



Article

# Why Return? Birdwatching Tourists' Revisit Intentions Based on Structural Equation Modelling

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Abstract: Birdwatching tourism is a model of ecotourism that is beneficial to the sustainable development of developing regions and is growing rapidly in China. In order to explore the development path of birdwatching tourism, this study constructs and tests a model of revisit intention from the birdwatching tourists' perspective and aims to understand the factors influencing tourists' revisit intention for birdwatching destinations. The researchers collected 328 valid questionnaires from birdwatching tourists in Mingxi County, Fujian Province, China, and used structural equation modelling to validate the relationships among the study constructs. Cognitive image had the largest influence on revisit intent (0.219), followed by tourist satisfaction (0.172), and perceived image (0.155). Tourist motivation indirectly affects revisit intention through the full mediating effect of the cognitive image. This study provides some insights and references for policymakers and tourism project managers to design or adjust the construction plan of birdwatching-tourism sites.

**Keywords:** birdwatching tourism; revisit intention; cognitive image; perceived image; tourism motivation; structural equation modelling



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# 1. Introduction

Ecotourism is a sustainable development approach since it supports economic development while promoting sustainable management and conservation of nature reserves and natural tourist attractions [1–3]. Birdwatching-related ecotourism is becoming one of the fastest growing activities worldwide, mainly in developing countries. According to Sekercioglu, birdwatching tourism is "the observation, appreciation and documentation of the characteristics and behaviour of wild birds in their activity and habitat, without interfering with their normal life" [4]. It can be conducted without requiring specialized equipment or a high degree of physical ability, which is in line with the growing public interest in environmentalism, ecotourism, nature tourism, low-impact recreation, and resource management. Birdwatching tourism combines the integrated development of bird conservation, tourism management, and sociology, and is a feasible way to resolve the conflict between ecological conservation and socio-economic development [5–7].

The increasing number of birdwatchers with increased income and mobility has had a considerable impact on tourism in some destinations. Birdwatching tourism has become an ecologically sound and sustainable wildlife-tourism category and contributes to economic development and environmental stewardship in rural areas. Birdwatching tourists habitually visit the same birdwatching tourism destination multiple times [8,9], which differs from conventional tourism. The higher revisiting frequency shows the potential for the further development of this form of tourism whilst raising public concern about the pressure that tourists place on the ecological environment. An exploration of the formation mechanism behind the willingness of birdwatching tourists to revisit will assist in improving the management of the ecological environment and make birdwatching tourism orderly.

The study of revisit intention began in 1989 when Gyte studied the destination repeat business patterns of British tourists in Mallorca, Spain. Since then, revisit intention has

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been considered as one of the main factors in measuring tourist loyalty [10]. Satisfaction, destination image, and memorable travel experiences are common influencing factors on tourists' revisit intention [11]. Despite its popularity, birdwatching as a form of tourism is less studied in the literature [12] and few studies have explored the mechanisms of this influence [13]. Therefore, this paper raises the following questions: 1. Why do people repeatedly recommend the same birding destination to their friends during and after birding trips, or visit the same birding destination multiple times? 2. What influences birdwatchers in developing such behaviours and intentions? Answers to these questions are studied by determining the underlying process linking tourist motivation, destination image, and satisfaction with their revisit intention in birdwatching tourism.

Mingxi County, located in Fujian Province in south-eastern China, was selected as the study area using a scenario-based questionnaire to conduct an investigation based on revisit and recommendation intentions as sources of tourists' revisit intention. This raises tourists' awareness of bird conservation, promotes tourists' conservation tour behaviour, enhances the professionalism of birdwatching tourism, and results in substantial bird conservation, which improves biodiversity conservation. In addition, tourists' revisit rate is an important indicator of tourist loyalty, and the revisit rate of tourist destinations may be improved by increasing tourists' revisit intention. A high revisit intention rate helps maintain a high number of visitors for tourist destinations and achieves stable economic benefits.

## 2. Theoretical Background and Research Hypotheses

#### 2.1. Tourist Motivation

Motivation is considered the psychological needs and desires of individuals that guide, motivate, and combine the behavioural activities of individuals. Motivation is an important internal driving factor in tourism and the psychological state of individual tourists influences the generation and development of tourism behaviour [14]. Tourism motivation is formed when tourists' tourism needs are stimulated, which drives tourists to take action to satisfy demand [15]. An individual's desire to travel may be due to one or more factors, such as the need to escape from reality, relaxation, challenge, adventure, experiencing activities, cultural practice perception, nostalgia, novelty, education, emotional connection, or attraction to the destination based on their expectations of some qualitative features, including observing the beautiful flora and fauna in the natural environment [16,17].

