scientific reports

Check for updates

OPEN

Assessing the impact of community-based homestay experiences on tourist loyalty in sustainable rural tourism development

Qiwen Dai[1], Jinglian Chen[1] & Yanqiao Zheng[2]✉

In the context of community-based tourism, this study investigates the determinants of tourist loyalty to homestays, with a focus on sustainable rural tourism development in China. Using the stimulus–organism–response (SOR) framework, we propose a conceptual model to examine how connected experiences influence tourist emotions and, in turn, their loyalty. Data were gathered through onsite surveys of tourists, and structural equation modeling was applied to assess the relationships between key variables. The analysis reveals that tourists' emotions mediate the effect of connected experiences on loyalty, while the unique local characteristics of homestays significantly moderate the link between emotions and loyalty. These findings provide valuable insights for policymakers and practitioners aiming to enhance the sustainability of rural tourism through strategic management of community-based homestays.

Keywords Community-based tourism, Tourist loyalty, Rural tourism, Structural equation modeling

Tourism has been identified as a potent driver of economic growth in developing countries[1,2]. The United Nations' Agenda 2030 highlights the vital role of tourism in advancing the Sustainable Development Goals (SDGs). In underdeveloped regions, tourism has increasingly become a central industry for fostering local economic progress. Community-Based Tourism (CBT) offers an alternative model for tourism development, prioritizing active community involvement and aligning with the tenets of sustainable tourism by addressing socio-cultural, environmental, and economic factors simultaneously[3,4] .

Yangshuo, a county in Southwest China renowned for its karst features and geomorphological diversity, has seen significant growth in community-based homestay tourism over the past decades. Government reports indicate that Yangshuo's GDP increased from 1.44 billion Chinese Yuan in 2004 to 13.16 billion Chinese Yuan in 2023. Despite the challenges posed by the Covid-19 pandemic, the contribution of tourism to GDP rose from 28% in 2004 to 51% in 2023, positioning tourism as the primary driver of the local economy. Our survey indicates that 66.4% of respondents expressed willingness to stay at the same community-based homestay in the future. Understanding the factors that contribute to customer retention in Yangshuo's homestay sector is essential for scaling this model to other regions, in line with China's Rural Revitalization strategy and the United Nations' Sustainable Development Goals, particularly in poverty alleviation.

Grounded in the Stimulus-Organism-Response (SOR) framework[5], this study investigates how connected experiences during community-based homestays influence tourists' emotions and loyalty. In this context, a connected experience, functioning as the stimulus in the SOR model, is defined as an authentic, locally-driven experience where tourists engage with local families, not only through overnight stays but also by participating in local cuisine and culturally anchored activities[6]. The connectedness of the experience is evaluated across three dimensions: host-guest interaction, tangible aspects of a caring environment, and intangible aspects of care[6,7]. Emotions, serving as the organism, encompass both cognitive responses and emotional involvement, including enjoyment derived from the connected experience[8]. Loyalty, the response, is assessed through both attitudinal

[1]School of Economics and Management, Guangxi Normal University, Guilin 541004, China. [2]Institute of Population and Labor Economics, Chinese Academy of Social Science, Beijing 100006, China. ✉email: zhengyanqiao@hotmail.com

and behavioral loyalty. This study explores the relationship between connected experiences and tourist loyalty, focusing on the mediating role of emotions and the moderating role of local characteristics.

This study makes three key contributions to the literature. First, we integrate psychological and marketing concepts by applying the SOR paradigm to examine the underlying mechanisms of the community-based homestay business model in a region heavily reliant on tourism. Second, we explore the moderating role of local characteristics, a crucial factor for tourism industries in areas with distinctive natural and cultural landscapes, such as Yangshuo and other similar destinations. Third, our findings offer insights into how community-based tourism can be leveraged as a sustainable approach to poverty reduction and rural revitalization.

Evaluating the impact of community-based tourism and homestays on local development

Community-based tourism (CBT) proposes the concept of "tourism by the local people for the local people"[9]. This tourism management model places local communities at the core of the tourism process and has been widely adopted in developing countries, particularly in rural and nature-based tourism settings[4]. Since the 1990s, CBT has gained significant traction in countries such as China, Thailand, Vietnam, Malaysia, Indonesia, and Laos, as it empowers local populations by enhancing livelihoods and fostering sustainable development[10].

The benefits of CBT are multifold. First, CBT can provide educational opportunities for visitors, fostering awareness of waste management, cultural preservation, nature conservation, and local ecological systems[11]. Second, CBT ensures that tourism planning is considerate of local communities[12]. Notably, CBT enhances rural communities' capacity to manage tourism resources while promoting active local participation[13]. Its bottom-up approach aligns the interests of both the government and local communities[14]. Third, the interaction between visitors and locals encourages cultural exchange and integration, facilitating cross-cultural understanding[15].

Homestays play a pivotal role in community-based tourism (CBT)[9]and serve as a significant source of income for families in CBT regions[16]. In Yangshuo, for example, families operating successful homestays earn substantially higher incomes compared to villagers in surrounding areas. Thus, the homestay model has proven effective in enhancing local livelihoods. Additionally, homestays provide tourists with participatory travel experiences, fostering a deeper appreciation of local culture[11,13,15]. This cultural engagement can also strengthen the community's sense of identity[17]. Overall, in regions where CBT is well-established, both the material and spiritual quality of life have significantly improved.

Assessing the relationship between connected experiences and tourists' loyalty

Tourism is a prominent example of the experience economy[18], with experiences serving as a central pillar of the industry[19]. Many researchers have explored different aspects of tourist experiences[20–22]. Among these, the sense of connectedness to local families and cultural practices has been identified as a crucial component in community-based tourism[6]. CBT encompasses a variety of touristic activities, local food, and accommodation services, including but not limited to, trekking, camping, walking, participating in cooking, weaving, and other traditional practices[13]. These products provided by CBT usually tie closely with homestay families. Building upon the frameworks proposed by Pasanchay & Schott[6] and Karol[7], this study assesses the connectedness of tourist experiences through three distinct dimensions: host-guest interaction, tangible elements of a caring environment, and intangible aspects of a caring environment.

A connected experience has the potential to foster tourists' loyalty, which is typically assessed across two dimensions: attitudinal loyalty and behavioral loyalty. The sense of connectedness experienced during travel is closely linked to emotional and psychological states. Previous studies have demonstrated that visitors' sense of well-being significantly predicts their likelihood of making recommendations and exhibiting behavioral loyalty[23,24]. Additionally, research indicates that tourists' emotions and well-being during the trip are strong predictors of their post-trip behaviors[25] and that varying emotional responses can have differential effects on tourists' loyalty[26].

The mediating role of emotions in shaping tourist loyalty and behavioral outcomes

Emotions refer to cognitive response, enjoyment, and emotional involvement[8]. Prior research has demonstrated that emotions play a mediating role in the association between tourist experience and loyalty in a general context[20,21]. In this paper, we specifically investigate the mediating role of emotions within the framework of community-based tourism. Particular emphasis is placed on the connectedness of the experience, as connection to local families and cultural practices is a central tenet of community-based tourism.

The definitions of cognitive response, enjoyment, and emotional involvement are as follows. Cognitive response involves the processes of perception and understanding in which individuals actively think and decide on their overall response to external information. Cognitive response includes the processes of sensation and perception, referring to an individual's active thinking and decision-making in response to external information. Enjoyment can be defined as the extent to which the activity of using a specific object is considered to be enjoyed in its own right, without including any performance consequence[27]. Emotional involvement refers to the degree to which individuals are emotionally engaged in a behavior[28] which includes such characteristics as involvement, empathy, and impression[8].

The influence of experience connectedness on emotional responses in community-based tourism

The connectedness of the experience is assessed through three dimensions: host-guest interaction, tangible elements of a caring environment, and intangible elements of a caring environment. Gunasekaran and Anandkumar[29] proposed using indicators such as free space, feeling of home, cleanliness, safety, food quality, local environment, and flexibility of stay to measure environment. Feng et al.[30] pointed out that a host's warm hospitality and architectural decoration also contribute to creating a friendly and caring atmosphere. We further

divide the measure of environments to two dimensions: tangible elements of a caring environment and intangible elements of a caring environment, following Karol[7]. In the context of community-based tourism, host-guest interaction is of key importance. Therefore, we add a third dimension to the measure of the connectedness of the experience: host-guest interaction.

