

The Role of Sustainable Tourism in Enhancing Cultural Heritage Preservation: In-depth Analysis

Dr. Jayaprakash Lamoria¹, Abhinav Mishra², Nishant Kumar³, Prem Colaco⁴, Tarang Bhatnagar⁵, RanganathaswamyMadihalli Kenchappa⁶, Tusha⁷

¹Assistant Professor, Parul Institute of Management and Research-MBA, Parul University, Vadodara, Gujarat, India, Email Id- jayprakash.lamoria@paruluniversity.ac.in

²Chitkara Centre for Research and Development, Chitkara University, Himachal Pradesh- 174103 India, abhinav.mishra.rop@chitkara.edu.in

³Assistant Professor, Department of Commerce, ARKA JAIN University, Jharkhand, India, Email Id- nishant.k@arkajainuniversity.ac.in

⁴Assistant Professor, Department of ISWE, ATLAS SkillTech University, Mumbai, Maharashtra, India, Email Id- prem.colaco@atlasuniversity.edu.in

⁵Centre of Research Impact and Outcome, Chitkara University, Rajpura- 140417, Punjab, India, tarang.bhatnagar.rop@chitkara.edu.in

⁶Associate Professor, Department of Mechanical Engineering, Faculty of Engineering and Technology, JAIN (Deemed-to-be University), Ramanagara District, Bangalore, Karnataka - 562112, India, Email Id- rk.ranganatha@jainuniversity.ac.in

⁷Quantum University Research Center, Quantum University, India. tusha@quantumeducation.in

Abstracts

Sustainable tourism is essential to improving the preservation of cultural property since it encourages ethical travel, helps local communities, and raises money for conservation initiatives. It guarantees the preservation of cultural treasures for future generations while promoting awareness and appreciation of them. In this paper, the relationship between sustainable tourism practice, environmental policies, tourist education, community involvement, tourism revenue allocation, and cultural heritage preservation were evaluated using structural equation modeling (SEM) analysis. Five hypotheses were developed and the dataset includes 232 respondents. A systematic questionnaire with a Likert scale rating was used to evaluate the data. As a result, latent construct validity and reliability were examined, and the structural model evaluated the connections between the constructs in the context of the suggested hypotheses. The structural model revealed that EP, STP, and TE are positively connected to the CHP, providing support for hypothesis 1: Cultural Heritage Preservation and Sustainable Tourism Practice (CHP→STP) and 3: Cultural Heritage Preservation and Environmental Policies (CHP→EP) are well supported and show no significant changes to enhancing heritage preservation.

Keywords: Sustainable tourism, environmental, Cultural Heritage Preservation, hypotheses, and structural equation modeling (SEM).

Introduction

Sustainable tourism performs a critical position in the protection and advertising of cultural backgrounds, acting as a bridge between economic improvement and the safeguarding of cultural assets. As tourism grows, it has the potential to guide the protection of historical sites, traditions, and cultural practices by offering financial assets and elevating consciousness [6]. However, without proper management, tourism can also lead to the degradation of this cultural property through overcrowding, commercialization, and environmental impact.

One of the primary ways sustainable tourism enhances cultural historical past renovation with the aid of generating earnings that can be reinvested into maintaining and restoring heritage sites. Entrance costs, guided excursions, and cultural events can be used to fund conservation projects, ensuring that these sites stay intact for future generations [1]. Additionally, the involvement of nearby groups in tourism activities can result in a deeper understanding and appreciation of their own cultural heritage, fostering a feeling of cost and responsibility for its protection.

Sustainable tourism encourages the improvement of regulations and practices that prioritize the safety of cultural heritage. Governments and groups are more likely to put in force rules that limit the poor effect of tourism, together with controlling tourist numbers, limiting admission to vulnerable areas, and promoting environmentally friendly practices [4]. These measures assist in maintaining the integrity of cultural sites and reduce the threat of harm because of over-tourism.

