

# Sustainability's Impact on Tourist Loyalty in Rural Tourism: The Mediating Role of Tourist Experience

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## Abstract

This study investigates the intricate interplay between economic, environmental, and social sustainability in the context of rural tourism, with a particular focus on their influence on tourist experience and loyalty. Utilizing structural equation modeling and innovative predictive analysis techniques, the research empirically validates a comprehensive model. Out of the 443 surveys distributed, 337 were successfully collected, yielding a response rate of 75.8%, which is considered adequate for applying structural equation modeling (SEM) in data analysis. From the collected surveys, 319 were identified as clean and deemed suitable for detailed analysis. To conduct data analysis and test the hypotheses, researchers chose the Smartpls4 software. This software is acknowledged for its proficiency in employing structural equation modeling (SEM) techniques, aligning seamlessly with the study's analytical requirements, and adhering to the guidelines outlined in the research methodology. The results reveal that economic sustainability significantly impacts both tourist experience and loyalty. Collaborative economic practices with local businesses, culturally enriching activities, and fair economic engagement emerge as critical strategies for rural tourism operators. Similarly, environmental sustainability plays a pivotal role, with eco-friendly practices, natural resource preservation, and showcasing ecological diversity contributing significantly to both

tourist experience and loyalty. Social sustainability, encompassing community engagement and cultural initiatives, emerges as a crucial factor influencing both dimensions. The study also introduces the mediating role of the tourist experience, indicating that the overall quality of interactions shapes the relationship between sustainability components and loyalty. Practically, the research provides actionable strategies for rural tourism operators to enhance sustainability and foster loyalty, emphasizing the importance of creating memorable and immersive experiences. The study's methodological contributions include the use of PLSpredict and the Cross-Validated Predictive Ability Test (CVPAT) for robust predictive analysis. Theoretical advancements encompass refining frameworks to comprehend the complex relationships among sustainability dimensions, tourist experience, and loyalty. Suggestions for future research involve exploring the impact of emerging technologies, investigating cultural and socio-economic influences, and conducting longitudinal studies to track the evolution of tourist loyalty over time.

**Keywords:** Economics Sustainability, Environmental Sustainability, Social Sustainability, Tourist Experience, Tourist Loyalty

### **Introduction**

Global tourism is witnessing a profound shift as sustainability takes center stage in shaping tourist loyalty. In rural tourism, sustainable practices are key determinants, extending beyond economics to influence the planet and local societies (Lopez-Sanz et al., 2021). Tourists now prioritize destinations committed to responsible practices, particularly in rural settings where authenticity and eco-friendliness matter (Chi et al., 2020). Modern tourists, as conscious participants, value destinations that align with their environmental and social principles, emphasizing the critical role of sustainability in shaping loyalty in the evolving landscape of responsible tourism (Rohman, 2020). In Malaysia, sustainability profoundly shapes tourist loyalty as the nation aims for global tourism prominence. Rural destinations, prized for cultural richness and natural beauty, are integral to this vision (Khan et al., 2021). Sustainable practices are pivotal, enhancing the allure of these locales and contributing to broader tourism objectives. With diverse ecosystems and traditional communities, Malaysia grapples with balancing rural charm preservation and surging visitor numbers (Ng et al., 2022). Initiatives like eco-friendly accommodations and community-based tourism are now fundamental, reflecting an evolving tourism landscape (Rasoolimanesh et al., 2023). Tourists in rural Malaysia seek more than scenic landscapes; they are drawn to destinations prioritizing environmental conservation and community engagement (Chin et al., 2022). In Malaysia, the challenge tied to sustainability's impact on tourist loyalty involves delicately balancing economic development and environmental preservation. Rapid tourism growth in rural areas risks overexploitation, jeopardizing the very attractions that draw tourists (Karim & Rabiul, 2022). Threats such as habitat degradation, cultural commodification, and inadequate infrastructure planning emerge. A lack of awareness among local communities and businesses about sustainable benefits adds complexity (Muhamad Nasir & Wongchestha, 2022). Widespread collaboration is essential for effective eco-friendly initiatives and community involvement (Rasoolimanesh et al., 2023). Addressing these challenges demands a nuanced approach tailored to each rural destination's socio-environmental characteristics (Nasir et al., 2022). Research on these issues can inform policies and strategies, safeguarding local heritage and ensuring lasting tourist loyalty in the Malaysian rural tourism context (Chin et al., 2022). This study holds immense significance in understanding and optimizing the dynamics of rural tourism. As global tourism trends increasingly emphasize sustainability, this research

addresses a critical knowledge gap by examining the specific impact of sustainable practices on tourist loyalty in rural contexts. The inclusion of the tourist experience as a mediator adds depth, recognizing the pivotal role of first-hand encounters in shaping perceptions. This study's findings can inform policymakers, destination managers, and businesses involved in rural tourism, offering actionable insights to enhance sustainability initiatives and, consequently, tourist loyalty. By comprehensively exploring the interconnected dimensions of economic, social, and environmental sustainability, the research contributes to a holistic understanding of how responsible practices resonate with tourists, influencing their loyalty and overall satisfaction. Ultimately, the study's outcomes are poised to guide the development of more resilient, authentic, and sustainable rural tourism destinations, aligning with the evolving preferences of conscious global travellers. This study aims to assess the direct and indirect relationship between the economic, environmental, social, tourist experience, and tourist loyalty.

