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Original Research

Applying Ecotourism Knowledge and Destination Image in Planned Behavior Theory in Ecotourism

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Abstract

Ecological knowledge and destination image are important drivers of ecotourism. Although previous studies have explored the antecedents of ecotourism intentions, our understanding of the factors driving demand for ecotourism is still limited. This study explored factors that affect ecotourism intention. Ecotourism knowledge and destination image were evaluated from the perspective of the theory of planned behavior. In total, 441 valid questionnaires (in paper and electronic format) were obtained and analyzed using a structural equation model. We developed an extended theoretical model of planned behavior. The results showed that ecological knowledge, attitude, and perceived behavioral control had a significant impact on ecotourism intention. Destination image directly affected attitudes toward ecotourism. Ecotourism attitude and subjective norms mediated the relationship between ecotourism knowledge and ecotourism intention. This study extended the theory of planned behavior to analyze ecotourism intention according to ecotourism knowledge and destination image. The findings of this study enrich the literature on tourism and consumer behavior, and also have practical implications for ecotourism operators aiming to design experiences for tourists, as well as for government and non-profit organizations attempting to promote ecotourism.

Keywords: ecotourism knowledge, destination image, theory of planned behavior, ecotourism intention

Introduction

Ecotourism is a rapidly emerging type of tourism that has achieved a large market share. In fact, it is the fastest-growing tourism sector worldwide, currently accounting for 5%-0% of the global tourism market; moreover, this proportion is growing by 5% per year. In 2021, state-owned forests and tree farms, as well as nature reserves and other nature areas in China, were visited by a total of 2,083 billion tourists, representing an increase of more than 11.5%. Furthermore, the number of tourists in 2021 corresponded to 70% of all tourists in China in 2019.

With the increasingly pressing global crisis in environmental resources, governments and academics around the world are paying more attention to the development of ecotourism with the aim of

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environmental protection. Ecological tourism represents a new trend in the tourism industry and an ideal vehicle for promoting economic development in various regions. The development of ecological tourism relies on ample regional resources and a solid environmental foundation.

Overall, China's ecological environment is relatively fragile, and the quality and function of the ecosystem need to be improved. There is still a severe lack of ecological security and a clear conflict between ecological protection and economic and social development. Second, ecotourism in China is still relatively immature, with a lack of practical experience and poor operability. Moreover, ecological awareness among the public remains low, and many parts of the country have problems with excessive development, severe resource destruction, and unsatisfactory economic benefits in association with ecotourism. Therefore, more research on the development, planning and management of ecotourism is needed to achieve truly sustainable ecotourism.

Ecotourism is a sustainable form of tourism, the main purpose of which is to experience and understand nature [1]. The development of tourism has had many negative impacts, such as environmental pollution, excessive exploitation of resources, and poor management [2]. However, ecotourism can reduce such negative effects and promote sustainable development of the environment [3]. Bjork (2000) noted that tourism authorities make it possible for tourists to visit ecological areas where they can enjoy and appreciate natural culture in such a way as to not destroy resources but rather to contribute to sustainable development [4]. Ecotourism emphasizes natural scenic locations and environmental protection [5]. Young travelers could have a significant impact on many aspects of the tourism industry, and particularly on ecotourism [6]. Young travelers stayed for longer and spent more money in scenic tourist destinations; thus, awareness within the tourism sector of the considerable demand for tourism services among young travelers should be improved [7-8].

In this study, Zhalong National Nature Reserve, a popular wetland ecotourism destination in Northeast China, was selected as the research area. China has a vast territory and rich array of natural resources. Zhalong Nature Reserve is a "national AAAA tourist attraction" in Heilongjiang Province and one of the largest breeding grounds for red crowned cranes in the world [9]. However, because of overexploitation and poor management of natural resources, China's ecological environment has been damaged. Tourists consider many factors before participating in ecotourism, the most important of which is the image of the destination. When tourists have positive perceptions of a tourist area, they will be more inclined to engage in ecotourism [2]. Although attitudes are highly influenced by the image of a tourist destination, few studies have been conducted on the impact of destination image on attitudes toward ecotourism from the perspective of the theory of planned behavior (TPB). Initially, the TPB was applied to study the relationship between travelers' attitudes and behaviors, mainly via social–psychological models. To enhance explanatory power, the concept of perceived behavioral control (PBC) was subsequently introduced to better understand the role of behavioral intention. Models based on the TPB are considered robust [10]. Many previous studies focused on the preferences and satisfaction levels of tourists [11-12]. Although attitudes and satisfaction are important determinants of ecotourism behavior, other factors also play a role [13-14]. However, even though many studies of the antecedents of ecotourism intention have been conducted, our understanding of the factors driving ecotourism demand remains limited. Moreover, even though ecological knowledge and destination image are known to be important drivers of ecological travel, few studies have analyzed them from the perspective of the TPB. This study sought to elucidate many of the ecotourism phenomena unique to China. The motivation for our research is to explore tourists' willingness to engage in ecotourism through the analysis of data from tourists visiting the Zhalong Nature Reserve.