Many empirical studies support the idea that tourism motivation is an important determinant of tourists' destination image, satisfaction, and future tourism behaviour. Tourism motivation is the beginning of tourism activity and influences one's cognition, perception, and attitudes toward the destination [18-22]. The tourist motivation of tourists in rural tourism destinations is an important factor affecting tourists' revisit intentions [23]. Travel and tourism motivation has a direct impact on perceived image by constructing a destination-image-formation model [24,25]. The association between tourist motivation, destination image, satisfaction, and recommendation intention showed that motivation significantly increases overall satisfaction with the destination experience and enhances tourists' intention to recommend the destination, resulting in a positive reputation for the location [26]. Analysis of the influence of tourists' motivations and expectations and behavioural intention formation suggests that tourist motivation significantly impacts revisit intention and recommendation intention [27]. In birdwatching tourism, birdwatching tourists, such as tourists enjoying other nature activities, are very concerned about biodiversity and habitat quality. Similar to previous studies, we found that professional birdwatchers have a clear preference for natural areas that provide appropriate birdwatching opportunities, particularly with respect to observing rare and unusual bird species [28,29]. The probability of observing a rare or new bird species, as well as the number of species, significantly influenced the choice of birdwatching-tourism destination [30].

Based on the above studies, the following hypotheses were formulated:

**H1a:** Tourist motivation has a significant positive effect on cognitive image.

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**H1b:** *Tourist motivation has a significant positive effect on perceived image.* 

**H1c:** *Tourist motivation has a significant positive effect on tourist satisfaction.* 

**H1d:** Tourist motivation has a significant positive effect on revisit intention.

## 2.2. Tourism Destination Image

Destination image is an important factor affecting tourists' experiences. The concept of tourism destination image was first proposed in the 1970s and has received wide attention from domestic and foreign scholars [31]. The image of a tourist destination is generally defined as a comprehensive consideration of individual tourists' impressions, ideas, and beliefs [32], or their knowledge, understanding, and psychological perception [33,34]. Many scholars believe that the destination image is the result of rational and perceptual interpretations of tourists, and is a multidimensional structure formed by cognitive and perceived images [35–37]. Cognitive images represent individuals' perceptions, opinions, and knowledge of a tourism destination, which relies on objective attributes of the destination within the tourist's knowledge [38], including natural and historical background, rich heritage, lodging facility, and the climate [39]. That is, the more a tourist knows about the characteristics of the location, the more reliable his/her cognitive assessment will be [40]. In contrast, perceived images reflect individuals' attitudes, feelings, and mental impressions [41,42], and rely on a tourist's feelings or emotions and the value that individuals place on destinations based on their subjective motivations [43,44]. The cognitive image is one of the important influencing factors of perceived image [45-47]. There is a positive relationship between perceived image, cognitive image, and visitor satisfaction [48,49] with satisfaction influenced by consumers' cognitive judgments and emotional responses to the experience [50,51]. It is argued that the image of tourist destinations directly affects satisfaction [52], with cognitive and perceived images of tourist destinations playing a significantly positive role in tourist satisfaction [53]. The image of the destination plays an important role in the destination-selection stage [54] and influences tourist evaluation behaviour during the trip and future behavioural intentions [55]. Cognitive and perceived images have a significant effect on tourists' revisit intentions [36]. Cognitive, perceived, and overall destination images are all predictors of tourists' intention to recommend the destination [56].

This paper constructs a "cognitive-perceived" model to describe the image of tourist destinations. The following hypotheses were formulated:

**H2a:** Cognitive image has a significant positive effect on perceived image.

**H2b:** *Cognitive image has a significant positive effect on tourist satisfaction.* 

H2c: Cognitive image has a significant positive effect on revisit intention.

H3a: Perceived image has a significant positive effect on tourist satisfaction.