Another key element of sustainable tourism is its function in promoting cultural trade and understanding. By engaging with local cultures, visitors can benefit from a deeper appreciation of the history and traditions of the places they visit. This change no longer only enriches the traveler experience but also helps to maintain intangible cultural history, together with language, track, dance, and crafts, by means of retaining those traditions alive and relevant in a globalized globe [2].

It can make a contribution to the empowerment of local groups by presenting monetary possibilities and supporting the improvement of small businesses. Financial empowerment can reduce the need for groups to desert conventional practices in the desire for greater lucrative but potentially harmful activities. Instead, they can recognize keeping and showcasing their cultural history in a manner that is both worthwhile and sustainable [9]. Sustainable tourism performs a crucial role in enhancing cultural history renovation by imparting monetary assets, fostering community involvement, encouraging shielding regulations, promoting cultural trade, and empowering local groups. When controlled successfully, it guarantees that cultural background is not simply preserved; however, additionally celebrated and shared with the sector in a manner that respects and honors its significance [5].

The main objective of this paper is to investigate the role of sustainable tourism in enhancing cultural heritage preservation using SEM.

The remaining phase is as follows: In phase 2, the hypothesis is developed and related work is presented. In phase 3, the methodology contains demographic details, the structure of questionnaires, and statistical analysis was discussed. While phase 4 presents the result of this paper, and phase 5 concludes the research,

Related work

An expert-driven assessment framework to evaluate intangible cultural heritage relevant to theater's sustainable tourist growth was created in research [15]. The assessment showed that humanistic values were well preserved, although there were shortcomings in the growth of tourism, particularly in terms of technology. Important suggestions include striking a balance between innovation, preservation, and diffusion, stressing the importance of ideology, transparency, and climate compatibility, preserving humanistic variety, and enhancing site architecture.

A number of local characteristics were identified in an article [11] together with an assessment of how they affected the perception of advantages and encouragement for the tourism field's long-term growth. Structural equation modeling was applied to a data collection of 250 residents of two museums (SEM). The results showed that every factor significantly improved perceptions of the advantageous outcomes, which in turn greatly raised awareness for sustainable development.

The idea of post-smart tourism emerged as a result of numerous opponents who contended that travel destinations frequently prioritize technological adoption over local knowledge, inclusion, and indigenous local features of their development by research [7]. The results of the research indicated that while digital competency and environmentally friendly procedures have an important mediating impact of location on post-smart vacationing communities, innovative activities were crucial for the local elements of a village that attract tourists, and sustainability practices are the foundation blocks for a post-smart tourism village.

The specific socio-cultural and ecological context presented in the research [12] concentrated on providing a significant addition to the scholarly discourse as well as the practical understanding of how the goals of sustainable development might be used as a catalyst for significant change. By performing a thorough analysis of the complexity of sustainable development in a specific region, it found significant lessons that resonate with professionals, politicians, and residents around the world.

The paradigm model presented by research [10] sheds light on the composition and methodology of local support for sustainable tourism development (SSTD) in minor historical sites. The characteristics of the central phenomena of social interaction SSTD at tiny heritage sites were determined for the first time. Given the significance of the qualitative research on sustainable tourist development in minor heritage sites, the results of their search can serve as a foundation for enhancing community-based SSTD in Iran and other locations.

An article [8] incorporated the cultural worldview and sustainable intelligence as catalysts for inhabitants' desires and actions to protect land-based cultural tourism resources, it models the

goal-oriented behavior (MGB) paradigm. The results also demonstrated that inhabitants' behavioral intention to conserve the legacy was stimulated by their attitude, perceived authority, and expected emotions, both positive and negative. The findings of the research have significance for agricultural historic properties and sustainable development strategies.

To develop the impact process of cultural identity on visitors' consuming intentions in heritage tourism, research [14] examined cultural identity as a predicate variable, which allows the use of the planned conduct theory. The experimental findings demonstrated that, when it came to historical tourist attractions, cultural affiliation positively influenced tourists' intent to consume, indicating that was a powerful motivator. Consuming aspirations were positively impacted by behavioral mindsets, perceived control of behavior, and personal standards.