## **Literature Review**

### *Underpinning Theory*

The Triple Bottom Line (TBL) theory, developed by John Elkington (1998), is a robust underpinning for the study of the impact of sustainability on tourist Loyalty with tourist Experience as a Mediator in Rural Tourism." This theory expands the traditional focus on financial performance to encompass three interconnected dimensions: economic, social, and environmental. In the context of rural tourism, which often relies on the delicate balance between preserving natural ecosystems, fostering community well-being, and ensuring economic viability, the TBL framework becomes particularly relevant. Firstly, the economic dimension of the TBL emphasizes the importance of sustainable business practices in rural tourism. Sustainable economic practices in this context involve generating income for local communities and ensuring long-term economic viability without compromising the natural and cultural assets that attract tourists to rural areas. The study can investigate how sustainable economic activities, such as eco-friendly accommodation and locally sourced products, contribute to the loyalty of tourists who seek responsible and authentic experiences. Secondly, the social dimension of the TBL focuses on community well-being and social responsibility. In rural tourism, where communities are often intimately connected to the tourist experience, the study can explore how sustainability initiatives positively impact the social fabric of the destination. This may include examining the effects of community engagement, cultural preservation, and the empowerment of residents on tourist loyalty. Lastly, the environmental dimension underscores the need for conservation and responsible resource management. Rural tourism destinations are often valued for their pristine natural environments, making environmental sustainability paramount. The research can explore how eco-friendly practices and conservation efforts influence tourists' loyalty, considering their heightened awareness of and appreciation for the unique natural landscapes of rural destinations.

### *Relationship between Economic Sustainability, Tourist Experience & Tourist Loyalty*

In the realm of rural tourism, the nexus between sustainability in economic practices, tourist experiences, and tourist loyalty is integral to the long-term viability and appeal of destinations (Chen et al., 2023). The sustainability dimension in economics underscores the importance of fostering practices that not only generate economic benefits but also contribute to the environmental and social well-being of rural areas (Ng et al., 2022). Sustainable economic

initiatives, such as promoting local enterprises, embracing eco-friendly practices, and investing in community development, play a pivotal role in shaping the overall sustainability profile of rural tourism (Rehman et al., 2023). Tourist experiences, deeply interwoven with sustainability, serve as a linchpin for ensuring positive and enduring impressions (Osman et al., 2023). Sustainable tourism practices emphasize authentic and responsible experiences, ranging from cultural immersion and nature-based activities to supporting local traditions and crafts (Zulvianti et al., 2023). A harmonious integration of sustainable economic practices enhances the quality of tourist experiences by preserving cultural heritage, safeguarding natural environments, and fostering community engagement (Mo et al., 2023). Crucially, the sustainability of rural tourism is closely tied to the loyalty of tourists (Osman et al., 2023). Visitors who perceive destinations as committed to sustainable practices are more likely to develop a sense of loyalty, leading to repeat visits and positive word-of-mouth recommendations (Cheng et al., 2021). The alignment of economic sustainability with responsible tourist experiences creates a synergy that strengthens the bond between tourists and rural destinations (Rasoolimanesh et al., 2023). In rural settings, the economic dimension of sustainability extends beyond financial gains, incorporating the preservation of landscapes, biodiversity, and local cultures (Lopez-Sanz et al., 2021). The conservation of natural resources, responsible land use, and equitable distribution of economic benefits contribute to the overall attractiveness of rural destinations. Tourists seeking sustainable experiences find a sense of fulfillment in supporting destinations that prioritize environmental stewardship and community well-being (Rao et al., 2022). Given the above, the following hypotheses were proposed for this study:

*H1:* There is a relationship between economic sustainability and tourist experience in Rural tourism tourist loyalty.

*H2:* There is a relationship between economic sustainability and tourist loyalty in rural tourism.

*H3:* There is a mediating effect of tourist experience on the relationship between economic sustainability and tourist loyalty in rural tourism.

#### *Relationship between Environmental Sustainability, Tourist Experience & Tourist Loyalty*

The interplay between the sustainability dimension of the environment, tourist experiences, and tourist loyalty forms a critical triad in the context of rural tourism, shaping the ecological integrity and appeal of destinations (Chen et al., 2023). The environmental sustainability aspect of rural tourism underscores the imperative of preserving natural ecosystems, reducing the ecological footprint, and safeguarding biodiversity (Zheng et al., 2022). Sustainable practices such as responsible waste management, energy conservation, and the protection of natural habitats are paramount in ensuring the longevity and resilience of rural destinations (Zhao & Li, 2023). Tourist experiences, deeply entwined with environmental sustainability, serve as a conduit for fostering a genuine connection between visitors and the natural surroundings (Othman & Osman, 2024). Sustainable tourism experiences in rural settings often involve nature-based activities, eco-tours, and opportunities for environmental education (Sthapit et al., 2023). These experiences not only provide a sense of authenticity and adventure but also instill an appreciation for the importance of preserving the environment, creating a profound and lasting impact on the perceptions of tourists (Tabaeian et al., 2023). Crucially, the sustainability of the environment is intimately linked to the loyalty of tourists. Travelers increasingly seek destinations prioritizing environmental