Previous studies have examined the relationship between a connected experience and customers' emotions. For example, the connected experience of themed restaurants[31] and interactions in upscale hotels[32] significantly affect customers' emotions. Meanwhile, customers' perception of the tangible and intangible elements of a caring environment in service settings[33,34], and interactions with service providers[35], influence customers' emotions. A caring environment not only satisfies tourists' personalized experiential needs and facilitates interaction between hosts and guests, but also enhances a mutual emotional resonance and tourists' emotions, thereby influencing tourists' loyalty[29]. It should be noted that some studies have shown that the impact of host-guest interaction, tangible elements of a caring environment and intangible elements of a caring environment in retail stores and winter parks on customers' cognitive response is not significant[35,36]. Based on the preceding analysis, the following hypotheses are proposed:

H1a: Intangible elements of a caring environment have a positive effect on tourists' cognitive response.
H1b: Tangible elements of a caring environment have a positive effect on tourists' cognitive response.
H1c: Host-guest interaction has a positive effect on tourists' cognitive response.
H2a: Intangible elements of a caring environment have a positive effect on tourists' enjoyment.
H2b: Tangible elements of a caring environment have a positive effect on tourists' enjoyment.
H2c: Host-guest interaction has a positive effect on tourists' enjoyment.
H3a: Intangible elements of a caring environment have a positive effect on tourists' emotional involvement.
H3b: Tangible elements of a caring environment have a positive effect on tourists' emotional involvement.
H3c: Hosts-guest interaction has a positive effect on tourists' emotional involvement.

The role of emotions in shaping tourists' loyalty

Cognitive response plays a critical role in the development of customer loyalty[37]. For example, such cognitive responses as perceived service quality in restaurants[38], perceived risk in online stores[39], and perceived usefulness of virtual tourism[40] significantly influence consumers' word-of-mouth communication, attitudinal loyalty, purchase intention, and behavioral loyalty. Yet some other studies have also shown that the perceived value of a tourist destination[41] and satisfaction[42] have no significant relationship with purchase intention and behavioral loyalty.

Enjoyment has been shown to possess strong explanatory power in understanding customer behavior[43]. However, some scholars argue that consumers' emotions (especially enjoyment) are not related to their satisfaction and loyalty[44,45].

In specific contexts, such as themed restaurants[38], hotels[46], online shopping[39], and virtual tourism[40], consumers' emotional involvement significantly influence their purchasing decisions. Extensive emotional involvement enhances consumers' experiential perception and their willingness to make positive choices[47].

Therefore, consensus is not reached on the relationship between emotions and loyalty. Based on the above analysis, we propose the following hypothesis:

H4a: Positive cognitive responses to a homestay increase tourists' attitudinal loyalty.
H4b: Positive cognitive responses to a homestay increase tourists' behavioral loyalty.
H5a: Enjoyment has a positive effect on tourists' attitudinal loyalty.
H5b: Enjoyment has a positive effect on tourists' behavioral loyalty.
H6a: Emotional involvement has a positive influence on tourists' attitudinal loyalty.
H6b: Emotional involvement has a positive influence on tourists' behavioral loyalty.

The moderating role of local characteristics in consumer behavior and experience

The uniqueness of a place's landscape is direct and prominent expression of its local characteristics. Culture is another important aspect of local characteristics[48,49], as it endows a place with unique cultural significance and creates distinct cultural characteristics specific to that place. Culture shapes the characteristics and ambience of local characteristics. Different cultures have diverse tastes and preferences for architectural styles, urban planning, public facilities, etc. Taking into account local characteristics, we use local characteristics as a moderator between tourists' emotions and loyalty. We measure a homestay's local characteristics from four aspects: architectural characteristics, property ownership, nativeness of homestay's host, and local activities.

Tourists derive a comprehensive travel experience through their perception and evaluation of local characteristics, which affects their behavior and attitudes[29]. Local culture and rural attractions are the main factors that contribute to the attractiveness of homestay destinations, and the localized features of rural homestays meet tourists' unique needs, further strengthening the role of local characteristics in tourists' loyalty[50]. Research has shown that local characteristics play an important role in the relationship between emotions and loyalty. For example, the architectural characteristics of hotels can effectively convey their image and enhance tourists' willingness to visit[51]. Tourists can also enhance their entertainment and hedonic value by participating in local cultural activities, which can arouse pleasure and affect their travel decisions[51]. Therefore, local characteristics can moderate the relationship between tourists' emotions and loyalty. Based on the above analysis, the following hypotheses are proposed:

H7: Local characteristics of a homestay moderate the relationship between tourists' enjoyment and attitudinal loyalty.

H8: Local characteristics of a homestay moderate the relationship between tourists' enjoyment and behavioral loyalty.

H9: Local characteristics of a homestay moderate the relationship between tourists' emotional involvement and attitudinal loyalty.

H10: Local characteristics of a homestay moderate the relationship between tourists' emotional involvement and behavioral loyalty.

The overall research model is depicted in (Fig. 1).

Results

Descriptive statistics

Table 1 shows that males accounted for 37.6%, while females accounted for 62.4%. The respondents were mainly young people, 46.8% were aged 25 and below, and 49.5% were between 26 and 50 years old. The profile of age and gender is in line with the overall portrait of tourists in China. In terms of education, Junior high school or below account for 7.9%, senior high school accounts for 27.6%, Associate's /Bachelor's degree account for 51.3%, and Graduate degree account for 13.2%; in terms of monthly income, those below 3000 yuan account for 15.8%, those between 3001–5000 yuan account for 42.1%, those between 5001–8000 yuan account for 18.4%, and those above 8001 yuan account for 23.7%. Regarding loyalty, 33.6% of the respondents had intentions to extend their stay time, 66.1% of respondents had intentions to recommend the homestay, and 30.9% of tourists had the intention to maintain contact and cooperation with the host. 38.2% of respondents intended to post information about their homestay experience, 57.8% of respondents wanted to post reviews about the homestay, and 66.4% of respondents chose to stay at the same homestay again. In terms of local characteristics, homestays with local architectural characteristics, with property owned by the host, with host being native, and with local activities offered by the homestay, accounted for 58.6, 11.5, 31.7, and 60.7%, respectively.

Measurement model

Table 2 shows the results of reliability and validity testing. Cronbach's α and composite reliability for each latent variable are all above 0.7, indicating good internal consistency and high reliability among all variables in the model. Additionally, factor loadings of all indicators exceed 0.5, and the average variance extracted (AVE) values are all higher than 0.5, meeting the requirements for convergent validity[52]. This indicates that the measurement model has good convergent validity.

As shown in Table 3, the test results meet the Fornell-Larcker criterion, indicating good discriminant validity within the model. Due to the non-scale nature of the items related to local characteristics, reliability and validity analyses are not conducted. Overall, it can be inferred that the reliability and validity of the variables in the model meet the requirements, demonstrating good reliability and validity of the entire measurement model.

Second-order factor model

The second-order model is commonly employed in the assessment of measurement tools that assess several interrelated constructs[53]; it represents a hypothesis that these seemingly different but correlated structures can be explained by one or more underlying higher-order construct[54]. In comparison to first-order models with correlated factors, a second-order factor model can reduce the estimation parameters of a structural model, providing a more concise and interpretable model[54]. The second-order model has two unique characteristics: firstly, the second-order factors are exogenous structures, while the first-order factors are endogenous; secondly, the second-order factors lack indicators[55]. In this study, a second-order cognitive reaction structure was constructed utilizing four substructures: facility cognition, service cognition, overall cognition, and comparative

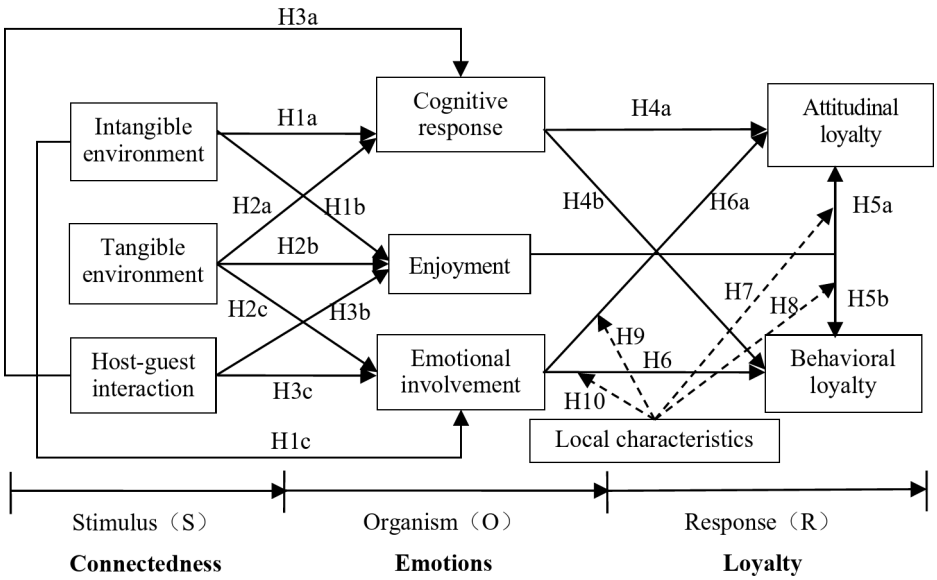

Fig. 1. Conceptual model. Photograph of the conceptual model showing the flow from stimulus (S) to organism (O) to responses (R), with sub-elements of S, O, and R. The hypotheses arrows are also displayed.

