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Stakeholders' Participation in Conducive Destination Bicycle Tourism Development: Intermediating Effect of Extended Value Belief Norm Theory

Vineeta KUMARI
M.S.Ramaiah University of Applied Sciences, Bengaluru, India, Email, vineeta.hk.hc@msruas.ac.in
Corresponding Author

Sweety JAMGADE
M.S.Ramaiah University of Applied Sciences, Bengaluru, India, Email, sweety.ms.hc@msruas.ac.in

Deepti BHATT
School of Hospitality& Tourism, Quantum University, Roorkee, India, Email, deeptibhatt530@gmail.com

Abstract

It is observed that bicycle tourism is in its nascent stages in third-world countries, whereas it is in a developed stage in other parts of the globe. This study utilises a descriptive approach, incorporating an inductive literature review method and a self-designed questionnaire for data collection. The constructs for the questionnaire were validated by panel members and through a reliability test. Statistical analysis included the Z-test and Chi-square with SEM, using data (n-600), emphasising the intermediating effect of Extended Value Belief Norm Theory (EVBN). The findings indicate the need to create awareness and integrate values that lead to beliefs and norms among stakeholders for the development of a conducive destination for bicycle tourism. The research highlights the importance of collaboration among stakeholders and suggests that government action is needed to promote bicycle tourism through information, infrastructure, and incentives. The incorporation of international practices and strategies can aid in the planning of bicycle tourism as well as the achievement of sustainable development goals (SDGs). The results of the study would significantly add value to strategy and policy development at all levels in the market, boosting conducive bicycle tourism growth.

Keywords: EVBN, stakeholders, bicycle tourism, sustainable tourism, government

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Introduction

Bicycle tourism is increasingly recognised as a sustainable means of travel, offering environmental benefits and opportunities for economic development (Pavluković et al., 2020). Bicycle tourism involves travelling by bicycle as the primary mode of transportation (Djohan et al., 2024). This form of tourism highlights incredibly scenic locations, which are mountain ranges, countryside areas, or urban settings (Anisya et al., 2019). Bicycling is an eco-friendly and efficient way to explore and become familiar with different areas and regions (Fargas et al., 2024). Bicycle tourism is recognised nationally and internationally as a critical component of a sustainable transportation model (Ćućić, 2024), and the benefits of cycling extend beyond transportation and environmental aspects, encompassing health advantages as well (Meng & Han, 2016). To support bicycle tourism, stakeholders play a vital role in developing, designing, and implementing sustainable transportation systems (Reis et al., 2016). These stakeholders are from diverse backgrounds, such as government, tourists, service providers, and local people, and contribute to different phases of development (Lawlor et al., 2023). Stakeholders' values, beliefs, norms, and participation intentions toward sustainability aid in the participation and development of sustainable transportation like bicycles (Eyisi et al., 2021). In developed countries like the Netherlands and Denmark, stakeholders have invested in developing advanced bicycle infrastructure to avoid traffic congestion, reduce carbon footprints, and promote bicycling in their regions (Brščić et al., 2021). On the other hand, developing nations like India are the second-largest producers of bicycles globally; however, it witnesses limited utilisation of bicycles, and most of the consumers are in the low-income segment for daily commuting purposes (Puneeth & Nethravathi P. S., 2021). Hence, there is a need to focus on stakeholders' participation in creating bicycle tourism as a product in India. Thus, this research examines the role of the Extended Value-Belief-Norm (EVBN) theory in shaping stakeholders' participation intentions for bicycle tourism. This theory assimilates Environmental, Social, and Governance (ESG) factors along with values, beliefs, and norms to predict pro-environmental behaviour (Kim et al., 2023). Through a quantitative research approach, hypothesis testing and Structural Equation Modelling (SEM), this study validates the constructs useful for conducive destination bicycle tourism i.e. 'awareness, belief, sustainability concerns, infrastructure quality, and cycling experiences' and their interrelations in enhancing destination bicycle tourism as a product. The outcome of the study is strategic policy development for the promotion of sustainable tourism practices in India and other developing nations.

Literature review

Sustainability has become a prime focus worldwide (Higgins-Desbiolles et al., 2019), especially in the tourism sector. Sustainable tourism initiatives will improve the visitor experience (Ferreira & Perks, 2020) and positively impact the quality of life for both current and future generations (Rocha, 2021). It is noted that bicycle tourism is a green alternative for travelling during holidays and reduces carbon footprints (Pantelaki et al., 2023). Hence, this paper's primary focus is on understanding stakeholders' participation level for the development of a conducive destination bicycle tourism and a chronological overview of the literature presented on the role of stakeholders in advanced and third-world countries, the following section will emphasize key factors for the growth of bicycle tourism and EVBN theory relationship with stakeholder participation intention that will be integral to know the effect of EVBN on stakeholders participation level.

