
H ₆	Destination image → Satisfaction → Quality of life	0.039	0.036	1.088	0.133	Not Supported
H ₇	Perceived value → Satisfaction → Quality of life	0.256	0.095	2.692	0.003	Supported

Note: Value was significant at 95% confidence level (*) if t-statistic > 1.645 ($p < .05$), and the predictive value was significant at 99% confidence level (**) if t-statistic > 2.33 ($p < .01$), (***) highly significant ($p < .001$)

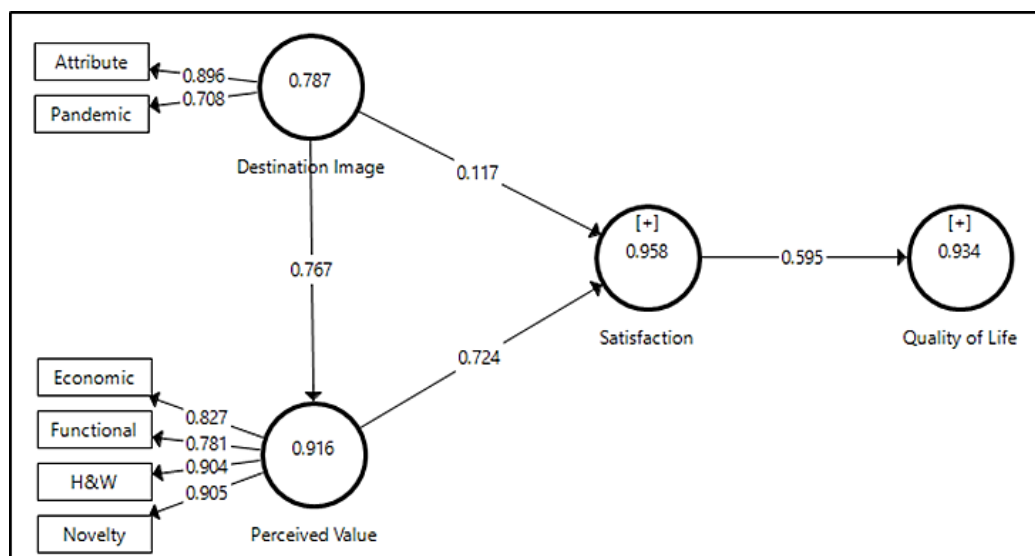


Figure 2. PLS Structural Equation Model

Mediating Effect

Table 4 from Hair et al. (2017) shows that perceived value fully mediates the relationship between destination image and satisfaction, with a Variance Accounted For (VAF) of over 80%. Additionally, satisfaction partially mediates the relationship between destination image and quality of life (QoL), with a VAF between 20% and 80%. According to the Expectancy Disconfirmation Theory (EDT), tourists' satisfaction is based on the difference between their pre-consumption expectations and actual experience. In this context, perceived value (PV) represents the tourists' assessment of their actual experience in relation to their expectations of the destination (destination image, DI). When perceived value aligns with or exceeds the expectations set by the destination image, satisfaction is likely to be high, which explains the full mediation observed between destination image and overall satisfaction (H5). Essentially, tourists' satisfaction depends entirely on how their experiences (perceived value) compare to their initial expectations (destination image).

Table 4. Summarised Result of the VAF Approach

Hypothesis	Std. Beta (a)	Std. Beta (b)	Std. Beta (c)	VAF	Decision
H5. DI → PV → SAT	0.765	0.728	0.112	0.83	Full Mediation
H6. DI → SAT → QoL	0.112	0.351	0.138	0.22	Partial Mediation
H7. PV → SAT → QoL	0.728	0.351	0.180	0.85	Full Mediation

Note: DI = Destination Image; PV = Perceived Value; SAT = Overall Satisfaction; QoL = Quality of Life

Conclusion

The study aims to examine the impact of ecotourism on the quality of life (QoL) of domestic ecotourists in Kuala Tahan National Park (KTNP), Malaysia, focusing on the COVID-19 pandemic. The research investigates the relationship between destination image, perceived value, satisfaction, and their combined effect on ecotourists' QoL. It provides valuable insights into the role of ecotourism in promoting health and well-being, especially in the context of shifting travel behaviours and consumption patterns due to the pandemic.