**H3b:** *Perceived image has a significant positive effect on revisit intention.* 

# 2.3. Satisfaction

Satisfaction is a combination of cognitive judgment and emotional state [11,57]. Unlike tourism motivation, satisfaction measures the thinking state and thoughts of tourists after their tourism experience, and is defined as the consumer evaluation after using a product or service [51,58], or the overall level of pleasure felt as a result of being able to meet tourists' expectations and needs [48]. In recent years, studies of tourism destination image and satisfaction suggest that satisfaction is influenced by visitors' cognitive judgments and their affective responses to the experience [59,60]. The mental process of assessing the experience is performed by the cognitive system while emotions are related to how tourists feel about the service [61].

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Tourist satisfaction is positively correlated with tourist behaviour choices and future tourist behaviour including the willingness of tourists to recommend and improve their intention to return to local tourism [62,63]. The quality of the destination's infrastructure, accessibility, beautiful scenery, weather conditions or climate, and a strong cultural heritage are considered the most important attributes for overall tourist satisfaction [64,65]. Therefore, the following hypothesis is proposed:

**H4:** Tourist satisfaction has a significant positive effect on revisit intention.

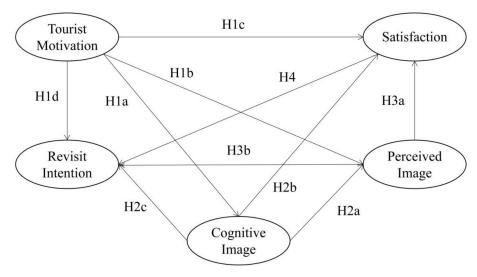
#### 2.4. Tourists' Revisit Intention

According to the theory of planned behaviour, behavioural intention refers to an individual's subjective judgment on the probability of starting a certain behaviour, which reflects the individual's willingness or willingness to devote effort to a certain behaviour [66]. The role of behavioural intentions in the occurrence of behaviour is primarily predictive, and if behavioural intentions are appropriately measured, the results of the study are close to most actual behaviour [67]. The intention to revisit a destination is one of the most important expressions of loyalty for tourists and may trigger actual revisit behaviour.

Tourist revisit intention is defined as the likelihood that a tourist would like to revisit a destination or engage in an activity again [11,68], or a tourist's willingness to recommend the destination to others [69]. Encouraging tourists to revisit is considered an effective way to ensure the sustainable development of the destination. Most scholars in the tourism field agree that behavioural intentions can be used to predict actual behaviour. Therefore, tourism researchers often use behavioural intention as an important indicator to explore tourists' choice of destinations or activities through combined specific behavioural contexts with multidimensional concepts to measure behavioural intention [47,70] including revisit intention and recommendation intention [71]. The willingness to revisit may be divided into resistance to change, positive word of mouth, repeated purchase intention, and willingness to recommend to others [72,73]. Tourists' future behaviour or post-visit behaviour is reflected in the form of revisits, recommendations, and positive word-of-mouth [74].

Tourist motivation is a key factor influencing tourists' revisit intention and is a driving force for tourist revisit behaviour [75,76]. Both cognitive and perceived images are antecedent variables for the generation of tourists' revisit intention and a good destination image drives the intention to recommend and revisit [77–80]. Tourists with higher satisfaction levels are more likely to bring good word-of-mouth to the destination, and satisfaction is an important predictor of revisits and recommendations by tourists [81–83].

Based on the existing literature discussed, the key themes, hypotheses, and their linkages are represented schematically in Figure 1.



**Figure 1.** Hypothesized relationships among the constructs.

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#### 3. Materials and Methods