Development of bicycle tourism in advanced and third world countries

European nations introduced bicycle tourism to avoid traffic congestion, promote active travel for a healthy lifestyle, and save the environment (Ciascai et al., 2022). European nations like the Netherlands are generally considered the best country in the world for cycling due to urban planning and sustainable transport practices (Pojani & Stead, 2015), among EU countries, the Netherlands has the most bicycle lanes per 100 square kilometres, with a rate of 93.3 km/100 square kilometres (Van Petegem et al., 2021). The government incentivises and supports bicycling in the Netherlands (Jonkeren & Kager, 2021) with service providers and governments following policy, encouraging infrastructure development, and support programs for bicyclists (Gričar et al., 2024). Also, the transportation network for bicycling was intuitive and well-connected here (Jonkeren & Kager, 2021). In Austria, they have constructed bike lanes for bicyclists (Gühnemann et al., 2021). In Germany, Austria, and Switzerland, people have started commuting to their workplace and exploring new places via bicycles. The main reasons for attracting people were the regional infrastructure development by the government and health consciousness (Buehler et al., 2017) of people. For awareness, their government has included bicycle traffic examinations for kids in early schools. Austrian city service providers organise mass rides for bicycle awareness, practical tests for children to follow traffic safety lessons in schools, and bicycling training courses for all age categories (Buehler et al., 2017). Belgium formed a cycling association called Rando-Velo to promote, encourage, and facilitate bicycle tourism in the region, they organise Vlaanderen (road cycling race), develop a website for race information, the waymarked tour of Flanders, printed and online maps, campaigns, and GPS to promote bicycle tourism (Cox, 2012). "Terre di Casole Bike Hub" (Belotti, 2022) and "The Tyrrhenian Cycling Path" (Pantelaki et al., 2023) are two cycling-related initiatives in Italy that highlight the country's commitment to promoting cycling tourism and outdoor exploration. Both projects have well-developed infrastructure to attract international tourists, supported by local peoples (Belotti, 2022). Denmark has one of the best-developed cycling networks in the world, supported by the government, tourists, and service providers (Nilsson, 2019). In collaboration with the European Union, the European Cyclists Federation developed long-distance EuroVelo cycling route projects to promote bicycle tourism in European nations (Pfaffenbichler et al., 2021). Apart from European nations, other developed nations are also promoting bicycle tourism, like Canadian authorities, who have set guidelines for bicycle infrastructure in the country (Whitehurst et al., 2021). Road facilities are off-road multiuse pathways, painted bicycle lanes, bike-accessible shoulders, buffered bicycle lanes (Whitehurst et al., 2021), protected bicycle lanes, bike boxes, intersection crossing markings, bend-in intersection approaches, advisory bike lanes, neighborhood greenways, protected signals phases, Highway Safety Manual, street lighting, parking facilities, two-way bicycle facilities, contra-flow one-way bicycle route (Cicchino et al., 2020). In Canada, for the marketing web pages for tourism, the links to cycling maps are available, cycling maps and guides for tourists are provided in all bookshops, libraries, civic centers, and electronic newsletters on cycling infrastructure projects, guided rides for conference delegates (Shaikh, 2016). Bogotá, South America, has 550 km of protected bicycle network connecting rural and urban areas and bike-sharing system facilities (3,300 bicycles) (Ángel et al., 2023). Australia has also developed bicycle paths to promote bicycling and active tour (Nau et al., 2023). Apart from European nations, other developed nations are also promoting bicycle tourism, like Canadian authorities, who have set guidelines for bicycle infrastructure in the country (Whitehurst et al., 2021). Road facilities are off-road multiuse pathways, painted bicycle lanes, bike-accessible shoulders, buffered bicycle lanes (Whitehurst et al., 2021), protected bicycle lanes, bike boxes, intersection crossing markings, bend-in intersection approaches, advisory bike lanes, neighborhood greenways, protected signals phases, highway safety manual, street lighting, parking facilities, two-way bicycle facilities, contra-flow one-way bicycle route (Cicchino et al., 2020). 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On the other hand, in third world countries, bicycle tourism is in the initial phase, like in Bangladesh, which is the eighth largest exporter of bicycles in the global market, but their bicycle tourism is limited due to insufficient infrastructure and government support (Xames et al., 2023). The acceptance level of bicycles as a mode of transportation in Ghana is higher among millennial riders, but bicyclists are not respected on the road by motorists; hence, awareness and proper rules are necessary to develop bicycle culture in nation (Amoako-Sakyi et al., 2021). India is the second largest manufacturer of bicycles after China, but bicycling is considered as poor man's vehicles (Puneeth & Nethravathi, 2021), issues faced by India include inadequate funding, political conflicts, infrastructure underutilization, user perception, and urbanisation (Puneeth & Nethravathi P. S., 2021). The ineffective timing of traffic signals, leading to traffic congestion, poses a significant barrier to the smooth and safe utilisation of non-motorised transport facilities (Angayarkanni et al., 2019). Hence, in India today, city roads are unsafe for bicycling due to a lack of infrastructure like dedicated bicycle paths, poorly maintained roads, a lack of rental services, parking facilities, and safety protocols for riders. In rural India, there is a lack of bicycle infrastructure like bicycle lanes, safety, signage, rental services, and last-mile connectivity. However, there is scope to start development in rural areas because of the available space (Shamdasani, 2021). There is a demand for bicycles, the two Indian states, Mysore and Bhopal, have successfully implemented Public Bicycle Sharing System, but it will require time to develop until proper bicycle infrastructure is in place (Das & Bajaj, 2023). In rural India, bicycling is limited to school students and low-income workers (Seebacher & Moritz, 2022).