The finding offers a unique approach to the existing model of QoL in the ecotourism sector by incorporating new dimensions to the constructs of destination image and perceived value. This approach, informed by expectancy-disconfirmation and bottom-up spillover theories, enriches the academic discourse on the subject.

Specifically, the research highlights (1) the importance of health and well-being in enhancing ecotourists' QoL, suggesting a reduced relevance of social value due to the pandemic's impact on social interactions and travel preferences, and (2) the need for stakeholders, including the government and local tourism operators, to adapt to these evolving trends by promoting KTNP as a safe, health-enhancing destination that caters to emerging preferences for personalised, hygiene-focused travel experiences.

In conclusion, the study confirms the significant potential of ecotourism in KTNP to enhance ecotourists' QoL, advocating for strategic initiatives that align with the post-pandemic tourism landscape. The insights from this research offer a blueprint for reimagining ecotourism as a vital component of sustainable development and individual well-being in the post-pandemic world.

Implication

In the post-pandemic era, understanding the long-term shifts in tourist behaviour is crucial for the Malaysian government to develop strategies that revive and sustain tourist arrivals, focusing on revitalising domestic ecotourism. Although the immediate threat of COVID-19 may have diminished, its impact on destination perceptions and travel preferences continues to influence the industry. Policymakers must ensure that the KTNP is perceived as a favourable, pandemic-free destination.

The KTNP should be portrayed as a destination that acknowledges changes in travel behaviour, tourist preferences, and consumption patterns, such as individualised itineraries, personalised transportation, separate dining facilities, and hygienic attractions. Hoteliers, boat operators, travel agencies, and transportation providers should also ensure the hygiene management of their facilities. This will help to increase the KTNP's positive destination image and ensure the KTNP realises its goal of being one of the world's top ecotourism destinations by 2030 (Bernama, 2022).

People will continue to be concerned about their physical and mental health even in the post-pandemic era (Lee et al., 2017). Marketers need to shift their advertising content from portraying only the natural beauty of a region to emphasising other potential benefits, including 'eco wellness' (Brymer & Lacaze, 2013; Ferrari & Gilli, 2017). Activities such as trekking, biking, hill or mountain climbing, wildlife observation, kayaking at cascades, and orienteering in national parks can be listed as choices to connect to nature and breathe in fresh air for rejuvenation (Wen et al., 2020; Nordin et al., 2021).

Nature-based destinations are likely targets for post-pandemic tourists (Ahmad et al., 2020). There is a significant opportunity for the government to embrace the value people place on health and wellbeing and highlight the innovative concept of protected natural areas as a catalyst to foster physiological health and psychological wellbeing. This study's findings can provide functional guidelines for Malaysia's National Ecotourism Plan 2026–2035 by embedding health and wellbeing features in national or protected parks and providing more attractions, infrastructure, and facilities to support health and wellbeing concepts.

Limitation

The use of a snowball sampling method in this study, while practical in certain research contexts, introduces limitations in terms of the randomness and representativeness of the sample. Snowball sampling, where existing study subjects recruit future subjects from among their acquaintances, can lead to a biased sample towards certain groups or characteristics, depending on the initial subjects and their social networks. This method may not accurately reflect the diversity and range of opinions, behaviours, and experiences of the broader population of domestic ecotourists. Consequently, the findings derived from such a sample might be skewed or limited to the sampled group's particular characteristics, preferences, and behaviours, thus impacting the study's external validity.

Furthermore, focusing solely on domestic ecotourism within a specific location like Kuala Tahan National Park might not capture the wide array of ecological and cultural contexts in other domestic ecotourism destinations. Ecotourism destinations can significantly differ in terms of their natural resources, conservation efforts, cultural heritage, and community involvement in tourism activities. These differences can influence ecotourists' expectations, experiences, and satisfaction levels, making it challenging to generalise findings from one specific location to others, even within the same country.

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