Socio-demographic	Frequency	Percentage
Gender		
Male	140	37.6
Female	232	62.4
Age		
≤25	174	46.8
26–50	184	49.5
>50	14	3.7
Education level		
Junior high school or below	29	7.9
Senior high school	103	27.6
Associate's /Bachelor's degree	191	51.3
Graduate degree	59	13.2
Personal monthly income		
Below 3000 Yuan	59	15.8
3001–5000 Yuan	157	42.1
5001–8000 Yuan	68	18.4
8001 Yuan and above	88	23.7
Loyalty		
Attitudinal loyalty		
Had intentions to extend their stay time	125	33.6
Had intentions to recommend the homestay	246	66.1
Had the intention to maintain contact and cooperate with the host	115	30.9
Behavioral loyalty		
Intended to post information about their homestay experience	142	38.2
Wanted to post reviews about the homestay	215	57.8
Chose to stay at the same homestay again	247	66.4

Table 1. Socio-demographic profile of the respondents (N = 372).

cognition. As indicated in Fig. 2, facility cognition ($\lambda = 0.806$, $t = 35.201$, $p < 0.001$), service cognition ($\lambda = 0.824$, $t = 42.128$, $p < 0.001$), overall cognition ($\lambda = 0.781$, $t = 21.241$, $p < 0.001$), and comparative cognition ($\lambda = 0.672$, $t = 20.110$, $p < 0.001$) significantly exceed the minimum threshold requirement for factor loading (0.5).

Structural model

Through calculations, the VIF values of the model variables are all below 3.3, meeting the requirement of no multicollinearity. As indicated in Fig. 3, a connected experience during community-based homestay accounts for 54.4% of cognitive response, 37.2% of enjoyment, and 31.7% of emotional involvement. Cognitive responses and emotional involvement, as well as enjoyment jointly explain 42.9% of attitudinal loyalty and 33.6% of behavioral loyalty. This indicates a relatively strong explanatory power of cognitive response ($R^2 = 0.544$), enjoyment ($R^2 = 0.372$), emotional involvement ($R^2 = 0.317$), attitudinal loyalty ($R^2 = 0.429$), and behavioral loyalty ($R^2 = 0.336$).

The GoF value for the model is 0.565, which surpasses the evaluation criterion of 0.36[56], indicating that the model had a good overall fit. The computational results demonstrate that enjoyment ($f^2 = 0.162$) had a moderate effect on choice intention, while facility cognition ($f^2 = 1.858$), service cognition ($f^2 = 2.119$), overall cognition ($f^2 = 1.576$), and comparative cognition ($f^2 = 0.828$) were at a strong effect level, and emotional involvement ($f^2 = 0.080$) was at a relatively weak effect level. The f^2 values range between 0.08 and 2.119, signifying a rational model construction.

Direct effects test

As indicated in Fig. 3, intangible elements of a caring environment significantly and positively influenced cognitive response ($\beta = 0.370$, $p < 0.001$), enjoyment ($\beta = 0.484$, $p < 0.001$), and emotional involvement ($\beta = 0.318$, $p < 0.001$). Hence, hypotheses H1a, H2a, and H3a are all supported. The greatest impact of intangible elements of a caring environment on visitors was seen in enhancing their enjoyment, which is consistent with Lin's assertion that environmental factors (e.g., lighting, scents, and music) strongly influence individuals' emotional states[33]. Tangible elements of a caring environment had a significant positive effect on visitors' cognitive response ($\beta = 0.191$, $p < 0.001$), but did not significantly influence their enjoyment or emotional involvement. Therefore, hypothesis H1b is supported, while hypotheses H2b and H3b are not supported. Hosts-guest interaction had significant direct positive effects on cognitive response ($\beta = 0.307$, $p < 0.001$), enjoyment ($\beta = 0.131$, $p < 0.05$), and emotional involvement ($\beta = 0.275$, $p < 0.001$). Hence, hypotheses H1c, H2c, and H3c are supported, confirming the significant role of social interaction in the quality of visitors' experiences[32].

Cognitive response was positively correlated with attitudinal loyalty ($\beta = 0.196$, $p < 0.001$) and behavioral loyalty ($\beta = 0.275$, $p < 0.001$), supporting hypotheses H4a and H4b. This demonstrates that visitors with more

Factors	Factor loading	Cronbach's α	Composite reliability	AVE
(S) connected experience				
Intangible elements of a caring environment (IE)		0.722	0.822	0.537
IE1	0.682			
IE2	0.668			
IE3	0.795			
IE4	0.778			
Tangible elements of a caring environment (TE)		0.872	0.939	0.886
TE1	0.931			
TE2	0.951			
Host-guest interaction (HI)		0.864	0.907	0.710
HI1	0.852			
HI2	0.797			
HI3	0.874			
HI4	0.844			
(O) emotions				
Cognitive response (CR)				
Facility cognition (CR1)		0.710	0.822	0.607
CR11	0.713			
CR12	0.767			
CR13	0.852			
Service cognition (CR2)		0.732	0.841	0.638
CR21	0.743			
CR22	0.788			
CR23	0.861			
Overall cognition (CR3)		0.783	0.868	0.688
CR31	0.802			
CR32	0.794			
CR33	0.888			
Comparative cognition (CR4)		0.735	0.883	0.790
CR41	0.901			
CR42	0.877			
Enjoyment (EN)		0.737	0.851	0.656
EN1	0.797			
EN2	0.819			
EN3	0.814			
Emotional involvement (EI)		0.723	0.831	0.557
EI1	0.836			
EI2	0.645			
EI3	0.769			
EI4	0.833			
(R) loyalty				
Attitudinal loyalty (LO1)		0.744	0.856	0.600
LO11	0.651			
LO12	0.897			
LO13	0.827			
Behavioral loyalty (LO2)		0.726	0.845	0.647
LO21	0.717			
LO22	0.813			
LO23	0.874			

Table 2. Construct reliability and validity.

positive cognitive response are more likely to have positive intentions. Enjoyment significantly influenced attitudinal loyalty ($\beta = 0.440$, $p < 0.001$) and behavioral loyalty ($\beta = 0.213$, $p < 0.001$), supporting hypotheses H5a and H5b, further validating the conclusion that customer's enjoyment level affects their loyalty[57]. Visitors' emotional involvement also significantly impacted attitudinal loyalty ($\beta = 0.137$, $p < 0.01$) and behavioral loyalty ($\beta = 0.221$, $p < 0.001$), supporting hypotheses H6a and H6b, which is consistent with previous research findings[47].

FLC	IE	TE	HI	CR1	CR2	CR3	CR4	EN	EI	LO1	LO2
IE	0.734										
TE	0.531	0.941									
HI	0.637	0.504	0.842								
CR1	0.520	0.455	0.457	0.794							
CR2	0.550	0.499	0.627	0.602	0.806						
CR3	0.479	0.356	0.428	0.481	0.496	0.834					
CR4	0.509	0.349	0.446	0.397	0.406	0.394	0.889				
EN	0.601	0.385	0.471	0.363	0.448	0.503	0.471	0.810			
EI	0.521	0.359	0.504	0.343	0.426	0.360	0.341	0.478	0.746		
LO11	0.502	0.361	0.410	0.337	0.359	0.396	0.530	0.618	0.441	0.798	
LO12	0.483	0.360	0.437	0.381	0.372	0.368	0.453	0.478	0.455	0.626	0.804

Table 3. The results of measurement model. The values on the diagonal are the square roots of the corresponding average variance extracted (AVE) for each latent variable. The values in the lower triangle are the Pearson correlation coefficients between latent variables.