conservation, and those aligning with these values are more likely to garner loyalty (Shen & Wang, 2023). Tourists who perceive rural destinations as stewards of the environment are inclined to become repeat visitors and advocates for sustainable tourism practices (Ye et al., 2021). In rural tourism, the sustainability dimension of the environment extends beyond mere preservation; it involves active efforts to regenerate and restore ecosystems, contributing to the overall attractiveness of the destination (Machado et al., 2022). Tourists seeking sustainable experiences find solace in destinations that demonstrate a commitment to maintaining the ecological balance and minimizing negative impacts on the natural environment (Paudyai et al. 2022). Therefore, the following hypotheses were proposed for this study:

*H4:* There is a relationship between environmental sustainability and tourist experience in rural tourism tourist loyalty.

*H5:* There is a relationship between environmental sustainability and tourist loyalty in rural tourism.

*H6:* There is a mediating effect of tourist experience on the relationship between environmental sustainability and tourist loyalty in rural tourism.

#### *Relationship between Social Sustainability, Tourist Experience & Tourist Loyalty*

The complex interplay between the sustainability dimension of the social realm, tourist experiences, and tourist loyalty forms the bedrock of success in rural tourism (Ferreira et al., 2023). Social sustainability in rural tourism involves fostering inclusive practices that benefit local communities, preserve cultural heritage, and enhance the overall well-being of residents (Suhartanto et al., 2020). Community engagement, equitable distribution of economic benefits, and the protection of cultural authenticity are pivotal aspects of social sustainability. Tourist experiences, deeply connected with the social fabric of rural destinations, play a central role in shaping perceptions and loyalty (Hu et al., 2021). Sustainable tourism experiences often involve interactions with local communities, immersion in cultural traditions, and the promotion of social responsibility (Chang et al., 2021). These experiences go beyond the superficial, providing tourists with a profound connection to the destination and its people, fostering a sense of cultural appreciation and mutual respect. Crucially, the sustainability of the social dimension is closely tied to the loyalty of tourists (Wang & Li, 2023). Visitors who perceive rural destinations as socially responsible, with a commitment to community well-being, are more likely to develop a sense of attachment and loyalty (Diallo et al., 2022). Sustainable tourism practices that prioritize social inclusion contribute to positive relationships between tourists and residents, fostering an environment where visitors feel welcome and appreciated (Asgharzadeh et al., 2023). In rural settings, the social sustainability dimension extends beyond economic considerations to embrace the preservation of intangible cultural assets, community empowerment, and the enhancement of social cohesion (Podovac et al., 2023). Tourists seeking meaningful and responsible travel experiences are drawn to destinations that prioritize social sustainability, creating a sense of belonging and shared values (Ding & Jiang, 2023). Hence, the following hypotheses were proposed for this study:

H7: There is a relationship between social sustainability and tourist experience in rural tourism tourist loyalty.

H8: There is a relationship between social sustainability and tourist loyalty in rural tourism.

H9: There is a relationship between tourist experience and tourist loyalty in rural tourism.

H10: There is a mediating effect of tourist experience on the relationship between social sustainability and tourist loyalty in rural tourism.