Key factors for the growth of conducive destination bicycle tourism

Bicycles are an eco-friendly, sustainable, and healthy mode of transportation with low carbon emissions (Fechete-Tutunaru et al., 2025). Bicycling tourism is an awakening and active form of nature-oriented tourism (Lorincz et al., 2020). Awareness of bicycling offers considerable benefits for individuals and society, including health benefits, reducing traffic congestion, and creating a more humanised urban environment, which helps promote bicycle tourism at the destination (Van Goeverden et al., 2015). Stakeholders' awareness and beliefs about bicycles are crucial in promoting bicycle tourism (Cunha et al., 2023). A positive attitude fosters the belief that bicycles offer empowerment and sustainable mobility. Conversely, a negative attitude leads to the perception that bicycles are only for those unable to afford motor vehicles (Ardizzi et al., 2021). Greater awareness of the environment increases loyalty to shared bicycle services. Environmentally conscious people are more likely to choose transportation options with lower carbon footprints, such as bicycling (Zhou et al., 2022). Environmentally aware tourists and service providers prefer bicycle travel and support bicycle-sharing services to save the environment (Zhou et al., 2020). Enhanced awareness fosters a sense of responsibility toward sustainable practices (Zhou et al., 2022). Firstly, traffic education and training programs are intended to educate children and motorists about accepting bicyclists and understanding traffic rules (Haustein et al., 2020). This helps to promote a culture of mutual respect and assistance on the roads, leading to safer conditions for cyclists and enhancing the experience. Beliefs and perceptions regarding the health benefits of cycling motivate people to use bicycles for commuting or exploring new places (Etminani-Ghasrodashti et al., 2018). Awareness level, infrastructure quality, sustainability concerns, positive belief towards bicycle tourism, and overall bicycle experiences are interconnected with service providers' and tourists' participation intention. Hence, these constructs are vital for the development of bicycle tourism in developing nations like India. For developing conducive bicycle tourism, it is important to involve local service providers and tourists in the decision-making procedure, and this practice will enhance local people's involvement (Septyandi, et al., 2025), promoting positive belief in them towards bicycle tourism at their destination. Also, this approach develops along with the requirements and preferences of the local community (Brščić et al., 2021). The active participation of both tourists and the local community in bicycle tourism depends on their belief and confidence (Lorincz et al., 2020).

Destinations offering bicycle tourism should customise services to the types of bicyclists such as for leisure bicyclists, there should be sustainable (Glen & Mearns, 2020) and fun-oriented accommodation, and activities will be important because they look for such kinds of activities and amenities. For competitive bicyclists (Magangqaza et al., 2022), there should be provision of nutritious food and proper place to park bicycles (Benedict & David, 2023). Leasure bicyclists look for luxury, high-quality services and are willing to pay more, and on the other hand, racers and budgeted riders look for minimum services and inexpensive holidays in mountain areas, where they look for affordable accommodation. Hence, according to preferences, destinations can improve and provide services to boost local development (Pantelaki et al., 2023). Bicycle tourism positively impacts sports and health promotion, culture (Gričar et al., 2025), offers unique and engaging experiences in destinations, and boosts the local economy (McKay et al., 2021), drives tourism growth, provides advantages for the local community, and enhances regional promotion (Brščić et al., 2021). The development of bicycle tourism has been primarily driven by economically viable projects, which also open new employment opportunities in destinations that support sustainable bicycle tourism (Gazzola et al., 2018). Furthermore, bicycle tourists often prioritise intangible aspects of their destination, such as overall ambience, aesthetics, and atmosphere, seeking experiences that evoke emotional reactions (Lee & Huang, 2014). This aligns with studies that emphasise modern tourists' desire for emotional fulfilment and meaningful experiences rather than material possessions from their vacation spending (Brščі et al., 2021).

EVBN theory relationship with stakeholder participation intention

The VBN (Value Belief Norm) theory effectively predicted consumer behaviour regarding the use of public transport for domestic tourism. Then EVBN (Extended Value Belief Norm) theory consists of an extension of ESG (Environmental, Social, and Governance) along with Values, Beliefs, and Norms. The values are related to sustainability concerns for domestic tourism, which significantly influence perceptions of air quality. Beliefs and efforts toward climate change mitigation are closely followed. The study of Kim et al., (2023) show that travellers prioritising public transport for tourism are more likely to be aware of air quality issues and actively pursue climate change mitigation measures. According to Norm Activation Theory (Schwartz, 1977), awareness of consequences is related to human norms; hence, awareness is related to norms. Awareness, sustainability concerns, and beliefs are related to participation intention to use sustainable transport (Nordlund & Garvill, 2003). Although there are extensive studies on environmental, economic, and health benefits of bicycle tourism, there is limited research on stakeholder participation in developing countries like India. This study addresses the existing gap by integrating EVBN theory to evaluate the impact of awareness, beliefs, sustainability concerns, and infrastructure quality among stakeholders' participation and experiences. The following hypotheses were formulated for the study:

H1: Stakeholders have significant awareness of the concept of destination bicycle tourism.
H2: There is a positive belief in destination bicycle tourism among stakeholders.
H3: Stakeholders' belief is positively related to awareness of destination bicycle tourism.
H4: There is a positive correlation between the quality of infrastructure and participation intention for destination bicycle tourism.
H5: Higher levels of sustainability concern among stakeholders lead to greater participation intention in bicycle tourism.

H6: Strong beliefs in the benefits of bicycle tourism are positively associated with both awareness and participation intention.
H7: Sustainability Concern, infrastructure, and participation intention contribute positive cycling experience.

Methodology

For this research, a quantitative research approach was utilised for questionnaire framing and analysing data. Stage 1 involved item generation and reliability. Several sources were used to generate items for analysing various aspects of tourists' and service providers' interrelationships of the identified six constructs for conducive destination bicycle tourism, including a literature study with academics in the relevant field and through the Content Validity Index (CVI). The first stage research articles thoroughly evaluated published in renowned hospitality and tourism journals. The keywords in this literature synthesis include responsible tourism, bicycle tourism, and factors influencing bicycle tourism. A review of the literature analysis discovered the development of bicycle tourism in advanced and third-world countries. The first coding and grouping approaches were primarily used to generate an item pool of tourists' and service providers' attitudes toward bicycle tourism. These strategies entail analysing and categorising the data gathered during the qualitative stage. As a result, a total of 80 items were generated. CVI was used to assess the relevance of each item on a scale in the survey or questionnaire based on feedback from a group of subject matter experts (SMEs) (Roebianto et al., 2023). Questionnaires were sent to five academic experts for content validity. The total number of items given to experts was 80. After the content validity index, the items were reduced to 31. Stage 2 was scale refinement and validation. The respondents' inclusion criteria included (i) tourists who are inclined towards or have previously participated in bicycle-related activities (Lee, 2014); and (ii) service providers who are offering a range of services relevant to bicycle tourism, such as bike rental companies, tour operators offering bicycle tours, accommodations catering to bicycle tourists to some extent, etc. (Brščić et al., 2021)**.** This study adopted quantitative research methodology approach to investigate the attitude of tourists regarding destination bicycle tourism in India. Cochran's equation determined sample size, having a 5% precision level, 95% confidence interval, and an estimated population proportion of 0.5 resulted in a target sample size of 385 respondents. However, the study received responses from 500 tourists and 100 service provders out of the 1000 questionnaires sent. Data collection was conducted at ten notable tourist destinations across India and chosen based on evaluative parameters aligning with Dickman's 5A's of tourism: Attraction, Accessibility, Accommodation, Amenities, and Activities (Benedict & David, 2023). The chosen destinations were Sakleshpur, Manali, Jabalpur, Wayanad, Rajgir, Goa, Pondicherry, Jaipur, Bengaluru, and Pune. These selected destinations represent a cross-section of India's diverse tourism landscapes, though regional socio-economic diversity remains a limitation. The validity and reliability of the questionnaire were assessed using Cronbach's Alpha coefficient. Additionally, a pilot survey employing the validated questionnaire was conducted to confirm its reliability before the primary data collection phase. Cronbach's Alpha value for the tourists and service provider questionnaire was 0.9484 and 0.9423, respectively. Cronbach's alpha value was greater than 0.05, confirming the measurement scale's reliability. Exploratory Factor Analysis (EFA), utilising principal component analysis with Varimax Rotation, was employed to streamline the variables. Additionally, Cronbach's Alpha, Kaiser-Meyer-Olkin (KMO), and Bartlett's Test were conducted for the constructs of level of participation, sustainability concern, and beliefs to assess their reliability and suitability for inclusion in the analysis. Z-test, Chi-Square, correlation analysis, and multiple regression analysis tests were used to test the hypotheses.

Table 1: Demographic data of the respondents

Demographic Variables		Tourists (N=500)		Service Provider (N=100)	
	Item	**Frequency**	**%**	**Frequency**	**%**
Gender	Male	350	70.00	69.00	69.00
	Female	150	30.00	31	31.00
	Between 16 to 25 years	149	29.8	3	3.00
	Between 26 to 35 years	219	43.71	34	34.00
Age	Between 36 to 45 years	100	19.96	61	61.00
	Between 46 to 55 years	22	4.39	1	1.00
	Above 55 years	11	2.19	1	1.00
	No Education	0	0	0	0
Level of Education	School Level	7	1.39	1	1.00
	Undergraduate	258	51.49	84	84.00
	Postgraduate	217	43.31	15	15.00
	PhD	19	3.79	0	0.00
	Less than 5 Lakhs	164	33.60	6	6.00
Gross Income	5-10 Lakhs	138	28.27	54	54.00
	10-20 Lakhs	95	19.46	39	39.00
	20-50 Lakhs	74	15.16	1	1.00
	Above 50 lakhs	17	3.48	0	0.00