Improving the ecotourism knowledge of ecotourists may be key for sustainable long-term development of ecotourism areas. Attention should also be paid to the image of ecotourism destinations to attract more tourists. We applied an extended TPB framework to analyze tourists' environmental knowledge and impressions of destinations. These factors have not been considered together until now, and potential mediating factors have also been neglected; this paper aimed to address these issues [15].

Literature Review and Hypothesis Development

Theory of Planned Behavior

According to the TPB, human behavior is guided by three kinds of beliefs: beliefs about the likely consequences and experiences associated with a behavior (behavioral beliefs; beliefs regarding the likely outcome of a certain behavior), beliefs about the normative expectations and behaviors of significant others (normative beliefs; a person's tendency to believe that others around them expect a specific behavior and their motivation to comply), and beliefs about the presence of factors that may facilitate or impede performance of a behavior (control beliefs; the ability to surmount hurdles to the performance of the intended behavior) [16]. Previous literature applying a TPB approach to ecotourism discussed attitude, PBC, and subjective norms. Many studies found that individuals make rational choices in terms of travel behaviors. Attitude is defined as the degree of positive or negative evaluation of behavior. In the TPB, attitude has the greatest influence on intention and is the key determinant of behavior. If a person perceives ecological travel to be

beneficial to his or her health and the environment, he or she will likely be motivated to engage in it [17]. Tourists' attitudes play an important role in decision-making as it pertains to all aspects of travel [18].

Subjective norms are beliefs about the opinions of others, which may govern subsequent behavior (depending on whether it is believed that a given action will meet the approval of others) [19]. In other words, subjective norms are a form of social pressure [20] that relate to the individual's expectation of whether individuals or groups important to their lives perform a specific behavior. Subjective norms, as a component of the TPB, can directly affect travel attitudes and behaviors [21-22]. As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger the person's intention to perform the behavior in question is likely to be. The connection between subjective norms and attitudes indicates that a person's attitude towards a particular behavior of a person who he or she considers important will affect his attitude towards that behavior.

Finally, assuming a sufficient degree of control over a behavior, people are expected to carry out their intentions when the opportunity arises. Intention is thus assumed to be the immediate antecedent of behavior. To the extent that PBC is veridical, it can serve as a proxy for actual control and facilitate predictions of the behavior in question. PBC encompasses self-efficacy (the perceived difficulty of implementing a behavior) and controllability (implementation of a behavior according to one's own ideals); these TPB components affect a person's intention [16]. The intention to engage in ecological travel arises from a strong internal drive. People who pay attention to the issue of environmental protection are more likely to participate in ecological travel [15]. The direct influence of subjective norms on PBC indicates that social pressure arising from others' beliefs or behaviors could promote or inhibit a person's behavior. The TPB has been widely applied to explore behaviors associated with environmental protection and can be used to predict travel behavior [9, 23]. The TPB is widely cited in the ecotourism literature. For example, to study behaviors associated with environmental displayed by travelers staying in green accommodation, a unified framework was developed on the basis of the value-belief-norm model and the TPB [24]. In addition, Han et al. (2017) studied travelers' decision-making by extending the TPB, i.e., by using a model in which past behaviors and personal norms served as predictors [19]. Past behavior and personal behavioral norms were similarly used as predictors of the decisions of travelers in another study [25]. Against this background, the first three hypothesis of this study are as follows:

H1: Attitudes toward ecological travel strongly influence the intention to engage in it.