An article [3] investigated how public-private partnerships (PPPs) eliminate destitution in tourist-hosting communities through the promotion of sustainable tourism. Primary data was gathered from experts with a range of experiences in a qualitative approach. The results were subjected to thematic analysis and discussion, with particular attention paid to broad questions about sustainable tourism and the effects of PPP implementation on the economic, environmental, and social determinants of tourist destinations.

The Prism of Sustainable (PoS) model guided the conception in research [13]. They investigated how the respondents' fulfillment with sustainable tourism was affected by socio-cultural and environmental aspects. The findings of the research suggested that these elements have a major impact on the satisfied locals and tourists with sustainable tourism. When planning the growth of visitors in the wilderness preserve, the research's findings could offer crucial information. Furthermore, the outcomes may contribute to the advancement of the tourism sector on a local and national level.

Hypothesis development

□ H1- Cultural Heritage Preservation and Sustainable Tourism Practice (CHP→STP)

This hypothesis predicts that the implementation of sustainable tourism practices ends in stronger maintenance of cultural historical sites. It shows that practices like eco-friendly tourism and responsible visitor conduct make a contribution to better conservation and restoration efforts.

□ H2- Cultural Heritage Preservation and Community Involvement (CHP→CI)

It supports the case that local communities' active participation in tourism-related initiatives promotes the preservation of cultural assets. It implies that when communities are engaged, they are more likely to support and contribute to cultural heritage conservation.

□ H3- Cultural Heritage Preservation and Environmental Policies (CHP→EP)

CGP-CI proposes that severe environmental policies related to tourism positively impact the preservation of cultural heritage. It suggests that policies aimed at minimizing environmental damage lead to better protection of heritage sites.

□ H4- Cultural Heritage Preservation and Tourism Revenue Allocation (CHP→TRA)

It hypothesizes that the strategic allocation of tourism revenue toward heritage preservation projects enhances the conservation of cultural sites. It implies that directing funds from tourism towards preservation attempts outcomes in more effective protection of cultural heritage.

□ H5- Cultural Heritage Preservation and Tourist Education (CHP→TE)

It suggests that educating tourists about cultural heritage contributes to its preservation. It implies that informed tourists are more likely to respect and support efforts to conserve cultural sites.

Methodology

In this section, thekey variables such as the independent variables are Sustainable Tourism Practice (STP), Community Involvement (CI), Environmental Policies (EP), Tourism Revenue Allocation (TRA), and Tourist Education (TE) were provided, while the dependent variable is Cultural Heritage Preservation (CHP). Fig 1 illustrates a theoretical framework.

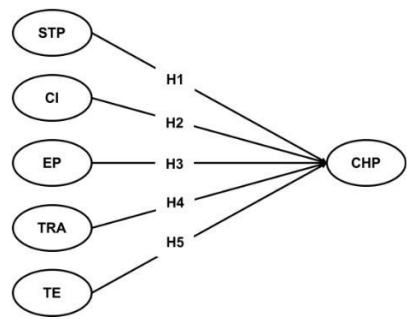


Fig 1 Theoretical framework

Demographic details

The dataset includes demographic details for 232 respondents who visit cultural heritage sites, including their information on age, gender, education level, occupation, and geographical location. Table I represents the demographic details.

Table I Demographic details		
Variables	Category	Count
Age	18-25	39
	26-34	100
	35-45	51
	Above 45	42
Gender	Male	129
	Female	103
Education level	High school	31
	Undergraduate	107

	Postgraduate	58
	Doctorate	36
Occupation	Student	39
	Tour guide	85
	Travel agent	53
	Travel content creators	28
	others	27
Geographical location	Urban	49
	Suburban	57
	Rural	88
	mountainous	38

Structure of Questionnaires

CHP: The two questions in this section are designed to measure the benefits and outcomes of current cultural heritage preservation efforts influenced by various factors.

TE: This section contains two questions to evaluate how education about cultural heritage affects tourist behavior and support for preservation.