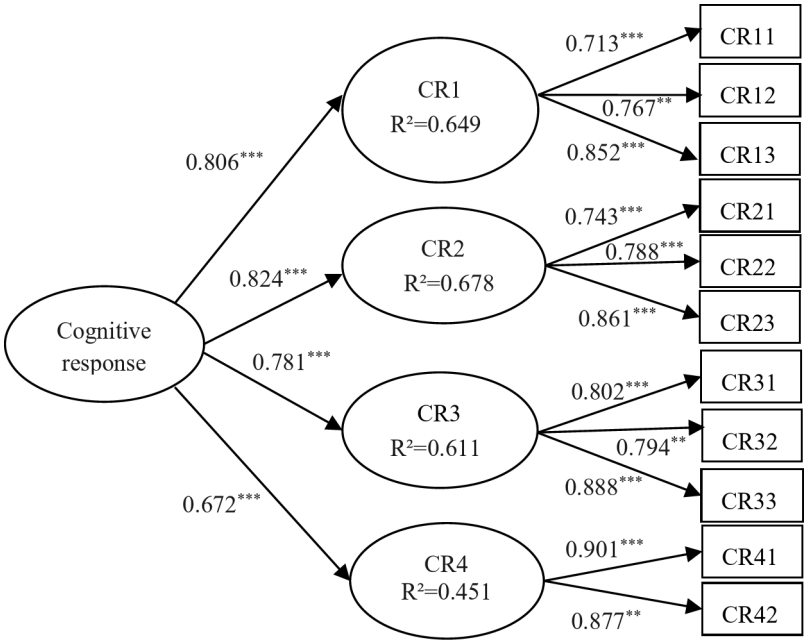

Fig. 2. The results of second-order factor. The results of second-order factor are displayed where facility cognition ($\lambda = 0.806$, $t = 35.201$, $p < 0.001$), service cognition ($\lambda = 0.824$, $t = 42.128$, $p < 0.001$), overall cognition ($\lambda = 0.781$, $t = 21.241$, $p < 0.001$), and comparative cognition ($\lambda = 0.672$, $t = 20.110$, $p < 0.001$) significantly exceed the minimum threshold requirement for factor loading (0.5).

Mediation effects test

As observed in Table 4, intangible elements of a caring environment can not only indirectly influence visitors' attitudinal loyalty through cognitive response ($\beta = 0.073$, $p < 0.01$), enjoyment ($\beta = 0.213$, $p < 0.001$), and emotional involvement ($\beta = 0.043$, $p < 0.05$); Also further affect visitors' behavioral loyalty through cognitive response ($\beta = 0.102$, $p < 0.001$), enjoyment ($\beta = 0.103$, $p < 0.01$), and emotional involvement ($\beta = 0.070$, $p < 0.01$). Tangible elements of a caring environment indirectly impacted visitors' attitudinal ($\beta = 0.038$, $p < 0.001$) and behavioral loyalty ($\beta = 0.053$, $p < 0.001$) through cognitive response.

Host-guest interaction indirectly influenced visitors' attitudinal loyalty through cognitive response ($\beta = 0.060$, $p < 0.001$), enjoyment ($\beta = 0.058$, $p < 0.05$), and emotional involvement ($\beta = 0.038$, $p < 0.05$). Furthermore, it further impacted visitors' behavioral loyalty through cognitive response ($\beta = 0.084$, $p < 0.001$) and emotional involvement ($\beta = 0.061$, $p < 0.001$).

Moderating effects test

Architectural characteristics As shown in Table 5, the interaction term between enjoyment and architectural characteristics significantly, positively influenced visitors' attitudinal loyalty ($\beta = 0.127$, $t = 3.026$, $p < 0.05$), thus supporting hypothesis H7a. However, the interaction terms between architectural characteristics and other var-

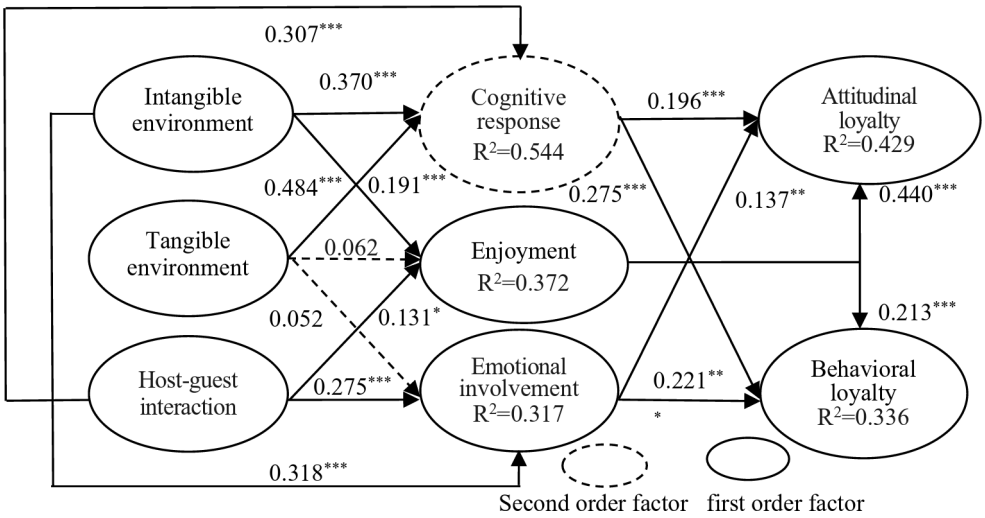

Fig. 3. Structural model. The results of structural model are displayed. The structure of Fig. 3 resembles that of (Fig. 1). Hypotheses H1c, H2c, H3c, H4a, H4b, H5a, H5b, H6a and H6b are supported with significant effects.

Mediating path	Mediation effect	Total effect
Intangible elements of a caring environment→cognitive response→attitudinal loyalty	0.073**	0.329***
Intangible elements of a caring environment→enjoyment→attitudinal loyalty	0.213***	
Intangible elements of a caring environment→emotional involvement→attitudinal loyalty	0.043*	
Intangible elements of a caring environment→cognitive response→behavioral loyalty	0.102***	0.275***
Intangible elements of a caring environment→enjoyment→behavioral loyalty	0.103**	
Intangible elements of a caring environment→emotional involvement→behavioral loyalty	0.070**	
Tangible elements of a caring environment→cognitive response→attitudinal loyalty	0.038***	0.072*
Tangible elements of a caring environment→enjoyment→attitudinal loyalty	0.027	
Tangible elements of a caring environment→emotional involvement→attitudinal loyalty	0.007	
Tangible elements of a caring environment→cognitive response→behavioral loyalty	0.053***	0.077**
Tangible elements of a caring environment→enjoyment→behavioral loyalty	0.013	
Tangible elements of a caring environment→emotional involvement→behavioral loyalty	0.011	
Host-guest interaction→cognitive response→attitudinal loyalty	0.060***	0.156***
Host-guest interaction→enjoyment→attitudinal loyalty	0.058*	
Host-guest interaction→emotional involvement→attitudinal loyalty	0.038*	
Host-guest interaction→cognitive response→behavioral loyalty	0.084***	0.173***
Host-guest interaction→enjoyment→behavioral loyalty	0.028	
Host-guest interaction→emotional involvement→behavioral loyalty	0.061***	

Table 4. Mediating effects. ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

iables were not significant, leading to the rejection of hypotheses H8a, H9a, and H10a. Table 6 illustrates the positive moderating effect of a community-based homestay architectural characteristics on the relationship between enjoyment and attitudinal loyalty. Homestays with local architectural characteristics ($\beta = 0.618$, $t = 7.037$, $p < 0.001$) had a stronger moderating effect than those without local architectural characteristics ($\beta = 0.407$, $t = 7.726$, $p < 0.001$).