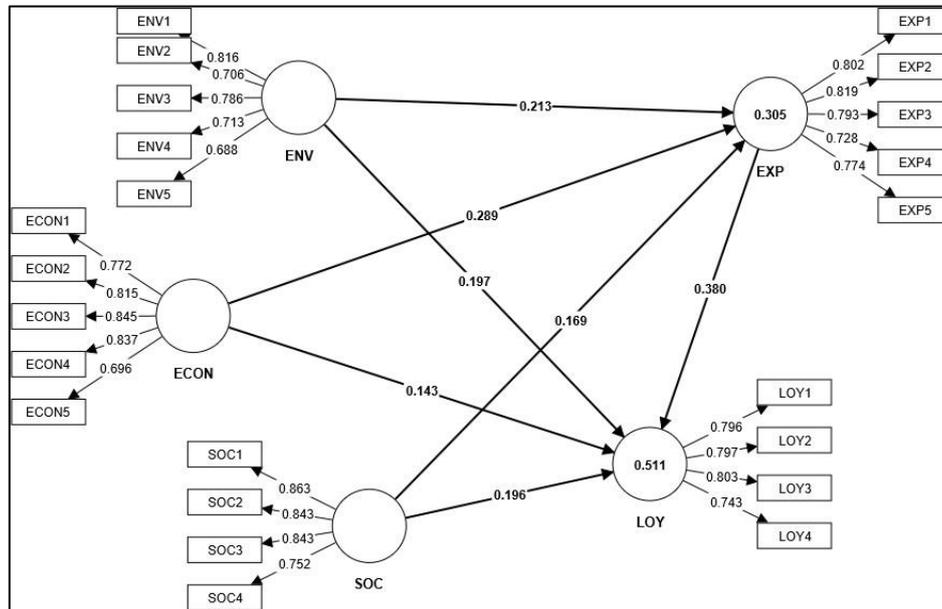


Figure 1: Research Framework

Note: ENV=Environmental ECON=Economic SOC=Social EXP=Experience LOY=Loyalty

**Methodology**

This research aimed to evaluate the perception of rural tourism tourists regarding the relationships among the sustainability components of economic, environmental, and social factors, and tourist loyalty, with tourist experience serving as a mediator. To accomplish this goal, a survey was conducted to gather primary data, and a careful review of prior research was undertaken to select reliable and valid measurements. The survey questionnaires were subsequently sent via email to chosen participants, employing purposive sampling due to the absence of a comprehensive population list. A total of 23 observed variables were analyzed, encompassing exogenous variables such as environment (assessed using a 5-item scale by Quoquab et al. (2019), economics evaluated with 5 items (Oh et al., 2020), and social was measured through 4 items (Larimian & Sadeghi, 2021). The study's mediating variable was tourist experience, measured with 5 items (Zatori et al., 2018), while the dependent variable was tourist loyalty, assessed via 4 items (Zhang et al., 2018). A Likert scale with five response choices, ranging from strongly disagree to strongly agree, was employed to assess elements within each construct. Out of 443 surveys distributed, 337 were collected, resulting in a response rate of 75.8%, which is deemed satisfactory for utilizing structural equation modeling (SEM) in data analysis. Among the collected surveys, 319 were identified as clean and suitable for analysis. For data analysis and hypothesis testing, researchers opted for Smartpls4 software, recognized for its utilization of structural equation modeling (SEM) techniques. This decision was motivated by the software's robust assessment capabilities and proficiency in managing multivariate data analysis, aligning seamlessly with the study's

objectives and adhering to the guidelines outlined by Ringle et al. (2022). Smartpls4 played a crucial role in effectively scrutinizing proposed hypotheses and conducting comprehensive multivariate data analysis, facilitating a thorough examination of both measurement and structural models.

## Data Analysis

### *Respondents' Profiles*

The analysis of respondent profiles reveals interesting insights into the demographic composition of the study participants. In terms of gender, the majority of respondents were male, constituting 52.2% of the total, while females accounted for 47.8%. This gender distribution suggests a relatively balanced representation, ensuring a diverse range of perspectives. Moving on to age distribution, the largest proportion falls within the 31-40 years range, comprising 43.6% of the respondents. The 41-50 years and 51-60 years age groups follow closely behind, with 44.3% and 4.2%, respectively. Notably, participants aged below 30 years and above 60 years make up smaller percentages, hinting at a predominant middle-aged demographic. Regarding educational background, a significant portion of respondents are undergraduates, making up 54.3%, while 31.1% have completed postgraduate studies. Secondary school-educated participants constitute 14.5% of the total. When it comes to income, the majority of respondents earn less than RM4,850, accounting for 53.3%, followed by those earning between RM4,851 and RM10,970 at 30.8%. A smaller percentage, 15.9%, earns above RM10,971. In terms of marital status, a substantial 69.2% of respondents are married, 30.4% are single, and a negligible 0.3% are widowed. Lastly, the overwhelming majority of respondents, at 95.8%, express a positive recommendation for others to visit rural tourism destinations, highlighting a strong overall endorsement of such destinations within the surveyed population.

### *Common Method Bias*

Kock (2015) suggested that the identification of common method bias can be made when the variance inflation factor (VIF) exceeds 3.3. Common method bias occurs when variations in respondents' responses are attributed to the measurement instrument rather than the actual predispositions that the instrument aims to uncover. A thorough collinearity test was conducted to evaluate the presence of collinearity and common method bias. The results of the factor-level analysis, as presented in Table 1, indicated that all variance inflation factors (VIFs) were below the threshold of 3.3. This confirmation implies that the model did not encounter any issues related to common method bias.

Table 1

### *Full Collinearity*

	LOY	ECON	ENV	SOC	EXP
LOY		1.952	1.911	1.871	1.652
ECON	1.910		1.485	1.935	1.896
ENV	1.903	1.511		1.951	1.967
SOC	1.265	1.337	1.325		1.338
EXP	1.416	1.660	1.692	1.695	

*Measurement Model*

In this study, the assessment of both first-order and second-order measurements was conducted using the measurement evaluation technique proposed by Hair et al. (2017). The primary focus was on identifying items with loadings below the 0.7 threshold. Analysis of construct reliability and validity revealed that all constructs demonstrated Average Variance Extracted (AVE) values surpassing 0.5, ranging from 0.553 to 0.683 (Table 2), thereby establishing convergent validity (Hair et al., 2017). Additionally, composite reliability for all constructs exceeded 0.7, ranging from 0.798 to 0.874, while Cronbach's alpha values were greater than 0.7, ranging from 0.793 to 0.854 (Table 2). To ensure discriminant validity, researchers assessed cross-loadings initially, ensuring the effective representation and measurement of each construct by its corresponding items (Table 2). Subsequently, the Heterotrait-Monotrait (HTMT) ratio, recommended for assessing discriminant validity in Variance-Based Structural Equation Modeling (VB-SEM) (Henseler, Ringle & Sarstedt, 2015), was employed. The HTMT ratios for the constructs, along with the original sample, are presented in Table 2. These values were below the 0.85 threshold, and the bias-corrected and accelerated bootstrap confidence intervals remained below 1, confirming adherence to discriminant validity. This comprehensive analysis reinforces confidence in the distinctiveness of the constructs and their efficacy in measuring various facets of the investigated phenomenon.