STP: The two questions in this section assess the effect of sustainable tourism practices on cultural heritage preservation efforts.

EP: There are two questions in this part, which concentrate on the ways in which environmental policies associated with tourist management assist in the preservation of cultural heritage sites.

TRA: The two questions here are to understand the role of tourism revenue allocation in supporting the preservation of cultural heritage sites.

CI: This section also contains two questions aimed at determining how local community involvement in tourism capability contributes to cultural heritage preservation. Questionnaires are presented in Appendix A.

A 5-point Likert scale was used to survey 232 participants about various aspects of cultural heritage preservation. CHP responses ranged from (1) not effective at all to (5) extremely effective for the impact of different preservation. TE responses varied from (1) not at all influential to (5) extremely influential for the influence of tourist's attitudes and actions. STP responses were from (1) not at all contributing to (5) extremely contributing to the evaluation of practices. EP responses ranged from (1) not impactful at all to (5) extremely impactful for protecting the heritage sites. The TRA responses were as follows: (1) extremely disagree; (5) extremely agree that the revenue allocation is understood. CI responses varied from (1) not involvement to (5) extensive involvement.

Statistical analysis

The SEM technique was used in this experiment to develop the proposed structural model because it provides greater flexibility for data collecting and sample size. CHP was used to analyze the framework components (TE, STP, EP, TRA, and CI).

□ Reliability evaluation

It refers to the consistency of a dimension tool or test. In the context of research and SEM, it evaluates the degree to which a device consistently measures a constraint. A reliable tool will yield comparable outcomes in steady situations. Reliability may be assessed through the use of numerous methods, including Cronbach’s alpha, item loading, and composite reliability (CR).

Validity evaluation

It refers back to the extent to which a device measures what its miles are intended to measure. It assessed the accuracy of the size. In SEM, validity is generally categorized into convergent and discriminant validity.

Structural model

The structural model in SEM represents the hypothesized connection between constraints and is used to check the causal connection via the hypotheses. It consists of R- squared values (R^2) and effect sizes (f^2).

Result and discussion

The reliability, validity, and structural model were evaluated using constructs in this section.

Reliability and Validity evaluation

Each variable is evaluated based on the loading of individual items, alpha values, CR value, Average Variance Extracted (AVE) value, and vital value. Table II represents the reliability evaluation. Item loading denotes the correlation between every item and its underlying construct, with values typically starting from 0.74 to 0.83. Higher loading indicates that the objects are strong signs of the assembly. (α) Value degree assesses the inner consistency of the items inside a construct. The (α) value ranges from 0.80 to 0.86, suggesting a high stage of reliability, as values above 0.70 are commonly considered applicable. CR values range from 0.83 to 0.89, indicating the overall reliability of the assembly. CR values of about 0.70 are considered high quality, understanding the constructs are reliably measured with the aid of the items. AVE values from 0.55 to 0.66 measure the quantity of variance captured with the aid of the assessment relative to the variance due to measurement errors, with values above 0.50. β Values range from 0.47 to 0.55, representing the energy of the connection between the construct and its related variables.

Table II reliability evaluation

Construct	Item	Loading	(α) value	β value	AVE value	CR value
CHP	CHP 1	0.83	0.86	0.55	0.66	0.89
	CHP 2	0.81				
TE	TE 1	0.76	0.81	0.52	0.57	0.84
	TE 2	0.74				
STP	STP 1	0.80	0.84	0.48	0.62	0.87
	STP 2	0.78				
EP	EP 1	0.81	0.83	0.53	0.60	0.86
	EP 2	0.79				
CI	CI 1	0.77	0.80	0.47	0.55	0.83
	CI 2	0.75				

TRA	TRA 1	0.79	0.82	0.50	0.59	0.85
	TRA 2	0.77				

The discriminant validity is evaluated, as shown in Table III. The values starting from 0.77 to 0.83 imply the square root of AVE of each construct. For discriminant validity to be accepted, each diagonal value ought to be higher than the off diagonal values in its corresponding row and column. This implies that the assemble shares more variance with its personal measures than the different constructs. The correlation between STP and CHP is 0.55, which is lower than the square root of the AVE for both CHP (0.83) and STP (0.80), indicating true discriminant validity.