Homestay's property ownership From Table 5, it is evident that the interaction term between homestay's property ownership and enjoyment had a significant positive moderating effect on tourists' attitudinal loyalty ($\beta = 0.094$, $t = 2.112$, $p < 0.05$) and behavioral loyalty ($\beta = 0.113$, $t = 2.482$, $p < 0.05$), supporting hypotheses H7b and H8b. Table 6 corroborated the differences in the moderating effect that the impact of owner-occupied homestays on tourists' attitudinal loyalty ($\beta = 0.679$, $t = 5.279$, $p < 0.001$) was stronger than privately rented homestays ($\beta = 0.457$, $t = 8.657$, $p < 0.001$). Tourists choosing owner-occupied homestays were more likely to have a positive behavioral loyalty ($\beta = 0.176$, $t = 3.497$, $p < 0.01$) after experiencing enjoyment, while for tourist choosing rental homestays ($\beta = -0.122$, t=-0.918, $p > 0.05$), their enjoyment didn't enhance behavioral loyalty. Owner-occupied homestay hosts had lower operating costs, no rental expenses, and less profit-driven motivation. They were often local residents, familiar with local culture and emphasizing humanistic sentiment and who

provide a more comfortable and caring homestay environment, resulting in tourists experiencing more enjoyment and relaxation, thus easily obtaining feelings of pleasure and positive intention.

Moderating factors	Hypot-heses	Moderating path	Moderating effect	SE	2.50%	97.50%
Architectural characteristics	H7a	Enjoyment→attitudinal loyalty	0.127*	0.042	0.043	0.211
	H8a	Enjoyment→behavioral loyalty	0.028	0.053	−0.079	0.135
	H9a	Emotional involvement→attitudinal loyalty	−0.062	0.046	−0.150	0.032
	H10a	Emotional involvement→behavioral loyalty	0.050	0.050	−0.048	0.142
Homestay's property ownership	H7b	Enjoyment→attitudinal loyalty	0.094*	0.045	0.018	0.195
	H8b	Enjoyment→behavioral loyalty	0.113*	0.045	0.031	0.211
	H9b	Emotional involvement→attitudinal loyalty	−0.057	0.037	−0.136	0.008
	H10b	Emotional involvement→behavioral loyalty	−0.114*	0.048	−0.216	−0.028
Nativeness of homestay's host	H7c	Enjoyment→attitudinal loyalty	−0.003	0.040	−0.080	0.077
	H8c	Enjoyment→behavioral loyalty	0.022	0.048	−0.078	0.110
	H9c	Emotional involvement→attitudinal loyalty	−0.024	0.042	−0.108	0.059
	H10c	Emotional involvement→behavioral loyalty	−0.123**	0.046	−0.214	−0.033
Local activity	H7d	Enjoyment→attitudinal loyalty	0.138*	0.044	0.051	0.223
	H8d	Enjoyment→behavioral loyalty	0.103*	0.050	0.006	0.198
	H9d	Emotional involvement→attitudinal loyalty	−0.090	0.049	−0.183	0.014
	H10d	Emotional involvement→behavioral loyalty	−0.056	0.052	−0.154	0.043

Table 5. Moderating role of homestay's local characteristics. ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

The interaction term between homestay's property ownership and emotional involvement significantly negatively moderated tourists' behavioral loyalty ($\beta = -0.114$, $t = 2.482$, $p < 0.05$), supporting hypothesis H10b. Table 6 also confirmed a stronger behavioral loyalty of tourists staying in rental homestays ($\beta = 0.272$, $t = 5.111$, $p < 0.001$) with increased emotional involvement. However, the moderating effect was not significant for owner-occupied homestays ($\beta = -0.207$, $t = -0.011$, $p > 0.05$).Despite non-local operators facing rental pressure, they had extensive management experience, and thereby had more interaction and empathy with tourists possibly driven by sentiments or yearning for local life. Accordingly, tourists were more likely to trust homestay hosts and make positive behavioral loyalty. The interaction term between homestay's property ownership and emotional involvement did not significantly moderate tourists' attitudinal loyalty, thus hypothesis H9b is not supported.

Nativeness of homestay's host From Table 5, it is evident that the interaction term between the nativeness of homestay's host and emotional involvement significantly negatively influenced tourists' behavioral loyalty ($\beta = -0.123$, $t = 2.676$, $p < 0.01$), confirming hypothesis H10c. Table 6 further confirms that tourists staying in a homestay operated by a non-Yangshuo native had stronger behavioral loyalty with increased emotional involvement ($\beta = 0.323$, $t = 5.284$, $p < 0.001$); this relationship was not significant for Yangshuo native hosts ($\beta = 0.073$, $t = 0.90$, $p > 0.05$). This might be due to non-Yangshuo investors having more management experience compared to Yangshuo natives, leading to higher-quality interactions and positive intentions from tourists. The interaction term between the nativeness of homestay's hosts and other variables was not significant, therefore hypotheses H7c, H8c, and H9c are not supported.

Local activity From Table 5, it is evident that the interaction term between enjoyment and local activities significantly positively influenced tourists' attitudinal loyalty ($\beta = 0.138$, $t = 3.159$, $p < 0.05$), supporting hypothesis H7d. Table 6 illustrates the positive moderating effect of homestay local activities, indicating that homestays with local activities ($\beta = 0.615$, $t = 8.618$, $p < 0.001$) had a stronger moderation effect compared to those without local activities ($\beta = 0.382$, $t = 6.305$, $p < 0.001$). The interaction term between enjoyment and local activities significantly positively influenced tourists' behavioral loyalty ($\beta = 0.103$, $t = 2.062$, $p < 0.05$), supporting H8d. Table 6 demonstrates that homestay's local activities positively moderated the relationship between enjoyment and behavioral loyalty, with homestays offering local featured activities ($\beta = 0.369$, $t = 2.784$, $p < 0.001$) showing a stronger moderation effect compared to those without local activities ($\beta = 0.184$, $t = 4.734$, $p < 0.01$). This confirms that characteristic activities such as entertainment can induce arousing and pleasurable emotions in consumers, enhancing their enjoyment value and thereby influencing their loyalty The moderating effect of local activities on the relationship between emotional involvement and loyalty was not significant, hence hypotheses H9d and H10d are not supported.

Moderating path	Characteristics of homestay	p-value	SE	2.50%	97.50%
Enjoyment→attitudinal loyalty	Architectural characteristics				
	Absence of local architectural characteristics	0.407***	0.058	0.293	0.521
	Presence of local architectural characteristics	0.618***	0.08	0.461	0.775
	Property ownership				
	Rental homestay	0.457***	0.053	0.353	0.561
	Owner-occupied homestay	0.679***	0.129	0.426	0.932
	Local activity				
	Absence of local characteristic activity	0.382***	0.061	0.263	0.5
	Presence of local characteristic activity	0.615***	0.071	0.475	0.756
Enjoyment→behavioral loyalty	Property ownership				
	Rental homestay	−0.122	0.133	−0.341	0.097
	Owner-occupied homestay	0.176**	0.05	0.093	0.259
	Local activity				
	Absence of local characteristic activity	0.184**	0.066	0.054	0.314
	Presence of local characteristic activity	0.369***	0.078	0.216	0.522
Emotional involvement→behavioral loyalty	Property ownership				
	Rental homestay	0.272***	0.054	0.165	0.379
	Owner-occupied homestay	−0.207	0.139	−0.300	0.246
	Nativeness of homestay's host				
	Not native to Yangshuo country	0.323***	0.061	0.203	0.443
	Native to Yangshuo country	0.073	0.081	−0.086	0.231

Table 6. Moderating effects of different characteristics of homestays. $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

Discussion

This study aimed to investigate the effects of connected experiences during community-based homestays on tourists' emotions and loyalty, as well as to examine the moderating role of local characteristics in the relationship between emotions and loyalty. The results indicated a significant impact of connected experiences on tourists' emotional responses. Additionally, the findings confirmed that emotions act as a key mediator in predicting tourist loyalty. Furthermore, the local characteristics of homestays moderated the relationship between emotions and loyalty. Theoretical and managerial implications derived from these findings are discussed below:

Theoretical implications

To enhance the understanding of local characteristics in community-based homestays, this study distinguishes between architectural characteristics and homestay property ownership. Both dimensions represent key elements of local characteristics and offer theoretical insights into their development. While there is an abundance of research examining the effects of architectural characteristics, few studies have considered the impact of homestay property ownership. Our findings suggest that homestay property ownership may be equally important as architectural characteristics in generating positive emotions among customers. This highlights the critical role of homestay property ownership in shaping tourist experiences.