H2: Subjective norms have a positive impact on attitudes toward ecotourism within the extended TPB framework used.

H3: Subjective norms have a positive impact on PBC within the extended TPB framework.

PBC affects tourists' behavior in a manner that is largely within conscious awareness [26]. PBC also has an impact on behavioral intentions [27]. The fourth hypothesis of this study is as follows:

H4: PBC can play a positive role in enhancing ecotourism intention.

Ecotourism Knowledge, Attitudes, and Intention; Subjective Norms

Ecotourism knowledge refers to the degree to which tourists understand environmental conditions, climate change, and other related issues. Travelers' attitudes toward ecotourism, as well as their behaviors, may be affected by environmental knowledge. Individuals who have received higher education may be more likely to engage in environmentally friendly behaviors [3, 28, 29]. Environmental knowledge was reported to be positively correlated with ecotourism intention [30]. Ecotourism knowledge reflects not only tourists' awareness of the ecological environment and environmental protection issues, but also their level of concern about changes in the environment and the impact of their behaviors thereon. Environmental knowledge is an important factor in terms of attitudes toward, and the likelihood of participating in, ecological travel [31]. Attitudes towards ecotourism largely depend on perceptions of the potential impact of human activities on the ecological environment [19]. Three further hypotheses of this study related to these findings are as follows:

H5: Ecological knowledge positively affects attitudes toward ecotourism.

H6: Ecological knowledge positively affects subjective norms.

H7: Ecological knowledge positively affects the intention of individuals to engage in ecological travel.

Destination image has been regarded as a key factor in understanding tourists' experience and behavior. Early studies defined destination image as the sum of tourists' feelings, thoughts, ideas, and knowledge concerning tourism destinations. In other words, destination image refers to the overall impression of a given location [32], which influences the decision to travel and is amenable to change [33]. The destination image plays an important role in ecotourism as well as in tourist destination selection, and influences different aspects of the tourist decision-making process including searching for information on destination attractions. A good impression of a tourist attraction is associated with a positive attitude [2, 14, 32, 34]. In other words, if an ecological destination looks attractive to tourists, they will be more likely to visit it. Against this background, the eighth hypothesis of this study is as follows:

H8: Destination image is positively associated with ecotourism attitudes.

There are multiple mediating variables to better explain the influence of independent variables on

dependent variables, which requires the establishment of a chain multiple mediating model [35]. We propose that ecotourism attitudes and subjective norms play a chain like multiple mediating role between ecotourism knowledge and ecotourism willingness. The two chain conduction pathways are assumed to be:

1. ecotourism knowledge → subjective norms → perceived behavioral control → ecotourism intention;
2. ecotourism knowledge → subjective norms → ecotourism attitudes → ecotourism intention.

The ninth and tenth hypotheses of this study are as follows:

H9: Ecotourism attitude plays a strong mediating role between ecotourism knowledge and ecotourism intention.

H10: Ecotourism attitude and subjective norms play a chain like multiple mediating role between ecotourism knowledge and ecotourism intention.

On the basis of the above assumptions, the effects of ecotourism knowledge and destination image on TPB are shown in Fig. 1.

Research Design and Methodology

According to the characteristics of the study area and previous studies, a questionnaire was designed concerning ecological knowledge, destination image, ecotourism attitudes, subjective norms, PBC, and the intention to engage in ecotourism. A large number of studies, including international ones, informed the design of the questionnaire. The questionnaire was also assessed and modified by tourism experts to ensure that it was easy to understand.

Attitudes, subjective norms, PBC, and ecotourism intentions were measured using the scales of Ajzen (1991) [16], Agarwal (2014) [36], Tuu et al. (2008) [37] and Han et al. (2017) [19]. Our questionnaire comprises 19 questions distributed over four variables. Ecological knowledge was measured using the scales of Zhang and Lei (2012) [31] and Castellanos-Verdugo et al. (2016) [38], while destination image was assessed via items taken from Huang and Liu (2017) [39] and Pham et al. (2020) [2]. All items were measured using a seven-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). Seven-point Likert scales, which are sensitive, robust, and accurate, are suitable for online questionnaires [40].