Table III Discriminant validity

Construct	CHP	STP	CI	TRA	EP	TE
CHP	0.83					
STP	0.55	0.80				
CI	0.52	0.58	0.81			
TRA	0.57	0.60	0.54	0.79		
EP	0.50	0.53	0.56	0.58	0.82	
TE	0.48	0.51	0.49	0.52	0.54	0.77

Structural model

The primary metrics utilized to examine the structural model are the significance of size (f^2) and the R^2 values of the internal latent variables. Table IV shows the output of the structural analysis as well as the results of the SEM approach. By examining variations in R^2 values, the effect size (f^2), which determines the relative effect of an external factor on an internal factor, enhances R^2 analysis and research guarantees a thorough analysis.

Table IV Output of the structural analysis

Hypothesis	β value	P Value	R^2	f^2	Findings
H1:(CHP→STP)	0.52	<0.001	0.50	0.38	Well supported
H2:(CHP→CI)	0.48	<0.001	0.45	0.28	Supported
H3:(CHP→EP)	0.09	<0.001	0.48	0.35	Well supported
H4:(CHP→TRA)	0.10	<0.001	0.46	0.30	Supported
H5:(CHP→TE)	0.08	<0.001	0.43	0.27	Supported

H1:(CHP→STP): The connection between Cultural Heritage Preservation (CHP) and Sustainable Tourism Practice (STP) shows a statistically significant medium effect size, providing strong support for this hypothesis.

H2:(CHP→CI): It is supported by the statistically significant relationship between Cultural Heritage Preservation (CHP) and Community Involvement (CI), which points to a medium effect size.

H3:(CHP→EP): It is well supported by the statistically significant relationship between Cultural Heritage Preservation (CHP) and Environmental Policies (EP), which points to a medium effect size.

H4: (CHP→TRA): The connection between Cultural Heritage Preservation (CHP) and Tourism Revenue Allocation (TRA) shows a medium effect size and is statistically significant, supporting this hypothesis.

H5: (CHP→TE): The connection between Cultural Heritage Preservation (CHP) and Tourist Education (TE) proposes a large effect size and is statistically significant, providing support for this hypothesis.

Conclusion

Study used SEM analysis to investigate the connection between environmental policies, tourism revenue allocation, sustainable tourism practice, tourist education, and community involvement with cultural heritage preservation. Data was gathered from 232 respondents using Likert scale questionnaires. The result demonstrated that EP,STP, and TE positively influence CHP with the values $\beta = 0.53, 0.52,$ and 0.48 and $p\text{-value} < 0.005$. According to the findings, hypotheses 1 (CHP→STP) and 3 (CHP→EP) are well supported than others, and the role of sustainable tourism with no significant changes occurred in cultural heritage preservation. The study's reliance on a single dataset and self-mentioned measures may additionally introduce biases, probably proscribing the generalizability of the findings. The cross-sectional nature of the facts restricts insights into causal relationships and long-term outcomes. Future research has to discover longitudinal designs to assess causal influences through the years and incorporate various information resources for broader applicability. Additionally, examining other ability factors influencing cultural heritage preservation, which include local government policies and international collaborations, may provide deeper insights.