Table 2

*Construct Reliability, Validity, Cross Loadings & Heterotrait-Monotrait Ratios (HTMT)*

Constructs	Items	Loadings	CA	CR	AVE	ECON	ENV	EXP	LOY
Economics Sustainability	ECON1	0.772	0.854	0.874	0.632				
	ECON2	0.815							
	ECON3	0.845							
	ECON4	0.837							
	ECON5	0.696							
Environmental Sustainability	ENV1	0.816	0.797	0.801	0.553	0.790			
	ENV2	0.706							
	ENV3	0.786							
	ENV4	0.713							
	ENV5	0.688							
Social Sustainability	SOC1	0.863	0.844	0.846	0.683	0.438	0.482	0.432	0.569
	SOC2	0.843							
	SOC3	0.843							
	SOC4	0.752							
Tourist Experience	EXP1	0.802	0.843	0.848	0.614	0.565	0.564		
	EXP2	0.819							
	EXP3	0.793							
	EXP4	0.728							
	EXP5	0.774							
Tourist Loyalty	LOY1	0.796	0.793	0.798	0.616	0.631	0.675	0.741	
	LOY2	0.797							
	LOY3	0.803							
	LOY4	0.743							

Notes: CA=Cronbach Alpha CR=Composite Reliability AVE=Average Variance Extracted

### *Structural Model*

In this study, the evaluation of the structural model encompassed simultaneous scrutiny of pathway coefficients ( $\beta$ ) and coefficients of determination ( $R^2$ ) following the methodology delineated by Hair et al. (2017). The approach employed the Partial Least Squares (PLS) technique with 5000 subsamples to ascertain the significance level of path coefficients. The results of hypothesis tests, including confidence intervals, path coefficients (beta), corresponding t-statistics, and p-values, are detailed in Table 3. This comprehensive analysis offers valuable insights into the significance and resilience of the relationships among the variables integrated into the structural model.

*Hypothesis 1 (H1)*, examining the relationship between Economic Sustainability (ECON) and Tourist Experience (EXP), is strongly supported. The positive beta coefficient (0.289) indicates a significant and moderate impact, with every one-unit increase in Economic Sustainability associated with a 0.289-unit increase in Tourist Experience. The high T statistic (4.007) and low p-value (0.000) underscore the statistical significance of this positive relationship. The absence of significant collinearity issues (Inner VIF: 1.833). *Hypothesis 2 (H2)*, exploring the connection between Economic Sustainability (ECON) and Tourist Loyalty (LOY), is supported. The positive beta coefficient (0.143) suggests a modest yet statistically significant relationship, indicating that a one-unit increase in Economic Sustainability corresponds to a 0.143-unit increase in Tourist Loyalty. While the effect size ( $f^2$ : 0.021) signifies a small practical impact, the absence of significant collinearity issues (Inner VIF: 1.953). *Hypothesis 3 (H3)*, examining Tourist Experience (EXP) as a mediator between Economic Sustainability (ECON) and Tourist Loyalty (LOY), is strongly supported. The positive beta coefficient (0.111) indicates a statistically significant indirect effect, with Tourist Experience serving as a mediator in the relationship. The high T statistic (3.187) and low p-value (0.001) highlight the robustness of this mediating role, and the effect size ( $f^2$ : 0.051) suggests a moderate practical impact. The absence of a direct coefficient for Tourist Experience implies that the entire relationship operates through this mediating variable, and the Inner VIF (0.186) indicates no significant collinearity issues. *Hypothesis 4 (H4)*, exploring the link between Environmental Sustainability (ENV) and Tourist Experience (EXP), is strongly supported. The positive beta coefficient (0.213) signifies a significant and moderate relationship, indicating that a one-unit increase in Environmental Sustainability corresponds to a 0.213-unit increase in Tourist Experience. The high T statistic (3.207) and low p-value (0.001) confirm the statistical significance of this association. The effect size ( $f^2$ : 0.035) suggests a moderate practical impact, with no significant collinearity issues (Inner VIF: 1.868). *Hypothesis 5 (H5)*, investigating the link between Environmental Sustainability (ENV) and Tourist Loyalty (LOY), is strongly supported. The positive beta coefficient (0.197) indicates a significant and moderate relationship, suggesting that a one-unit increase in Environmental Sustainability corresponds to a 0.197-unit increase in Tourist Loyalty. The moderate T statistic (2.958) and low p-value (0.003) confirm the statistical significance of this association. The effect size ( $f^2$ : 0.041) implies a moderate practical impact with no significant collinearity issues (Inner VIF: 1.933). *Hypothesis 6 (H6)*, exploring Tourist Experience (EXP) as a mediator between Environmental Sustainability (ENV) and Tourist Loyalty (LOY), is robustly supported. The positive beta coefficient (0.081) indicates a statistically significant indirect effect, affirming the mediating role of the Tourist Experience. The high T statistic (3.189) and low p-value (0.001) underscore the robustness of this mediation effect. The effect size ( $f^2$ : 0.033) suggests a small but practical impact, with no significant collinearity issues (Inner VIF: 0.133). The absence of a direct