Data Collection and Analysis

Data were collected between August 2 and November 20, 2020. Both online and paper questionnaires were used to collect data. The Questionnaire Star platform was used for the online questionnaires. The paper questionnaires were randomly distributed to tourists and recycled immediately after completion. Prior to the survey, pilot studies were conducted in several Chinese universities, and 60 samples were obtained in accordance with the literature; Oksenberg et al. (1991) stated that 25-75 samples are sufficient for pilot studies. Analysis of the pilot data indicated that all questionnaire items were reliable and valid [41].

In the main survey, 459 questionnaires were distributed (online format, n = 280; paper format, n = 179). There were 441 valid questionnaires; 39.9% and 60.1% of these questionnaires were completed by men and women, respectively. Regarding education level, 10.7% of the respondents had a master's degree or above, 75.7% had a bachelor's degree, and 7% had graduated from high school or college. In terms of age, 86.2% of the respondents were aged 17-28 years and 13.8% were aged 29-50 years. The characteristics of the sample are shown in Table 1 below.

In this study, the questionnaire data were subjected to frequency and consistency analyses using SPSS 26.0 software (IBM Corp., Armonk, NY, USA). To analyze the structure, test assumptions, and validate the measurement scale, confirmatory factor analysis was used. The maximum likelihood method was implemented with Mplus 8 software (Muthén & Muthén, Los Angeles, CA, USA), along with confirmatory factor analysis, structural equation modeling, and tests of mediation effects.

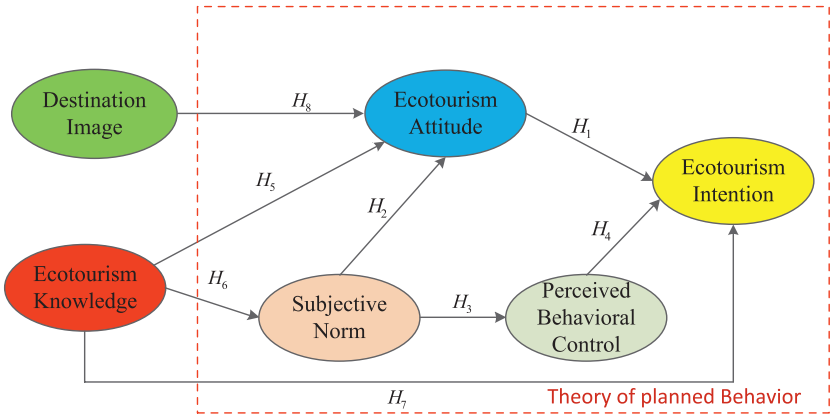

Fig.1. The conceptual model.

Table1. Demographic profiles.

Background	Categories	Frequency	Percent
Gender	Male	176	39.9
	Female	265	60.1
Age	17-28	380	86.2
	29-50	61	13.8
Education	Master	47	10.7
	Bachelor	338	76.6
	Senior high school	56	12.7
Income (RMB)	≤2000	341	77.3
	2001-6000	100	22.7

Measurement Model

In accordance with the criteria of Hair et al. (1998), factors with loading values <0.6 were removed from the model. The goodness of fit test for the overall model was significant (χ^2 = 271.229 [126 degrees of freedom {df}, p<0.001; χ^2/df = 2.153; comparative fit index [CFI] = 0.967; Tucker-Lewis index [TLI] = 0.959; root mean square error of approximation [RMSEA] = 0.051) (Table 2). The values for all of these indicators met the thresholds of Hair et al. (1998).

All items significantly loaded on their respective factors with values ranging from 0.615 to 0.966. The composite reliability of the latent variables ranged from 0.836 to 0.963, thus exceeding the critical value of 0.7. The average variance extracted (AVE) for all latent variables was in the range of 0.634-0.897, thereby exceeding the threshold of 0.50 suggested by Hair et al. (1998). The Cronbach's alpha scores showed that all of the questionnaire dimensions were reliable, with values in the range of 0.803-0.963 (Table 3). In summary, the questionnaire had high convergent validity, discriminant validity, and component reliability [42].

Table 2. Model fit data.