## 3.1. Study Area

Mingxi County is in north-western Fujian Province, at 26°08′–26°39′ N latitude and 116°47′–117°35′ E longitude (Figure 2); the total area is 1708.6 km<sup>2</sup>. Mingxi has a subtropical maritime monsoon climate with an average annual temperature of 18 °C, an average annual rainfall of 1800 mm, an average annual frost-free period of 261 days, a mild climate, abundant rainfall, less severe cold in winter and no extreme heat in summer. Data Source: official website of Mingxi County People's Government (http://www.fjmx.gov.cn/zjmx/ zrdl/, accessed on 8 October 2022). It is a critical area for the international migratory route from East Asia to Australia, and an essential passage for migratory birds across Fujian and Jiangxi provinces in China. It is also an important stopover for migratory birds and breeding ground for summer migratory birds in eastern China [84]. There are 316 confirmed wild bird species in Mingxi County. Of these, in the International Union for Conservation of Nature (IUCN)'s Red List of Threatened Species, the yellowbellied tragopan (Tragopan caboti) is "vulnerable" (VU-rated); Elliot's pheasant (Syrmaticus ellioti) is "near threatened" (NT-rated); the Chinese merganser (Mergus squamatus) and oriental white stork (Ciconia boyciana Swinhoe) are both "endangered" (EN-rated); the silver pheasant (Lophura nycthemera), mandarin duck (Aix galericulata), crested goshawk (Accipiter trivirgatus), black-crested baza (Aviceda leuphotes) and pied falconet (Microhierax melanoleucos) are also included in the IUCN Red List of Threatened Species. Both yellowbellied tragopan (Tragopan caboti) and Elliot's pheasant (Syrmaticus ellioti) are included in the CITES appendices and are also endemic to China. Continuous progress in ecological protection has attracted a variety of migratory birds to Mingxi County and has drawn a constant influx of bird lovers.

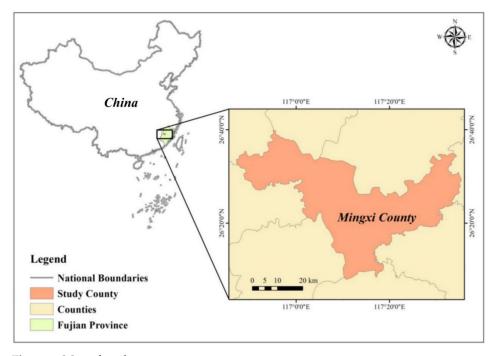


Figure 2. Map of study area.

# 3.2. Questionnaire Composition and Data Collection

The questionnaire consists of two parts: the first part is the demographic and other basic information of the respondents, including gender, age, education level, employment, and personal monthly income. The second part is the respondents' tourist motivation, cognitive image, perceived image, satisfaction, and revisit intention test scale; the latent variables were measured using several observed variables with minor modifications according to the study context and the actual situation of the study area (Table 1). To measure

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tourist motivation, three observation variables were selected based on prior theoretical studies [85,86] and previous results [87,88]. These scales are suitable for the Chinese context and have more reliable measurement effects. The design of the cognitive image measurement items was carried out in conjunction with the unique natural and cultural landscape of Mingxi County, with three observation items selected based on previous research by other scholars [89,90]. The perceived image of tourist sites was assessed using four items ('Pleasant', 'Exciting', Relaxing', and 'Arousing') [35] while drawing on Russel and Prutt's model of affective evaluation, which includes four emotions: relaxed, distressed, excited, and hazy [91,92]. It is theoretically sufficient to use only two basic emotions as item scales for affective assessment [93]. This paper has designed three measures, taking into account the actual situation of birdwatching-tourism destinations: "mind-blowing," "unforgettable," and "enjoyable". The revisit intention includes three observed variables: birdwatching tourists' revisit intention, recommendation intention, and visit priority [58,94]. To ensure the scientific validity and applicability of the test scale, four experts and ten doctoral students in related research fields were invited to discuss each measurement variable several times, and some wording was adjusted in time to make it easy for respondents to read and understand. The second part of the test scales was measured using a five-point Likert scale (1, 2, 3, 4, and 5) ranging from "strongly disagree" to "strongly agree" since the 7-point Likert scale may cause ambiguity for the respondents [95]. The final formal questionnaire consisted of five latent variables and 15 observed variables (Table 1).

Table 1. Measurement items of latent variables.

Latent variables	Items	Observed variables
	TM1	Wildlife viewing, especially rare birds
Tourist Motivation	TM2	Traditional culture and folklore perception
	TM3	Accompanying friends and relatives, enhancing relationships
	SA1	Satisfaction with infrastructure
Satisfaction	SA2	Satisfaction with natural habitat
	SA3	Satisfaction with cultural environment
	CI1	A wide variety of bird species and excellent weather conditions
Cognitive Image	CI2	Rich biodiversity
	CI3	Complete road signs and warning signs
	PI1	The birdwatching tour was a great experience for me
Perceived Image	PI2	The birdwatching tour was unforgettable
· ·	PI3	The birdwatching tour was enjoyable
	RI1	I desire to revisit this destination
Revisit Intention	RI2	I will say positive things about this destination to others
	RI3	I will prefer to visit the local area under the same conditions