Another theoretical contribution of this research is the identification of the moderating effect of homestay local characteristics. While the concept of local characteristics has been extensively explored in human geography, it has received limited attention in other disciplines, such as marketing and service research. Empirical studies examining local characteristics in the context of accommodation choices are scarce. This study confirms that homestay local characteristics play a moderating role in influencing tourists' accommodation decisions. Specifically, property ownership positively moderates the relationship between enjoyment and loyalty, while negatively moderating the relationship between emotional involvement and behavioral loyalty. Homestays operated by the owner are more effective in moderating the relationship between enjoyment and loyalty. Conversely, homestays managed by tenants positively moderate the relationship between emotional involvement and behavioral loyalty. Additionally, the nativeness of the host negatively moderates the relationship between emotional involvement and behavioral loyalty, while homestay-specific activities positively moderate the relationship between enjoyment and loyalty.

Grounded in the SOR paradigm, this study demonstrates that emotions (O) mediate the relationship between connected experiences (S) and loyalty (R), aligning with findings from previous research. Specifically, intangible elements of a caring environment and host-guest interactions indirectly influence tourists' loyalty in homestays through emotions. In contrast, tangible elements of a caring environment exert an indirect effect on loyalty through cognitive responses. While prior studies in the hotel industry have highlighted the role of environmental factors in shaping consumer evaluations and loyalty[32,58], this study contributes to the literature by identifying the influence of connected experiences on homestay loyalty within the SOR paradigm.

Managerial implications

Rural homestays, as critical components of rural, cultural, and leisure tourism, play a pivotal role in promoting local economic development, preserving cultural heritage, enhancing rural governance, and advancing ecological sustainability. They are increasingly recognized as key drivers of rural revitalization. However, the rapid expansion of homestays in China has revealed several challenges, including inconsistent management standards, product homogeneity, and a lack of distinct cultural attributes, which have diminished their competitiveness. Analyzing tourists' emotions and the mechanisms influencing their loyalty—particularly with regard to the impact of local characteristics—can offer valuable insights for the homestay industry. Understanding these dynamics may aid in attracting customers more effectively, enhancing product design and management, improving the quality of homestays, and boosting their overall attractiveness and viability, ultimately transforming homestays into unique experiential tourism offerings. The findings of this study provide practical guidance for service and homestay industry practitioners and managers, enabling them to make informed decisions, implement effective strategies, and maintain competitiveness in an evolving market.

The findings of this study suggest that both intangible and tangible elements of a caring environment, along with host-guest interactions, significantly influence tourists' emotional responses. Personalized services and memorable connected experiences are therefore critical in promoting both attitudinal and behavioral loyalty[29]. Creating a warm and comfortable environment is essential for providing tourists with high-quality experiences. Enhancing the overall caring environment of homestays—through factors such as sound, scent, and lighting, incorporating local characteristics—can improve tourist satisfaction. Moreover, offering family-style services and interactive engagement is crucial. Prioritizing the quality of interaction between hosts and tourists, and transforming the relationship into one resembling that of friends or family, can strengthen the emotional connection. Additionally, improving the humanistic care provided by hosts, focusing on respectful communication and positive attitudes, is vital for enhancing service quality. These strategies play a significant role in shaping tourists' emotional experiences and fostering loyalty.

Tourists' emotions serve as crucial mediators in predicting their attitudinal loyalty and behavioral loyalty, underscoring the significance of cognitive and emotional factors in shaping tourists' preferences for homestay accommodations. Enhancing service quality through comprehensive training for hosts and staff is essential, with the goal of improving tourists' cognitive responses, emotional involvement, and overall enjoyment. Additionally, it is important to establish standardized mechanisms for evaluating the connected experience of homestays and to encourage tourists to provide feedback and reviews. This practice enables homestay operators to better understand tourists' needs, ultimately improving the quality of the connected experience and fostering stronger customer loyalty.

The local characteristics of homestays significantly influence tourists' enjoyment and emotional involvement, which in turn affect their loyalty. It is therefore crucial to prioritize the development of local characteristics within homestays to enhance tourists' experiences. Homestay operators should deepen their understanding of local cultures by renewing and expanding their knowledge, and sharing local traditions, skills, and customs with tourists. Additionally, efforts should be made to uncover and integrate unique traditional cultural elements, focusing on the distinctive development of homestay facilities. Beyond meeting functional requirements, incorporating local features into architectural and interior designs is essential. Further, using design and art as thematic activities and service experiences can integrate regional elements into homestay operations. Developing unique homestay offerings, increasing experiential activities, and providing immersive cultural encounters can strengthen tourists' emotional connections to local cultures. Finally, preserving the original character and style of villages to maintain harmony between homestays and their surroundings is imperative. Cultivating rural cultural leisure systems, establishing distinctive homestay villages, and involving local communities in homestay tourism are important for fostering a symbiotic relationship between homestays and their communities.

Limitations and future research

It is important to acknowledge the limitations inherent in this study. First, data collection was conducted over a relatively short period, which may have introduced time-specific biases. A more optimal approach would involve cross-sectional data collection over an extended time frame to account for seasonal variations and uncover longitudinal trends. Seasonal fluctuations in tourist behavior and environmental conditions can influence the connected experience in homestays, and addressing these variations would provide a more nuanced understanding. Future research should consider collecting data on homestays across multiple seasons and years to gain more comprehensive insights into how homestays contribute to tourism development in less-developed regions, with implications for poverty alleviation and sustainable development. Such an approach would also shed light on the resilience of homestays in adapting to external factors, such as economic shifts or climate variations, and their long-term impact on local economies and cultural preservation. The second limitation relates to the absence of follow-up surveys with tourists after their homestay experience. While this study provides a snapshot of tourists' immediate responses, longitudinal data collected through follow-up surveys—such as one month post-trip—would offer more reliable insights into tourist loyalty and behavioral changes over time. This would allow for a deeper exploration of the sustained emotional and cognitive impact of the homestay experience. Such longitudinal research could further inform the development of sustainable and profitable business models for homestays in community-based tourism, providing homestay operators with data-driven strategies to enhance repeat visitation and positive word-of-mouth recommendations. Moreover, these insights would contribute to more effective guidance for national and regional policies focused on Rural Revitalization, particularly as they pertain to tourism's role in achieving the United Nations Sustainable Development Goals. The third limitation is the relatively small sample size. Although the current sample size meets the minimum requirement, a lager sample size would enhance the robustness and credibility of the results. Therefore, conducting surveys on a lager scale would be on future research agenda.

Methods

Setting

Yangshuo lies 65 km south of Guilin city and in the northeast of Guangxi Zhuang Autonomous Region, characterized by a breathtaking Karst landscape. The rippling Li River traverses the county and brings it breathtaking natural beauty. Yangshuo is also the termination of a Li River cruise. Its 1,400 years' history and diverse ethnic minorities bless it with deep traditional and splendid cultures that are still well kept. Yangshou is among the first tourist destinations to welcome international tourist in the 1970s[59]. Now rated as one of the top 10 destinations in China according to TripAdvisor, Yangshuo is considered a showcase in terms of community-based tourism advocated by the United Nations World Tourism Organization. Yangshuo welcomed more than 21 million tourists in 2023[60]. According to the local government work report, the proportion of added value of tourism to GDP increased from 28% in 2004 to 51% in 2023, making tourism the pillar industry and the top contributor to the economy in Yangshuo. As of 2023, the number of homestays in Yangshuo has exceeded 2,000, accounting for more than 60% of the county's accommodations. Popular tourism activities include biking by the rice paddies, bamboo rafting on the Yulong River surrounded by numerous Zhuang ethnic villages, cooking local food such as glutinous rice cake or grinding tofu, making bring-home souvenirs such as a folding fan, watching Impression Liu Sanjie (a musical on the Li River about the "Zhuang song fairy"), and etc. Community-based tourism and homestays are key features of tourism in Yangshuo.

Data collection

To ensure the integrity of the sample, well-known tourist attractions such as Yangshuo West Street, Xingping Town, Ten-Mile Gallery, and Yulong River were selected as survey sites. The survey targeted homestay tourists, with proportional sampling conducted according to the tourist scale of each attraction. A total of 400 questionnaires were collected, of which 372 were deemed valid, with a validity rate of 93%. According to Hair et al.[61], the appropriate sample size should be at least ten times the total number of questions. We have 32 questions and 372 valid questionnaire samples. Therefore, our sample size meets this requirement. There are previous works that have sample sizes similar to ours. For instance, in Bortoluzzi et al.[62], the sample size was 204, Sun et al.[63]used a sample size of only 282, and Sugiarto et al.[64] used a large sample size of 425, all with the method of structural equation modeling.