coefficient for Tourist Experience indicates that the entire relationship operates through this mediating variable. *Hypothesis 7 (H7)*, investigating the link between Social Sustainability (SOC) and Tourist Experience (EXP), is strongly supported. The positive beta coefficient (0.169) indicates a significant and moderate relationship, suggesting that a one-unit increase in Social Sustainability corresponds to a 0.169-unit increase in Tourist Experience. The substantial T statistic (3.013) and low p-value (0.003) confirm the statistical significance of this association. For *Hypothesis 8 (H8)*, the relationship between Social Sustainability and Loyalty is positive and statistically significant. The beta coefficient of 0.196 indicates that a one-unit increase in Social Sustainability leads to a 0.196-unit increase in Loyalty. The high t-statistic of 3.978, coupled with a p-value of 0.000, which is well below the conventional significance level of 0.05, confirms this strong positive relationship. Therefore, H8 is supported, meaning we reject the null hypothesis and conclude that Social Sustainability has a positive impact on Loyalty. Moving to *Hypothesis 9 (H9)*, the relationship between Tourist Experience and Loyalty is also positive and highly significant. The beta coefficient of 0.380 suggests that a one-unit increase in Tourist Experience results in a 0.380-unit increase in Loyalty. The very high t-statistic of 7.197 and the p-value of 0.000 provide strong evidence for this relationship. Thus, H9 is supported, leading to the rejection of the null hypothesis and the conclusion that Tourist Experience positively influences Loyalty. Finally, *Hypothesis 10 (H10)*, which examines the indirect effect of Social Sustainability on Loyalty through Tourist Experience, also demonstrates a positive and significant relationship. The beta coefficient of 0.064 indicates a positive indirect effect. The t-statistic of 2.741 and the p-value of 0.006, again below the 0.05 threshold, confirm the statistical significance of this indirect effect. Consequently, H10 is supported, leading to the rejection of the null hypothesis and the conclusion that Social Sustainability positively influences Loyalty through the mediating role of Tourist Experience. According to Cohen's (1992) criteria, Table 3 presents a detailed summary of effect sizes, categorized as small (0.020 to 0.150), medium (0.150 to 0.350), or large (0.350 or above), irrespective of sample size. The observed effect sizes ranged from 0.021 (small) to 0.205 (medium). As shown in Table 3, all Intrinsic Value Inflation Factor (VIF) values were below 5, with the highest VIF being 1.953. This acceptable level of multicollinearity allows for valid comparisons of effect sizes and coefficient interpretations within the structural model. The model demonstrated a substantial amount of explained variance for the endogenous construct, with an  $R^2$  of 0.511 (Figure 1). For the mediator, the model explained approximately 30.5% of the variance, reflected in an  $R^2$  value of 0.305.

The conducted analysis in this research provided robust evidence supporting the majority of the hypotheses, confirming the established connections among the scrutinized variables. To ensure the reliability of the structural model, we assessed the inherent Value Inflation Factor (VIF) values, all of which were found to be below the generous threshold of 5, with the highest value recorded at 1.953 (Table 3). This minimal level of collinearity facilitates meaningful comparisons of magnitudes and the interpretation of coefficients within the model. The endogenous construct demonstrated a noteworthy degree of explained variance, with an  $R^2$  value of 0.511 (as depicted in Figure 1). Regarding the mediator, the model elucidated approximately 30.5% of the variability in the framework, as evidenced by an  $R^2$  value of 0.305.

To assess the model's ability to draw conclusions and provide managerial recommendations, an out-of-sample predictive analysis was executed using the PLSpredict technique, adhering to the methodology outlined by Shmueli et al. (2016, 2019). The  $Q^2$  forecasts in Table 4

indicate that PLS-SEM predictions exceeded standard naive mean predictions, with values above 0. Additionally, the Root Mean Square Error (RMSE) values associated with PLS-SEM predictions demonstrated lower values than those from the Linear Model (LM) prediction benchmark in all instances, highlighting the predictive capability of the proposed model (see Table 4). These findings underscore the efficacy of the structural model in generating precise forecasts and offering valuable insights for managerial decision-making. The integration of the Cross-Validated Predictive Ability Test (CVPAT) by Hair et al. (2022) and its application alongside PLSpredicts for evaluation by Liengard et al. (2021) contributes to ongoing PLS-SEM model prediction assessment. CVPAT, using out-of-sample predictions, compares average loss values to two benchmarks: indicator averages (IA) and linear model (LM), with lower PLS-SEM loss values indicating superior predictive ability. The results in Table 5 confirm the superiority of PLS-SEM, supported by lower average loss values, demonstrating robust predictive performance.