The data indicates the gender distribution among tourists and service providers in the study. From the total population of 500 tourists surveyed, 70% were male, and 30% were female. In contrast, among the 100 service providers surveyed, 69% were male, and 31% were female. The demographic breakdown of respondents, encompassing 500 tourists and 100 service providers, reveals insightful patterns of age distribution. Among tourists, the most prominent age group comprises individuals between 26 to 35 years, constituting 43.71% of the sample, followed by those aged 16 to 25 years at 29.8%. In contrast, among service providers, most respondents were within the 36 to 45 years age range, accounting for 61% of the respondents. Among tourists, a significant proportion holds undergraduate degrees, representing 51.49% of the sample. A significant proportion of tourists accounting for 33.60% falls within the "Less than 5 Lakhs" income bracket, followed closely by the "5-10 Lakhs" comprising 28.27% of the respondents. In contrast, service providers predominantly belong to the "5-10 Lakhs" income, constituting the majority at 54%, with the "10-20 Lakhs" representing 39% of the respondents.

Exploratory factor analysis

An exploratory factor analysis was run on a 31-question questionnaire that measured the factors required for conducive destination bicycle tourism. Inspection of the correlation matrix showed that all variables have at least one correlation coefficient greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was 0.913, with individual KMO measures greater than 0.9, which is classified as 'Marvelous' (Avkiran, 1994). Bartlett's test of sphericity was statistically significant ($p < .0005$), indicating that the data was likely factorizable (Hossein & Lovric, 2011). Principal Component Analysis (PCA) revealed constructs with eigenvalues greater than one and explained 39.330%, 10.046%, 8.072%, 7.474%, 5.025%, and 3.431% of the total variance respectively. Visual inspection of the scree plot indicated that six constructs should be retained (Cattell, 1988). The six-construct solution explained 73.379% of the total variance. The six constructs identified in the study were:

- Construct 1: Participation Intention
- Construct 2: Sustainability Concerns
- Construct 3: Awareness
- Construct 4: Belief
- Construct 5: Cycling Experience
- Construct 6: Infrastructure Quality

Findings

The test results presented along with explanations for each construct and its relationships with other constructs of the study.

Results of hypothesis testing

Based on the Z-test, the P-value was 0.763, higher than 0.05, indicating a lack of statistical significance. Therefore, based on these findings, it is concluded that stakeholders are less aware of the concept of destination bicycle tourism. The researcher observed that tourists are less aware of the concept, whereas the service providers are very much aware. This indicates that consumers and tourists need to be made aware of the concept of destination bicycle tourism so that they can contribute effectively. The associated p-value, which was extremely small ($p = 0.001$), provided compelling evidence against the null hypothesis. Therefore, based on these findings, it can be confidently concluded that there is indeed a positive belief in destination bicycle tourism among stakeholders. The p-value of 0.0013 indicates rejecting the null hypothesis since the p-value is less than α (0.05). Therefore, according to the criteria established in the hypothesis test, evidence suggests lower-level awareness but a significant relationship between belief and awareness. Hence, belief can positively affect the awareness level of stakeholders.

Hypothesis testing via SEM

Evaluation of the latent structure

Confirmatory Factor Analysis (CFA) was conducted using AMOS 22 with the data (n = 600) to validate the model's underlying structure. Table 2 shows that the model fit indices suggest a good overall fit. The Chi-Square/Degrees of Freedom (DF) ratio of 2.175 is within the acceptable range of >1 and <3, indicating an adequate model fit. The Comparative Fit Index (CFI) (0.957) and Tucker-Lewis Index (TLI) (0.905) exceed the recommended thresholds of 0.95 and 0.90, respectively, indicating strong model fit. The Goodness-of-Fit Index (GFI) (0.908) and Adjusted Goodness-of-Fit Index (AGFI) (0.919) exceed the 0.90 threshold, suggesting a good fit for goodness-of-fit indices. The Root Mean Square Error of Approximation (RMSEA) (0.079) is also acceptable (<0.08), indicating a reasonable approximation of the model. The Root Mean Square Residual (RMR) (0.033) and Standardised Root Mean Square Residual (SRMR) (0.037) are well below their respective thresholds, indicating that the residuals are minimal and the model's predictions align well with the data. These results support the model's good fit, with no significant areas of concern.