WORKS CITED

- Anh, T.T.T., Anh, T.T.L. and Thanh, N.N. "The impact of green tourism on the Hmong community in Vietnam." *Multidisciplinary Science Journal*, 6(4), pp.2024034-2024034, 2024. <https://doi.org/10.31893/multiscience.2024034>
- Caciora, T., Herman, G.V., Ilieș, A., Baiaș, Ș., Ilieș, D.C., Josan, I. and Hodor, N. "The use of virtual reality to promote sustainable tourism: A case study of wooden churches historical monuments from Romania." *Remote Sensing*, 13(9), p.1758, 2021. <https://doi.org/10.3390/rs13091758>
- Geoffrey Deladem, T., Xiao, Z., Siueia, T.T., Doku, S. and Tettey, I. "Developing sustainable tourism through public-private partnership to alleviate poverty in Ghana." *Tourist Studies*, 21(2), pp.317-343, 2021. <https://doi.org/10.1177/1468797620955250>
- Hosseini, K., Stefaniec, A. and Hosseini, S.P. "World Heritage Sites in developing countries: Assessing impacts and handling complexities toward sustainable tourism." *Journal of Destination Marketing & Management*, 20, p.100616, 2021. <https://doi.org/10.1016/j.jdmm.2021.100616>
- Ivancsóne Horváth, Z., Kupi, M. and Happ, E. "The role of tourism management for sustainable tourism development in nature reserves in Hungary." *GeoJournal of Tourism and Geosites*, 49(3), pp.893-900, 2023. <https://doi.org/10.30892/gtg.49306-1090>
- Jiawei, A.Z. and Mustapha, B.A. "Intangible cultural heritage protection from the perspective of cultural tourism: a case study of Shaanxi Province, China." In *IOP Conference Series: Earth and Environmental Science* (Vol. 1366, No. 1, p. 012051). IOP Publishing, 2024. <https://doi.org/10.1088/1755-1315/1366/1/012051>
- Kusumastuti, H., Pranita, D., Viendyasari, M., Rasul, M.S. and Sarjana, S. "Leveraging Local Value in a Post-Smart Tourism Village to Encourage Sustainable Tourism." *Sustainability*, 16(2), p.873, 2024. <https://doi.org/10.3390/su16020873>

- Lee, C.K., Olya, H., Park, Y.N., Kwon, Y.J. and Kim, M.J. "Sustainable intelligence and cultural worldview as triggers to preserve heritage tourism resources." *Tourism Geographies*, 25(2-3), pp.899-918, 2023. <https://doi.org/10.1080/14616688.2021.2016934>
- Mzembe, A.N., Koens, K. and Calvi, L. "The institutional antecedents of sustainable development in cultural heritage tourism." *Sustainable Development*, 31(4), pp.2196-2211, 2023. <https://doi.org/10.1002/sd.2565>
- Pezeshki, F., Khodadadi, M. and Bagheri, M. "Investigating community support for sustainable tourism development in small heritage sites in Iran: A grounded theory approach." *International Journal of Heritage Studies*, 29(8), pp.773-791, 2023. <https://doi.org/10.1080/13527258.2023.2220316>
- Pramanik, S.A.K. and Rahman, M.Z. "Influences of local community dimensions in enhancing support for sustainable tourism development." *International Journal of Hospitality & Tourism Administration*, 25(4), pp.817-841, 2024. <https://doi.org/10.1080/15256480.2023.2169854>
- Singh, S.V., Jha, R., Singh, A.K., Ranjan, R. and Pandey, S. "Sustainable Tourism Perspective in the Sustainable Development Goals: A Case Study of Heritage Sites in Uttarakhand." In *Implementing Sustainable Development Goals in the Service Sector* (pp. 91-107). IGI Global, 2024. <https://doi.org/10.4018/979-8-3693-2065-5.ch007>
- Stojanović, T., Trišić, I., Brđanin, E., Štetić, S., Nechita, F. and Candrea, A.N. "Natural and sociocultural values of a tourism destination in the function of sustainable tourism development—An example of a protected area." *Sustainability*, 16(2), p.759, 2024. <https://doi.org/10.3390/su16020759>
- Zhang, G., Chen, X., Law, R. and Zhang, M. "Sustainability of heritage tourism: A structural perspective from cultural identity and consumption intention." *Sustainability*, 12(21), p.9199, 2020. <https://doi.org/10.3390/su12219199>
- Zhao, X., Elahi, E., Wang, F., Xing, H. and Khalid, Z. Sustainable tourism development for traditional Chinese drama's intangible cultural heritage." *Heliyon*, 10(3), 2024.