INDEX	CRITIRIA	RESEARCH MODEL	DECISION
MLM χ^2	SMALLER IS BETTER	271.229	Accepted
DF	LARGER IS BETTER	126	Accepted
χ^2/df	1<χ^2/df<3	2.153	Accepted
CFI	>0.9	0.967	Accepted
TLI	>0.9	0.959	Accepted
RMSEA	<0.08	0.051	Accepted
SRMR	<0.08	0.050	Accepted

As shown in Table 4, the questionnaire items had composite reliability values >0.7 and convergence validity values >0.5. In accordance with Fornell and Larcker (1981), the value on the diagonal denotes the root value of AVE, and the value in the lower triangle denotes the Pearson correlation [43]. The square root value was greater than other related correlations, indicating good discriminant validity of our questionnaire.

Structural Model

To test the 10 hypotheses, structural equation modeling was used. Table 5 shows the standardized parameter estimates and path significance data, and the variance explained (R^2), for the structural equation model (Figure 2). For the extended TPB model, the fitting results were as follows: χ^2/df = 2.4, p<0.001; CFI = 0.958; TLI = 0.951; RMSEA = 0.056; and SRMR = 0.065. The R^2 for ecotourism intention was 0.602. All of the fit indices met the thresholds for a good fit. R^2 is used to measure the associations between independent and dependent variables. In this study, the R^2 was largest for ecotourism attitude (Table 5).

Ecotourism attitude had a significant positive impact on ecotourism intention (standardized path coefficient = 0.318). If a person believes that ecotourism is beneficial to their health and environment, their willingness to engage in ecotourism is high. Therefore, H1 was supported. Subjective norms had a positive impact on ecotourism attitude and PBC (standardized path coefficients = 0.312 and 0.799, respectively). Subjective norms can directly affect attitude toward ecotourism, and a person's attitude toward a specific behavior performed by someone they consider important can affect their general attitude toward that behavior. Subjective norms, as a form of social pressure, also exert a degree of practical control over behavior, including ecotourism behavior in the present context. Therefore, H2 and H3 were supported. The influence of PBC on ecotourism intention was significant in this study (path coefficient = 0.252); If a person has a strong internal drive to protect the environment, they will be more willing to engage in ecological travel. Therefore, H4 was also supported. A person's interest in ecotourism is determined by their attitude, self-control, and subjective norms, and the significant impact of these variables observed herein indicates that TPB is a useful concept to help explain ecotourism behavior.

In the basic TPB model, ecotourism knowledge had a significant positive impact on ecotourism attitude, subjective norms, and ecotourism intention (standardized path coefficients = 0.297, 0.754 and 0.320, respectively). These results indicate that the greater a person's understanding of ecotourism, the more important they perceive it to be. Therefore, H5–H7 were supported. Attitude can be affected by many factors and is therefore a relatively complex phenomenon. Destination image also affected ecotourism attitude (path coefficient = 0.334). Therefore, H8 was supported. If an ecotourism

Table 3. Results of the confirmatory factor analysis.

Constructs and Items		Factor loading	SMC	CR	AVE	Cronbach's á
Ecotourism knowledge	EK					
Ecotourism is an environmentally responsible form of tourism.	EK1	0.790	0.624	0.915	0.782	0.908
Ecotourism involves traveling, visiting natural areas and encourages active involvement, and brings socioeconomic benefits to the local population	EK2	0.911	0.830			
Ecotourism is a form of sustainable tourism, which in turn is inserted into the overall framework of sustainable development	EK3	0.945	0.893			
Ecotourism Attitude	EATT					
I feel comfortable travelling ecotourism sites	EATT1	0.940	0.884	0.963	0.897	0.963
I feel happy when travelling ecotourism sites	EATT2	0.966	0.933			
I find it interesting to travel ecotourism sites	EATT3	0.935	0.874			
Subjective norms	SUN					
Most people who are important to me understand that I visit Scenic spots of Ecotourism.	SUN1	0.745	0.555	0.908	0.768	0.892
Most people who are important to me support that I visit Scenic spots of Ecotourism.	SUN2	0.962	0.925			
Most people who are important to me agree that I visit Scenic spots of Ecotourism.	SUN3	0.908	0.824			
Perceived behavior control	PBC					
I have enough resources (money) and time to travel to ecotourism attractions.	PBC1	0.867	0.752	0.901	0.752	0.900
I have the ability to visit ecotourism attractions.	PBC2	0.900	0.810			
I have enough opportunities to visit ecotourism spots.	PBC4	0.833	0.694			
Destination image	DI					
Ecotourism spots have beautiful scenery.	DI1	0.615	0.378	0.836	0.634	0.803
Ecotourism is safe, and the environment of ecotourism scenic spots has not been polluted or damaged	DI2	0.887	0.787			
The environment of eco-tourism attractions is relaxing	DI3	0.859	0.738			
Ecotourism intention	ECI					
After the epidemic, I plan to go to ecotourism scenic spots in the near future.	ECI1	0.847	0.717	0.903	0.757	0.903
I will make efforts to travel to ecotourism scenic spots in the future.	ECI2	0.898	0.806			
In the near future, I am willing to spend time and money on Eco-tourism attractions.	ECI3	0.865	0.748			