Table 2: Fit indices

Name	Index	Threshold Value
Chi-Square	911.325	
DF	419	
Chi-Square / DF	2.175	>1 and <3
CFI	0.957	> 0.95
TLI	0.904	>0.90
GFI	0.908	> 0.9
AGFI	0.919	> 0.9
RMSEA	0.079	< 0.08
RMR	0.033	<0.8
SRMR	0.036	<1

The importance of item-to-factor loadings and the average variance extracted (AVE) for each dimension was used to assess convergent validity. Table 3 summarises the measurement items' reliability and validity. Item-to-factor loadings were between 0.60 and 0.95, and the AVE values for each dimension were between 0.61 and 0.9. These results were more significant than the 0.50 cut-off value proposed by (Fornell and Larcker, 1981). The measurement model exhibited strong convergent validity, showing that the items within each dimension consistently measured the underlying constructs. The discriminant validity of the constructs was evaluated by comparing the square roots of the Average Variance Extracted (AVE) with the correlation values between the latent variables, as recommended by (Ab Hamid et al., 2017).

Table 3: Confirmatory factor analysis

Latent Variable	Indicators	Factor Loadings	Composite/Construct Reliability	AVE	α
Awareness	I am aware of bicycle tourism	0.893			
	I am aware of the growth of bicycle tourism in other countries	0.957			
	I am aware that bicycle tourism is good for the country's economy and environment	1.000			
	I am aware of destination bicycle tourism	0.844			
	I am aware of the importance of destination bicycle tourism for the region	0.864	0.936	0.710	0.783
	I am aware that bicycle tourism is suitable for the nation's GDP	0.516			
Belief	Destination bicycle tourism in India is compatible with cycling	0.992			
	I believe destination bicycle tourism is useful for tourists and the environment	0.811			
	I believe the local community will benefit from developing a conducive destination for bicycle tourism	0.923			
	I believe investing in destination bicycle tourism will support tourism in the region	0.880			
	I believe local government (municipality and panchayat), local people, and tourists play a vital role in the development of destination bicycle tourism	1.000	0.896	0.635	0.759
Sustainability Concerns	Destination bicycle tourism will have a positive impact on health	0.863			
	Destination bicycle tourism avoids environmental disorders at the destination	0.920			
	Destination bicycle tourism helps to increase destination income through business and job opportunities	1.000			
	Destination bicycle tourism will improve the popularity of bicycles at the destination	0.973		0.675	
	Destination bicycle tourism reduces carbon footprints	0.890	0.912		0.784
Infrastructure Quality	Accommodation, quality bicycle paths, safety, restrooms, signage, and food service facilities at the destination	1.000			
	Bike renting, local guide, information center, and repair services facilities at the destination	0.978	0.880	0.710	0.77
	Local government (municipality and panchayat) maintains bicycle facilities	0.913			
Participation Intention	I like cycling	0.917			
	I accept destination bicycle tourism as a form of tourism product	0.989			
	Participation in destination bicycle tourism will save the environment	0.994			
	If the government develops destination bicycle tourism, I will participate in destination bicycle tourism	0.924			
	I will participate in destination bicycle tourism to motivate others to cycle	0.852		0.602	
	I will consider using the bicycle to explore tourist destinations	0.822	0.907		0.785
	I will consider visiting the destination bicycle tourism regions	1.000			
Cycling Experience	Destination bicycle tourism impacts the educational experience	0.984			
	Destination bicycle tourism gives an everlasting entertainment experience	0.873			
	Destination bicycle tourism gives a peaceful experience	1.000			
	Destination bicycle tourism gives a healthy experience	0.921		0.709	
	Destination bicycle tourism gives an adventurous experience	0.855	0.924		0.794

In Table 4, the values along the diagonal (which represent the square roots of the AVEs) are greater than the off-diagonal correlation values, indicating that each latent variable shares more variance with its indicators than with other latent variables. For example, cycling_exp has a strong correlation with itself (0.675) and weaker correlations with other constructs, such as awareness (0.423) and sus_concern (0.243). Similarly, INFRA shows a high AVE value (0.710) compared to its correlations with other factors. These findings confirm that the model meets the criteria for discriminant validity, as each latent variable is sufficiently distinct from the others. Thus, discriminant validity is established for this model.

Table 4: Correlation matrix

	AWARENESS	BELIEF	PART_INT	CYCLING_EXP	INFRA	SUS_CONCERN
AWARENESS	**0.710**	0.329	0.316	0.179	0.191	0.274
BELIEF	0.574	**0.635**	0.257	0.301	0.068	0.161
PART_INT	0.562	0.507	**0.582**	0.285	0.471	0.178
CYCLING_EXP	**0.423**	0.549	0.534	**0.675**	0.176	**0.243**
INFRA	0.437	0.261	0.686	0.420	**0.710**	0.037
SUS_CONCERN	0.524	0.401	0.422	0.493	0.193	**0.709**

Figure 1. SEM for conducive destination bicycle tourism (Source: Self, JMP software)

The Return to Behavior (RTB) scale's nomological validity was also evaluated. Bagozzi & Phillips (1991) define nomological validity as the extent to which a single construct performs as predicted within a system of related constructs. To assess this, a