Importance Performance Analysis (IPMA), proposed by Ringle and Sarstedt (2016) and Hair et al. (2018), was utilized to evaluate the significance and effectiveness of latent variables in elucidating acceptance. The outcomes in Table 6 reveal that the tourist experience has the most substantial influence (0.380) on overall tourist loyalty, followed by environment (0.278), social (0.260), and economics (0.253). These figures indicate the relative importance of each latent variable within the loyalty context. Concerning performance, social achieved the highest score (67.392) on a scale of 0 to 100, indicating relatively robust performance, while tourist experience garnered the lowest score (60.552), signifying a lower level of accomplishment. Despite its pivotal role in tourist loyalty, the tourist experience displayed the weakest performance. In light of these findings, rural tourism operators should prioritize efforts to enhance the tourist experience, as elevating this aspect can consequently boost overall tourist loyalty in rural tourism.

Table 3

*Hypotheses Testing Results, f<sup>2</sup> & Inner VIF*

Hypotheses	Beta	T statistics	P values	f <sup>2</sup>	Inner VIF	2.50%	97.50%	Decision
H1: ECON -> EXP	0.289	4.007	0.000	0.066	1.833	0.147	0.429	Supported
H2: ECON -> LOY	0.143	1.979	0.048	0.021	1.953	0.005	0.288	Supported
H3: ECON -> EXP -> LOY	0.111	3.187	0.001			0.051	0.186	Supported
H4: ENV -> EXP	0.213	3.207	0.001	0.035	1.868	0.077	0.341	Supported
H5: ENV -> LOY	0.197	2.958	0.003	0.041	1.933	0.062	0.322	Supported
H6: ENV -> EXP -> LOY	0.081	3.189	0.001			0.033	0.133	Supported
H7: SOC -> EXP	0.169	3.013	0.003	0.034	1.277	0.057	0.275	Supported
H8: SOC -> LOY	0.196	3.978	0.000	0.062	1.269	0.097	0.288	Supported
H9: EXP -> LOY	0.380	7.197	0.000	0.205	1.440	0.274	0.481	Supported
H10: SOC -> EXP -> LOY	0.064	2.741	0.006			0.022	0.115	Supported

Table 4

*PLSpredicts*

	Q <sup>2</sup> predict	PLS-SEM_RMSE	LM_RMSE	PLS - LM
EXP1	0.225	0.623	0.626	-0.003
EXP2	0.179	0.622	0.641	-0.019
EXP3	0.12	0.679	0.686	-0.007
EXP4	0.144	0.699	0.718	-0.019
EXP5	0.181	0.617	0.634	-0.017
LOY1	0.303	0.607	0.619	-0.012
LOY2	0.225	0.608	0.629	-0.021
LOY3	0.261	0.649	0.664	-0.015
LOY4	0.151	0.714	0.73	-0.016

Table 5

*Cross-Validated Predictive Ability Test (CVPAT)*

	Average loss difference	t value	p-value
EXP	-0.085	3.945	0.000
LOY	-0.127	5.633	0.000
Overall	-0.104	5.367	0.000

Table 6

*Importance-Performance Map Analysis (IPMA)*

	Total Effect	Performance
ECON	0.253	66.516
ENV	0.278	65.922
EXP	0.380	60.552
SOC	0.260	67.392

**Discussion & Conclusion**

The findings of this study provide valuable insights into developing a strategic approach for enhancing economic sustainability, environmental sustainability, and social sustainability to augment tourist loyalty with the mediating role of the tourist experience. The robust support for Hypotheses 1, 4, 7, and 8 underscores the significance of these sustainability dimensions in influencing both tourist experience and loyalty. To foster economic sustainability, rural tourism operators should focus on initiatives that not only contribute to the local economy but also enhance the overall tourist experience. This may involve creating partnerships with local businesses, offering unique and culturally enriching activities, and ensuring fair economic practices that benefit the local community. Environmental sustainability, supported by Hypotheses 4 and 5, emerges as a critical factor in shaping both tourist experience and loyalty. Implementing eco-friendly practices, preserving natural resources, and showcasing the region's ecological diversity can enhance the overall appeal of the destination. Tourists are increasingly drawn to destinations that prioritize environmental conservation, making it imperative for rural tourism operators to integrate sustainable practices into their offerings. Social sustainability, as validated by Hypotheses 7 and 8, holds substantial influence over both tourist experience and loyalty. Strengthening ties with the local community, promoting cultural exchange, and implementing socially responsible initiatives can create a positive and inclusive atmosphere. This may involve engaging in community development projects,

supporting local arts and crafts, and fostering meaningful interactions between tourists and locals. The mediation effect of the tourist experience, supported by Hypothesis 9, accentuates the need to prioritize and enhance the overall quality of tourists' interactions with the destination. Rural tourism operators should invest in creating memorable and immersive experiences, personalized services, and opportunities for cultural immersion. This can be achieved through guided tours, workshops, and cultural events that enable tourists to connect with the destination on a deeper level. In conclusion, a holistic strategy for enhancing economic, environmental, and social sustainability is essential for boosting tourist loyalty, with tourist experience acting as a vital mediator. Rural tourism operators should adopt a multifaceted approach that integrates sustainable practices, fosters community engagement, and prioritizes the creation of authentic and enriching experiences. By aligning these dimensions with the preferences and expectations of modern tourists, destinations can cultivate a loyal visitor base, contributing to long-term sustainability and success in the competitive tourism industry.