The questionnaire was developed based on a large number of literature reviews and includes four parts. Based on the work of Baker et al.[65] and Choi and Kandampully[32], the first part contains ten items related to the connectedness of the experience: four items for intangible elements of a caring environment, two items for tangible elements of a caring environment, and four items for host-guest interaction. The intangible elements of a caring environment were measured using a three-point Likert scale, while tangible elements of a caring environment and host-guest interaction were measured both using a five-point Likert scale.

The second part is about emotions. Specifically, cognitive responses consist of four sub-dimensions, each containing two or three items, based on the work of Kim et al.[8]. The measurements of enjoyment and emotional involvement are based on the work of Kim et al.[8], Guo and Barnes[57], Guttentag[47]. There are three items for enjoyment, measured using a two-point Likert scale, and four items for emotional involvement, measured using a three-point Likert scale.

The third part is about loyalty. Based on the work of Suhartanto et al.[41], the measurements of loyalty included three items for attitudinal loyalty and three items for behavioral loyalty, both measured using a three-point Likert scale.

The last part is about local characteristics. Based on Seamon and Sowers[66]and Relph[67], local characteristics of a homestay is measured from four dimensions: architectural characteristics, property ownership, nativeness of homestay's host, and local activities. The questionnaire items are presented in the Appendix.

Data analysis

Structural model was constructed using SmartPLS 3.2.9 software and partial least squares structural equation modeling to analyze the relationships between a connected experience, tourists' emotions and loyalty. First, the measurement model was checked for reliability and validity to confirm the appropriateness of each measurement indicator in explaining the model variables. Subsequently, the fitting and predictive capabilities of structural model were evaluated to examine the relationships and significance among variables proposed in the research framework. R^2 was employed to measure the predictive ability of exogenous variables on various endogenous latent variables and to examine the fit of the structural model. The goodness of fit (GoF) index was utilized to assess the adequacy of explanatory variables in predicting the outcome variables. Additionally, f^2 was used to evaluate the effect sizes of paths between latent variables and the impact of exogenous variables on endogenous variables. Bootstrapping, with 5000 iterations of random sampling, was applied to estimate and verify the significance of path relationships within the structural model. Moreover, process techniques were used to analyze and test moderation effects.

Ethical considerations

Ethical approval for this study was obtained from the institutional review board (committee set by Guangxi Normal University). All methods were performed in accordance with the relevant guidelines and regulations set by the institutional review board. Informed consent was obtained from all the participants and /or their legal guardians.

Data availability

The data can be made available in a normalized/standardized form from the corresponding author upon reasonable request.

Received: 13 October 2024; Accepted: 19 December 2024
Published online: 02 January 2025

References

1. Jiao, S., Gong, W., Zheng, Y., Zhang, X. & Hu, S. Spatial spillover effects and tourism-led growth: an analysis of prefecture-level cities in China. *Asia Pac. J. Tour. Res.* **24** (7), 725–734 (2019).
2. Scheyvens, R. & Laeis, G. J. T. G. Linkages between tourist resorts, local food production and the sustainable development goals. *Tour. Geogr.* 1–23 (2019).
3. Schott, C. & Nhem, S. Paths to the market: Analysing tourism distribution channels for community-based tourism. *Tour. Recreat. Res.* **43** (3), 356–371 (2018).
4. Dangi, T. B. & Jamal, T. An integrated approach to sustainable community-based tourism. *Sustainability* **8** (5), 475 (2016).
5. Mehrabian, A. & Russell, J. *A.An Approach to Environmental Psychology* (The MIT, 1974).
6. Pasanchay, K. & Schott, C. Community-based tourism homestays' capacity to advance the sustainable development goals: a holistic sustainable livelihood perspective. *Tour. Manag. Perspect.* **37**, 100784 (2021).
7. Karol, E. Tangible and intangible elements of design for well-being in the home. *Gerontechnology* **15** (4), 227–232 (2016).
8. Kim, M. J., Lee, C. K. & Jung T.Exploring consumer behavior in virtual reality tourism using an extended stimulus-organism-response model. *J. Travel Res.* **59** (1), 69–89 (2020).
9. Goodwin, H. & Santilli, R. Community-based tourism: a success. *ICRT Occas. Paper* **11** (1), 37 (2009).
10. Müller, S., Huck, L. & Markova, J. Sustainable community-based tourism in Cambodia and tourists' willingness to pay. *ASEAS Aust. J. South East Asian Stud.* **13** (1), 81–101 (2020).
11. Shukor, S., Salleh, N. H. M., Othman, R. & Idris, S. H. M. Perception of homestay operators towardshomestay development in Malaysia. *J. Pengur.* 42. (2014).
12. Kunjuraman, V. & Hussin, R. Challenges of community-based homestay programme in Sabah, Malaysia: hopeful or hopeless? *Tour. Manag. Perspect.* **21**, 1–9 (2017).
13. Jugmohan, S., Spencer, J. P. & Steyn, J. N. Local natural and cultural heritage assets and community based tourism: challenges and opportunities. *Afr. J. Phys. Act. Health Sci. (AJPHES).* **22** (1–2), 306–317 (2016).
14. Manyara, G. & Jones, E. Community-based tourism enterprises development in Kenya: an exploration of their potential as avenues of poverty reduction. *J. Sustain. Tour.* **15** (6), 628–644 (2007).
15. Leh, F. C. & Hamzah, M. R. Homestay tourism and pro-poor tourism strategy in Banghuris Selangor, Malaysia. *Elixir Int. J.* **45**, 7602–7610 (2012).
16. Lama, M. Community homestay programmes as a form of sustainable tourism development in Nepal (2013).
17. Ball, J. As if indigenous knowledge and communities mattered: transformative education in first nations communities in Canada. *Am. Indian Q* 454–479 (2004).
18. Agapito, D., Mendes, J. & Valle, P. Exploring the conceptualization of the sensory dimension of tourist experiences. *J. Destin. Mark. Manag.* **2** (2), 62–73 (2013).
19. Bigne, E., Fuentes-Medina, M. L. & Morini-Marrero, S. Memorable tourist experiences versus ordinary tourist experiences analysed through user-generated content. *J. Hosp. Tour. Manag.* **45**, 309–318 (2020).
20. Bagheri, F., Guerreiro, M., Pinto, P. & Ghaderi, Z. From tourist experience to satisfaction and loyalty: exploring the role of a sense of well-being. *J. Travel Res.* 00472875231201509. (2023).
21. Chen, H. & Rahman, I. Cultural tourism: an analysis of engagement, cultural contact, memorable tourism experience and destination loyalty. *Tour. Manag. Perspect.* **26**, 153–163 (2018).
22. Agapito, D., Pinto, P. & Mendes, J. Tourists' memories, sensory impressions and loyalty: in loco and post-visit study in Southwest Portugal. *Tour. Manag.* **58**, 108–118 (2017).
23. Vada, S., Prentice, C. & Hsiao, A. The role of positive psychology in tourists' behavioural intentions. *J. Retail. Consumer Serv.* **51**, 293–303 (2019).
24. Vittersø, J., Prebensen, N., Hetland, A. & Dahl, T. The emotional traveler: happiness and engagement as predictors of behavioral intentions among tourists in Northern Norway. *Adv. Hosp. Leisure* **13**, 3–16 (2017).
25. Prayag, G., Hosany, S., Muskat, B. & Del Chiappa G.Understanding the relationships between tourists' emotional experiences, perceived overall image, satisfaction, and intention to recommend. *J. Travel Res.* **56** (1), 41–54 (2017).
26. Al-Msallam, S. The impact of tourists' emotions on satisfaction and destination loyalty–an integrative moderated mediation model: tourists' experience in Switzerland. *J. Hosp. Tour. Insights* **3** (5), 509–528 (2020).
27. Venkatesh, V. Determinants of perceived ease of use: integrating control, intrinsic motivation, and emotion into the technology acceptance model. *Inform. Syst. Res.* **11** (4), 342–365 (2000).
28. Holsapple, C. W. & Wu, J. User acceptance of virtual worlds: the hedonic framework. *ACM SIGMIS Database DATABASE Adv. Inform. Syst.* **38** (4), 86–89 (2007).
29. Gunasekaran, N. & Anandkumar, V. Factors of influence in choosing alternative accommodation: a study with reference to Pondicherry, a coastal heritage town. *Proc. Soc. Behav. Sci.* **62**, 1127–1132 (2012).
30. Feng, Y., Chen, X. & Lai, I. The effects of tourist experiential quality on perceived value and satisfaction with bed and breakfast stays in Southwestern China. *J. Hosp. Tour. Insights* **4** (1), 121–135 (2021).
31. Lee, S. & Chuang, N. K. Applying expanded servicescape to the hotel industry. *J. Hosp. Tour. Res.* **46** (4), 771–796 (2022).
32. Choi, H. & Kandampully, J. The effect of atmosphere on customer engagement in upscale hotels: an application of SOR paradigm. *Int. J. Hosp. Manag.* **77**, 40–50 (2019).
33. Lin, I. Y. Evaluating a servicescape: the effect of cognition and emotion. *Int. J. Hosp. Manag.* **23** (2), 163–178 (2004).
34. Chang, C. H., Shu, S. & King, B. Novelty in theme park physical surroundings: an application of the stimulus–organism–response paradigm. *Asia Pac. J. Tour. Res.* **19** (6), 680–699 (2014).
35. Slåtten, T., Mehmetoglu, M., Svensson, G. & Sværi, S. Atmospheric experiences that emotionally touch customers: a case study from a winter park. *Manag. Serv. Qual. Int. J.* **19** (6), 721–746 (2009).
36. Bigdeli, F. & Bigdeli, A. The influence of atmospheric elements on emotions, perceived value and behavioral intentions. *Manag. Sci. Lett.* **4** (5), 859–870 (2014).
37. Ouyang, Z., Gursoy, D. & Sharma, B. Role of trust, emotions and event attachment on residents' attitudes toward tourism. *Tour. Manag.* **63**, 426–438 (2017).
38. Kim, W. G. & Moon, Y. J. Customers' cognitive, emotional, and actionable response to the servicescape: a test of the moderating effect of the restaurant type. *Int. J. Hosp. Manag.* **28** (1), 144–156 (2009).
39. Kim, J. & Lennon, S. J. Effects of reputation and website quality on online consumers' emotion, perceived risk and purchase intention: based on the stimulus-organism-response model. *J. Res. Interact. Mark.* **7** (1), 33–56 (2013).