destination has significant appeal to tourists in terms of image, it will attract more ecotourists.

Mediation Analysis

Bootstrapping (1,000 bootstrapped samples) was used to test for mediating effects in the relationships between variables [44]. Table 6 shows the direct and indirect effects in our model. Ecotourism attitude mediated the relationship between ecotourism knowledge and ecotourism intention (point estimate = 0.157); the 95% confidence intervals (CIs; percentile- and bias-corrected) were 0.078-0.270 and 0.080-0.280, respectively, and thus did not contain zero. Subjective norms and ecotourism attitude mediated the relationship between ecotourism knowledge and ecotourism intention (point estimate = 0.094; 95% CIs [percentile- and bias-corrected]: 0.044-0.156 and 0.041-0.154, respectively). As the 95% CIs did not include zero, these mediating effects were also significant. Subjective norms and PBC mediated the relationship between ecotourism knowledge and ecotourism intention (point estimate = 0.149; 95% CIs [percentile- and bias-corrected]: 0.086-0.225 and 0.089-0.230, respectively). Therefore, H9 and 10 were supported. These findings indicate that ecotourism attitude is an important mediating variable

Table 4. Correlations and discriminant validity.

DIM	COMPOSITE RELIABILITY	CONVERGENCE VALIDITY	DISCRIMINANT VALIDITY					
	CR	AVE	PBC	EK	DI	EATT	ECI	SUN
PBC	0.901	0.752	**0.867**					
EK	0.915	0.782	0.379	**0.884**				
DI	0.836	0.634	0.495	0.826	**0.796**			
EATT	0.963	0.897	0.400	0.778	0.807	**0.947**		
ECI	0.903	0.757	0.579	0.664	0.630	0.676	**0.870**	
SUN	0.908	0.768	0.621	0.674	0.755	0.766	0.633	**0.876**

Note: The bold characters on the diagonal are the AVE root value, and the lower triangle is the Pearson correlation.

Table 5. The hypothesized path coefficients.

Dependent variable	Independent variable	Standardized coefficient	S.E.	Est./S.E.	P-Value	R^2	Result
EATT	EK	0.297	0.143	2.075	0.038	0.729	Supported
	SUN	0.312	0.057	5.495	***		Supported
	DI	0.334	0.132	2.527	0.012		Supported
ECI	EATT	0.318	0.090	3.530	***	0.602	Supported
	EK	0.320	0.099	3.214	0.001		Supported
	PBC	0.252	0.042	6.052	***		Supported
PBC	SUN	0.799	0.056	14.222	***	0.374	Supported
SUN	EK	0.754	0.053	14.175	***	0.489	Supported