### **Theoretical Implications**

The theoretical contributions of this study are multifaceted and enrich the existing literature on rural tourism, sustainability, and tourist behavior. Firstly, the study extends the understanding of the relationships between sustainability components—economic, environmental, and social—and their intricate connections with both tourist experience and loyalty. The empirical validation of these relationships contributes to the refinement of theoretical frameworks that explain the complex interplay among these constructs. Secondly, the study introduces and substantiates the mediating role of tourist experience in the relationships between sustainability components and tourist loyalty. This theoretical extension aligns with the growing recognition of the centrality of experience in shaping tourist perceptions and behaviors. The mediation model enhances our understanding of the underlying mechanisms through which sustainability dimensions exert their influence on loyalty, emphasizing the pivotal role of the tourists' overall experiences. Furthermore, the study incorporates a comprehensive assessment of predictive performance using innovative techniques such as PLSpredict and Cross-Validated Predictive Ability Test (CVPAT). This methodological contribution advances the field by introducing robust tools for evaluating the predictive capabilities of structural equation models in tourism research. The study offers theoretical advancements by delving into the intricate relationships between sustainability dimensions, tourist experience, and loyalty while also contributing methodologically by employing cutting-edge techniques for predictive analysis. These contributions collectively enrich the theoretical landscape of sustainable rural tourism, providing scholars with valuable insights for future research endeavors in this dynamic and evolving field.

### **Practical Implications**

The practical contributions of this study offer valuable insights for stakeholders in the rural tourism industry, guiding strategic decisions and initiatives aimed at enhancing sustainability and tourist loyalty. Firstly, the findings provide actionable recommendations for rural tourism operators to bolster economic sustainability. Collaborative efforts with local businesses, the introduction of culturally enriching activities, and fair economic practices can not only contribute to the local economy but also elevate the overall tourist experience, fostering loyalty in the process. Environmental sustainability emerges as a key practical focus, with the study suggesting that rural tourism destinations can attract and retain tourists by

implementing eco-friendly practices, preserving natural resources, and showcasing the ecological diversity of the region. These actionable strategies align with the growing global interest in sustainable tourism, positioning rural destinations as environmentally conscious and appealing choices for eco-conscious travelers. Social sustainability is underscored as a practical imperative, with the study recommending initiatives such as community development projects, support for local arts and crafts, and meaningful interactions between tourists and locals. Strengthening ties with the local community not only enhances the social fabric of the destination but also contributes to a positive and inclusive atmosphere that resonates with tourists. The mediation effect of tourist experience suggests that investing in creating memorable and immersive experiences is crucial for building tourist loyalty. Rural tourism operators can design guided tours, workshops, and cultural events that allow tourists to connect with the destination on a deeper level, fostering a sense of attachment and loyalty. This study's practical contributions equip rural tourism practitioners with concrete strategies for promoting economic, environmental, and social sustainability. They emphasize the pivotal role of creating exceptional tourist experiences to cultivate and retain a loyal visitor base.

### **Suggestions for Future Studies**

Future studies in the realm of rural tourism, sustainability, and tourist behavior can explore several promising avenues to expand our understanding and refine existing frameworks. Firstly, investigating the role of emerging technologies, such as augmented reality (AR) and virtual reality (VR), in enhancing tourist experiences within rural settings could provide valuable insights into the integration of technology with sustainable tourism practices. Secondly, a deeper exploration of the cultural and socio-economic factors influencing tourists' perceptions and behaviors in rural contexts would contribute to a more nuanced understanding of the dynamics at play. Additionally, longitudinal studies tracking the evolution of tourists' loyalty over time and across various sustainability initiatives could offer valuable insights into the long-term impacts of sustainable practices on visitor retention. Furthermore, comparative studies across diverse rural destinations and their unique sustainability challenges could uncover context-specific strategies and contribute to a more comprehensive and globally applicable understanding of sustainable rural tourism. Lastly, incorporating the perspectives of local communities and stakeholders in shaping and implementing sustainability initiatives would enrich the literature by providing a more holistic view of the sustainable tourism landscape.

### **Conclusion**

This study delves into the intricate relationships between economic, environmental, and social sustainability in the context of rural tourism, examining their impact on tourist experience and loyalty. The robust empirical support for the proposed hypotheses underscores the interconnectedness of these dimensions and their pivotal role in shaping tourists' perceptions and behaviors. The mediation effect of the tourist experience further highlights the importance of creating immersive and memorable encounters to foster loyalty. Practical implications for rural tourism operators include a focus on collaborative economic practices, eco-friendly initiatives, and socially responsible engagements to enhance sustainability and tourist loyalty. The theoretical contributions enrich our understanding of the complex dynamics within sustainable rural tourism, while methodological innovations in predictive analysis add rigour to the study. As destinations strive for sustainability in the competitive tourism landscape, this research provides valuable insights for both scholars and

practitioners, guiding future endeavors to cultivate enduring relationships between tourists and rural destinations.

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