SEM was performed to explore the link between each dimension of the RTB scale and responsible tourist behavior leading to destination development. The structural model findings showed a good fit: $\chi 2$ (695) = 1522.299, $\chi 2/df$ = 2.19, CFI = 0.95, TLI = .742, SRMR = 0.07, RMSEA = 0.056. Table 5 summarises all six constructs in the structural model of destination bicycle tourism. The regression results reveal several significant relationships between the variables. Belief significantly influences sus_concern ($\beta = 0.162$, $p = 0.001$) and participation int ($\beta = 0.239$, $p < 0.001$). Tourists with strong environmental values and health concerns are likelier to participate in bicycle tourism. Sus_concern has a strong positive effect on cycling exp ($\beta = 0.334$, $p < 0.001$) while also significantly influencing participation int ($\beta = 0.151$, $p < 0.0001$). The more tourists and service providers have concerns about saving natural beauty and protecting and experiencing local culture, the more these concerns positively impact the expectations of a bicycling experience. Participation int positively affects cycling exp ($\beta = 0.332$, $p < 0.001$). The more people engage in bicycle tourism activities; their overall experiences will enhance bicycle tourism in the region. Awareness has a significant impact on Infra ($\beta = 0.388$, $p < 0.001$), sus_concern ($\beta = 0.372$, $p < 0.0001$), and participation int ($\beta = 0.078$, $p = 0.037$). Infra is significantly related to both cycling exp ($\beta = 0.122$, $p = 0.026$) and participation int ($\beta = 0.506$, $p < 0.001$). Infrastructure is one of the most important factors for participation intention and bicycle experience. For instance, safe bicycle paths and bicycle-related facilities motivate tourists to participate in bicycle tourism. All significant relationships have very low p-values ($p < 0.05$), indicating strong statistical significance. These findings suggest that beliefs, awareness, and infrastructure all play important roles in influencing participation in cycling and sustainability concerns, with participation itself also being a key driver of the bicycling experience.

Table 5: Path coefficient (construct relationship)

Model Path	Path Value	P Value	Results
BELIEF → SUS_CONCERN	0.162	0.001	Accepted
SUS_CONCERN → CYCLING EXP	0.334	0.001	Accepted
BELIEF → PARTICIPATION INT	0.239	0.001	Accepted
PARTICIPATION INT → CYCLING EXP	0.332	0.001	Accepted
SUS_CONCERN → PARTICIPATION INT	0.151	0.001	Accepted
AWARENESS → INFRA	0.388	0.001	Accepted
INFRA → CYCLING EXP	0.122	0.026	Accepted
AWARENESS → SUS_CONCERN	0.372	0.001	Accepted
INFRA → PARTICIPATION INT	0.506	0.001	Accepted
AWARENESS → PARTICIPATION INT	0.078	0.037	Accepted

The results indicate a positive relationship among infrastructure quality, sustainability concerns, beliefs, and their impact on participation intention and cycling experiences in conducive destination bicycle tourism. Infrastructure quality (0.506, $p < 0.001$) is positively associated with participation intentions. Sustainability Concerns also positively impact participation intention (0.151, $p < 0.001$). Sustainability concerns (environment, economic, health) among stakeholders increase participation intention. Beliefs about the benefits of bicycle tourism significantly influenced both awareness and participation intention (0.350, $p < 0.001$). Furthermore, the collective outcomes of sustainability concerns, infrastructure quality, and participation intention positively contributed to the cycling experience (0.263, $p < 0.001$).

Table 6: Hypothesis testing

	Hypothesis	Direct/Indirect Effect	P Value	Results
H4	INFRA → PARTICIPATION INT	0.506	<.001*	Accepted
H5	SUS_CONCERN → PARTICIPATION INT	0.151	<.001*	Accepted
H6	BELIEF → AWARENESS & PATICIPATION INT	0.350	<.001*	Accepted
H7	SUS_CONCERN , INFRA, PATICIPATION INT → CYCLING EXP	0.263	<.001*	Accepted

Discussion

The study examines the interconnectedness of the EVBN constructs, which include ESG (environmental, social, and governance), Value, belief, and norm with constructs of this study for conducive destination bicycle tourism, which are Awareness, Belief, sustainability concerns, infrastructure quality, participation intention and cycling experience. The findings reinforce the EVBN theory's application in forecasting pro-environmental actions as they relate to sustainable travel, such as destination bicycle tourism. Awareness is one of the important constructs for conducive destination bicycle tourism, and awareness is related to activating personal norms as per the Norm Activation Model (Schwartz, 1977). The results show that belief significantly impacts the awareness level of stakeholders, which significantly influences sustainability concerns, infrastructure perception, and participation intentions. Stakeholders who have a positive belief in destination bicycle tourism are more likely to form more awareness and act on it. However, this study found that tourists have less awareness of the technical concept of destination bicycle tourism; however, they have beliefs in the benefits. This gap highlights the need to refine educational efforts and promote awareness to fill the gap among consumers to know and utilise it effectively. The Netherlands is an example of a country where such measures are effective due to the successful conduct of educational campaigns to increase awareness and utilisation of cycling (Van Goeverden et al., 2015). Sustainability concerns, like environment, health, and economic development, are the main motivators for stakeholder participation. According to EVBN theory, individuals having concerns about sustainability tend to affect the values of humans, which promotes sustainable behaviors (Kim et al., 2023). The findings of this study support the hypothesis that stakeholders with sustainability concerns are more likely to participate in bicycle tourism. This also aligns with previous research on the role of values in encouraging concerns for climate and use of sustainable transport (Nordlund & Garvill, 2003). The findings support the hypothesis that governments and local people play a vital role in developing infrastructure for conducive destination bicycle tourism, which is aligned with the Social and Governance part of the EVBN theory. Infrastructure quality was the main factor for participation