***p<0.001

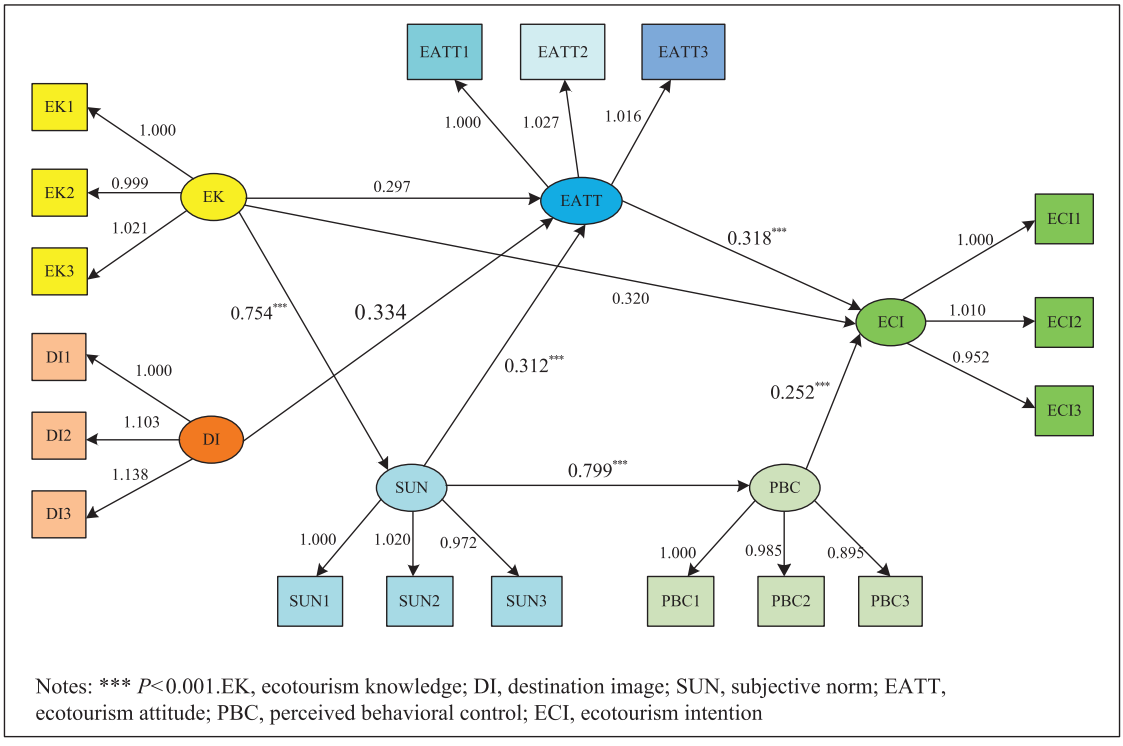

Fig. 2. Structural equation model.

Table 6. Result of mediation effect.

Path		Point Estimate	Product of coefficient			Bootstrap 1000TIMES			
						Bias corrected 95%CI		Percentile 95%CI	
			S.E.	z	P-Value	Lower	Upper	Lower	Upper
EK→EAT→ECI	Indirect Effect	0.157	0.049	3.199	0.001	0.080	0.280	0.078	0.270
EK→SUN→EATT→ECI	Indirect Effect	0.094	0.029	3.291	0.001	0.041	0.154	0.044	0.156
EK→SUN→PBC→ECI	Indirect Effect	0.149	0.036	4.176	0.000	0.089	0.230	0.086	0.225
	Total Indirect	0.401	0.072	5.553	0.000	0.272	0.560	0.269	0.555
EK→ ECI	Direct Effect	0.314	0.088	3.560	0.000	0.132	0.478	0.130	0.476
	Total	0.715	0.051	13.908	0.000	0.616	0.816	0.612	0.811

in the relationship between ecological knowledge and ecotourism willingness, as it can increase the overall effect. Finally, ecotourism knowledge had a direct effect on ecotourism intention (point estimate = 0.314). This result indicates that the greater the mastery of ecological knowledge, the stronger the impact on attitudes and subjective norms towards ecotourism, in turn resulting in a greater willingness to engage in ecotourism. Overall, the results indicated that ecotourism knowledge and ecotourism attitude had the greatest influence on ecotourism intention.

Conclusion and Discussion

Conclusion

This study established an extended TPB model to explore the ecotourism intentions of a Chinese population. The goal was to assess the willingness of individuals and families to engage in ecotourism by incorporating ecological knowledge and destination terrain images into the original TPB. Compared with the original TPB, our extended TPB was superior in terms of explaining the development of ecotourism intention. With regard to the hypothesis testing, the results indicated that all of the proposed predictors were determinants of ecotourism intention, thereby supporting H1–H10.