40. Huang, Y. C., Backman, S. J., Backman, K. F. & Moore, D. Exploring user acceptance of 3D virtual worlds in travel and tourism marketing. *Tour. Manag.* **36**, 490–501 (2013).
41. Suhartanto, D., Brien, A., Primiana, I., Wibisono, N. & Triyuni, N. N. Tourist loyalty in creative tourism: the role of experience quality, value, satisfaction, and motivation. *Curr. Issues Tour.* **23** (7), 867–879 (2020).
42. Pandža Bajs, I. Tourist perceived value, relationship to satisfaction, and behavioral intentions: the example of the croatian tourist destination Dubrovnik. *J. Travel Res.* **54** (1), 122–134 (2015).
43. Kim, M. J., Lee, C. K. & Bonn, M. Obtaining a better understanding about travel-related purchase intentions among senior users of mobile social network sites. *Int. J. Inf. Manag.* **37** (5), 484–496 (2017).
44. Dixon, M., Freeman, K. & Toman, N. Stop trying to delight your customers. *Harvard Business Rev.* **88** (7/8), 116–122 (2010).
45. Loureiro, S. M. C. & Roschk, H. Differential effects of atmospheric cues on emotions and loyalty intention with respect to age under online/offline environment. *J. Retail. Consumer Serv.* **21** (2), 211–219 (2014).
46. Jani, D. & Han, H. Influence of environmental stimuli on hotel customer emotional loyalty response: testing the moderating effect of the big five personality factors. *Int. J. Hosp. Manag.* **44**, 48–57 (2015).
47. Guttentag, D. A. Virtual reality: applications and implications for tourism. *Tour. Manag.* **31** (5), 637–651 (2010).
48. Reid, B. Trellising the girders: Poetry and the imagining of place in Northern Ireland. *Soc. Cult. Geogr.* **9** (5), 519–533 (2008).
49. Hulme, P. & Youngs, T. In *The Cambridge Companion to Travel Writing* Vol. 10 (Cambridge University Press, 2002).
50. Dey, B., Mathew, J. & Chee-Hua, C. Influence of destination attractiveness factors and travel motivations on rural homestay choice: the moderating role of need for uniqueness. *Int. J. Cult. Tour. Hosp. Res.* **14** (4), 639–666 (2020).
51. Lockwood, A. & Pyun, K. Developing a scale measuring customers' servicescape perceptions in upscale hotels. *Int. J. Contemp. Hosp. Manag.* **32** (1), 40–59 (2020).
52. Sarstedt, M., Ringle, C. M. & Hair, J. F. Partial least squares structural equation modeling. In *Handbook of Market Research* (587–632). (Springer International Publishing, 2021).
53. Chin, W. W. The partial least squares approach to structural equation modeling. *Mod. Methods Bus. Res.* **295** (2), 295–336 (1998).
54. Chen, F. F., Sousa, K. H. & West, S. G.Teacher's corner: testing measurement invariance of second-order factor models. *Struct. Equ. Model.* **12** (3), 471–492 (2005).
55. Narayan, B., Rajendran, C. & Sai, L. P. Scales to measure and benchmark service quality in tourism industry: a second-order factor approach. *Benchmark. Int. J.* **15** (4), 469–493 (2008).
56. Wetzels, M., Odekerken-Schröder, G. & Van Oppen, C. Using PLS path modeling for assessing hierarchical construct models: guidelines and empirical illustration. *MIS Q* **33** (1), 177–195 (2009).
57. Guo, Y. & Barnes, S. Purchase behavior in virtual worlds: an empirical investigation in second life. *Inf. Manag.* **48** (7), 303–312 (2011).
58. Dedeoglu, B. B., Bilgihan, A., Ye, B. H., Buonincontri, P. & Okumus, F. The impact of servicescape on hedonic value and behavioral intentions: the importance of previous experience. *Int. J. Hosp. Manag.* **72**, 10–20 (2018).
59. Qun, Q., Mitchell, C. J. & Wall G.Creative destruction in China's historic towns: Daxu and Yangshuo, Guangxi. *J. Destin. Mark. Manag.* **1** (1–2), 56–66 (2012).
60. Qiu, W. W., Yu, H. T., Lin, P. M. & AU, W. C. W. evaluating rural homestay accommodations in China using the hospitality index: an online review—Based approach. *Int. J. Hosp. Manag.* **121**, 103792 (2024).
61. Hair, F. Jr et al. Multivariate data analysis. *Up. Saddle River NJ. Prent. Hall* **3**, 256–291 (2009). 7th ed.
62. Bortoluzzi, D. A. et al. Effect of online hotel reviews on the relationship between defender and prospector strategies and management controls. *Int. J. Contemp. Hosp. Manag.* **32** (12), 3721–3745 (2020).
63. Sun, J. et al. Place attachment to pseudo establishments: an application of the stimulus-organism-response paradigm to themed hotels. *J. Bus. Res.* **129**, 484–494 (2021).
64. Sugiarto, A. et al. Predictors of pro-environmental intention and behavior: a perspective of stimulus–organism–response theory. *Sustainability* **14** (23), 16047 (2022).
65. Baker, J., Grewal, D. & Parasuraman, A. The influence of store environment on quality inferences and store image. *J. Acad. Mark. Sci.* **22** (4), 328–339 (1994).
66. Seamon, D. & Sowers, J. Place and placelessness, Edward Relph. *Key Texts Hum. Geogr.* **43**, 51 (2008).
67. Relph, E. *Place and Placelessness* Vol. 67 p. 45 (Pion, 1976).

Acknowledgements

Qiwen Dai thanks National Natural Science Foundation of China (No. 42061027), the Philosophy and Social Science Planning Foundation of Guangxi (No. 24JYF015) and the Thousands of Young and Middle-aged Backbone Teachers Training Foundation of Guangxi Universities (No. 2022QGRW002) for financial support. Yanqiao Zheng thanks National Natural Science Foundation Program of China (grant number: 72104209) and China Postdoctoral Science Foundation (Grant Number: GZC20233096, 2024T171031, 2024M753603) for financial support.

Author contributions

D.-Q.W. conceived the study. D.-Q.W. and C.-J.L. designed the methodology and implement the main computation. C.-J.L. provided the visualization of the data and analytic results. C.-J.L. and Z.-Y.Q. wrote the manuscript. Z.-Y.Q. and D.-Q.W. advised the interpretation of the result, and all authors critically reviewed the manuscript for intellectual content and approved the final manuscript.

Declarations

Competing interests

The authors declare no competing interests.

Additional information

Correspondence and requests for materials should be addressed to Y.Z.