intention and cycling experiences. As per Buehler (2017), investment in bicycle paths, safety features, amenities, etc., directly impacts the participation level and experience. The research found that there is a connection between the two factors - beliefs and sustainability concerns that have an impact on the intention to participate. The EVBN model claims that views about bicycle tourism, such as preserving the environment and growing the local economy, trigger personal norms to take part. In addition to this, the perception of quality of infrastructure and the increase in awareness of the people improve the norms, which then increases the awareness of the cycle. For instance, Zhou et al. (2022) pointed out that people with environmental views care more about shared bicycle services, which reflects the findings of the present research concerning the sustainability appeal in the motivation of the participation intention. The SEM results demonstrate a relationship among the EVBN constructs. Beliefs on the benefits of bicycle tourism considerably influence awareness, sustainability concerns, and participation intentions, aligning with the EVBN theory's emphasis on subsequent activations of values, beliefs, and norms. As per the findings, sustainability concerns, infrastructure quality, and participation intention enhance the cycling experiences. The interconnectedness of all these constructs provides conducive destination bicycle tourism. Shown in Figure. 2.

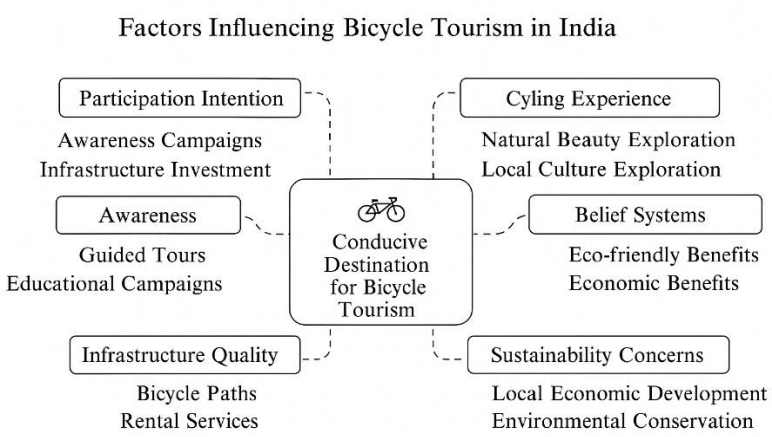

Figure 2: Factors influencing conducive bicycle tourism

In terms of policy implications, the results of the study highlight the need to involve stakeholders in decision making for bike tourism to be successful at a destination level. The government's role is very important in raising awareness through campaigns, providing facilities, and developing comprehensive bicycle policies. Learning from the global best practices, like Denmark and the Netherlands, incorporating cycling education, developing cycling promotes infrastructure can greatly enhance tourism development (Nilsson, 2019). In India, pedal bicycle sharing systems close to tourist destinations as well as tax incentives for service providers, will help in easier access. With regards to the integration of bike tourism to urban mobility in India, some successful examples are Mysuru's Trin Trin and Public Bike Sharing (PBS) in Bhopal (Puneeth & Nethravathi, 2021). Moreover, in tourism planning, safe and exclusive bike paths in important tourism sites should be given priority. Countries like the Netherlands have embedded biking infrastructure into urban design and cities like Chandigarh have started to put such lanes in some areas (Gričar et al., 2024; Jain & Hecht, 2019). Engaging local communities alongside tourism service providers in creating bicycle circuits that connect heritage sites, eco-tourism regions, and cultural landmarks has the potential of providing complete tourism experiences. A good example of such initiatives is the EuroVelo network that spans across 38 countries, EU-funded, and managed by the European Cyclist Federation (Pfaffenbichler et al., 2021). Combining these policies with the proposals from the EVBN framework helps promote inclusive and sustainable bicycle tourism.

Conclusion

This study highlights that bicycling tourism has the potential to save the environment, generate new job opportunities, and support local economies. The use of EVBN theory establishes the role of awareness, beliefs, sustainability concerns, and infrastructure in enhancing stakeholder participation, intention and cycling experiences. According to the results, collaborative efforts between governments, service providers, and local authorities have the ability to enhance awareness and bicycle tourism infrastructure development. Initiatives such as public awareness tours or campaigns, educational programs, workshops, and conferences are important to bridge the awareness gap among stakeholders and enhance participation intention. Bicycle tourism infrastructure investments like bicycle paths, safety measures, accommodation facilities, and food and beverage facilities are essential to enhance bicycling experiences. Future research should focus on how policymakers can align bicycle tourism initiatives with the Sustainable Development Goals (SDGs) of the country to promote sustainable and inclusive tourism practices.

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