Attitudes toward ecotourism and PBC had a significant impact on ecotourism intention. Our research also confirmed that subjective norms have an indirect impact on behavior intention through attitude and perceived behavior control [45-46]. Subjective norms and PBC played a distal mediation role in the relationship between ecological knowledge and travel intention. This showed that the expectations of others and their ecotourism behavior will affect a person's attitude towards this behavior. Ecotourism attitude also played an intermediary role in the relationship between ecological knowledge and ecotourism intention; this represents a novel finding. Ecological knowledge directly and indirectly impacted ecotourism intention in this study, consistent with previous literature [30-31]. This study demonstrated causal links between ecological knowledge and ecotourism attitude and intention; enhancing understanding of regional ecological resources could increase the likelihood of engagement in ecotourism. Our results showed that destination image and ecotourism knowledge had a direct impact on tourists' attitudes, consistent with previous studies [2,14,34]. These studies also demonstrated that attitude plays a crucial role in tourism decision-making, i.e., the likelihood of tourists choosing to participate in ecotourism, while our results revealed the important role of ecological knowledge in tourists' attitudes and ecotourism intention. The ecological tourists in this study were mainly attracted by the natural environment experienced during ecotourism and exhibited environmental awareness [47]. The results could inform the management of ecotourism attractions in other developing countries. We also found that attitude towards ecotourism is an important mediator of the relationship between ecological knowledge and ecotourism willingness, and subjective norms and PBC also play a mediating role. Overall, our study has successfully expanded the TPB and enhances our understanding of the behavior of ecotourists.

Theoretical Contributions

In the TPB, attitude has the greatest influence on intention and is the key determinant of behavior [16]. Tourists' attitudes play an important role in decision-making as it pertains to all aspects of travel [13, 18, 19]. Subjective norms, as a component of the TPB, can directly affect travel attitudes and behaviors [22]. PBC encompasses self-efficacy (the perceived difficulty of implementing a behavior) and controllability (implementation according to one's own ideals) is TPB's components that affect a person's intention. The intention to engage in ecological travel arises from a strong internal drive. People who pay attention to the issue of environmental protection are more likely to participate in ecological travel [15]. Travelers' attitudes

toward ecotourism, as well as their behaviors, may be affected by environmental knowledge. Individuals who have received higher education may be more likely to engage in environmentally friendly behaviors [3, 28, 29]. Ecotourism knowledge reflects not only tourists' awareness of the ecological environment and environmental protection issues, but also their level of concern about changes in the environment and the impact of their behaviors thereon. The destination image plays an important role in ecotourism as well as in tourist destination selection, and influences different aspects of the tourist decision-making process including searching for information on destination attractions. Therefore, this study extended the theory of planned behavior to analyze ecotourism intention according to ecotourism knowledge and destination image. The findings of this study enrich the literature on tourism and consumer behavior.

Practical Contributions

A large amount of ecotourism knowledge will help tourists positively identify with the value of ecotourism attractions, and to a large extent help people to have a positive attitude towards ecotourism.

Tourists are important stakeholders in ecotourism and have made significant contributions to the development of local ecotourism industries. Ecological education could improve environmental knowledge and attitudes toward ecotourism. However, the ecological education plan is a major function of ecotourism, which runs through the whole process of ecotourism and is fed back gradually at each stage to achieve a sustainable cycle. The study found that subjective norms have an impact on attitudes and TPB, indicating that government management plays an important role in promoting ecotourism. Destination image mainly depends on tourists' actual experience of tourist destinations, and is the product of a dynamic process [54]. Destination image can change over time. Marketing should be consistent with the destination image to enhance the emotional connection between tourists and a given destination. Tourists' feelings about a destination arise from their experiences during a trip; enhancing tourists' environmental knowledge and establishing a good image of destinations can promote positive attitudes toward ecotourism and encourage residents to participate in tourism management, thereby laying a solid foundation for successful ecotourism [31]. The results also provide a reference for the government and ecotourism planners. It is crucial for destination marketing agencies to master the relationship between ecological knowledge, destination image and attitude and ecological travel behavior. Due to the serious destruction of the ecological environment, if it continues, it will have a serious impact on the tourism industry. A full understanding of tourists' ecological travel behavior is helpful to the formulation of tourist attraction policies.

Limitations

This study had some limitations. First, other factors that affect ecotourism intentions and attitudes could have been incorporated into our TPB model, such as perceived risk. Second, this study only included Chinese tourists. Future research could aim to identify factors influencing the intention to engage in ecotourism among people in other countries. Finally, this study used convenience sampling; future studies could use more representative sampling methods.

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Conflict of Interest

The authors declare no conflicts of interest.

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