Survey data were collected in March and April 2021, which is an important time for local migratory birds to stop and breed and the peak season for birdwatching tourism. The research team conducted a preliminary survey in October 2020 prior to formal research. The areas and routes for data collection were determined through communication with local ecological conservation authorities and tourism authorities, and a pilot survey of the initial questionnaire was conducted in the study area to ensure that the survey questionnaire was understood by the participants. Before starting the questionnaire, we screened the respondents by first asking the participants about the purpose of their trip to ensure that the participants were all birdwatching tourists; secondly, the participants were asked about the departure place and length of stay of this trip to ensure that the participating birdwatching tourists were not local residents; and finally, the survey objectives and questions were explained to the participants to minimize any possible misunderstandings when administering the questionnaire. The participants received a thank-you gift souvenir after completing the survey. Preliminary findings showed that more than 95% of birdwatching

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tourists completed the entire content with the help of surveyors. The research team adjusted and optimised the survey program based on the survey results and officially launched the main survey in 2021. The survey questionnaire distribution area was concentrated in the core scenic spots of birdwatching tourism in Mingxi County and questionnaires were distributed by random interception. The data-collection team consisted of 10 graduate social science students from Beijing Forestry University with extensive experience in tourism surveys. All of the 350 distributed questionnaires were returned with 328 returning valid responses (94% effectiveness).

Descriptive statistical analysis of the valid questionnaires revealed the general composition of the respondents (Table 2): male tourists predominated (62.8%) with tourists mostly aged between 30 to 39 years old (27.13%) and 40 to 49 years old (28.66%). The education level of most respondents was undergraduate (39.63%) with most engaged in science, education, culture, and health (23.17%), while some were civil servants and soldiers (19.82%), and most visitors earned 2001–4000 yuan per month (37.20%).

**Table 2.** Demographic characteristics of the tourist sample (n = 328).

Respondent Characteristics	Variable	Frequency	Percentage (%)
<i>C</i> 1	Male	206	62.80
Gender	Female	122	37.20
	Under 20	9	2.74
	20–29	53	16.16
Λαο	30–39	89	27.13
Age	40–49	94	28.66
	50–59	71	21.65
	60 and above	206 62 122 37 9 2. 53 16 89 27 94 28 71 21 12 3. s 4 1. 39 11 44 13 90 27 130 39 e 21 6. y 45 13 ye, 76 23 y 65 19 34 10 13 3. 5 1. 13 3. 5 1. 13 3. 41 12 122 37	3.66
	Primary education or less	4	1.22
	Junior middle school	39	11.89
E1 (* 1 1	Senior high school	44	13.41
Education level	Junior college	90	27.44
	Bachelor's degree	130	39.63
	Master's degree or above	's degree or above 21 ure, forestry, animal	6.40
	Agriculture, forestry, animal husbandry, and fishery;	21	6.40
	Industry, manufacturing, construction	56	17.07
	Business, service industry	45	13.72
Work industry	Science, education, culture, and health	Male 206 Female 122 Under 20 9 20–29 53 30–39 89 40–49 94 50–59 71 and above 12 education or less 4 middle school 39 or high school 44 hior college 90 elor's degree 130 degree or above 21 re, forestry, animal dry, and fishery; r, manufacturing, nstruction service industry 45 ducation, culture, and health rants and military 65 al professions 34 Student 13 hemployed 5 Other 13 uan and below 41 L–4000 yuan 14–828 USD) L–6000 yuan 14–828 USD) L–6000 yuan 14–828 USD) L–6000 yuan 18	23.17
Ag I B Work industry Sc	Civil servants and military	65	19.82
	Liberal professions	34	10.37
	Student	13	3.96
	Unemployed	5	1.52
	Other	13	3.96
	2000 yuan and below (276 USD and below)	41	12.50
D 1 41	2001–4000 yuan (276.14–552 USD)	122	37.20
Personal monthly income	4001–6000 yuan (552.14–828 USD)	90	27.44
	6001–8000 yuan (828.14–1104 USD)	38	11.59

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Table 2. Cont.

Respondent Characteristics	Variable	Frequency	Percentage (%)
	8001–10,000 yuan (1104.14–1380 USD)	12	3.66
	10,001–15,000 yuan (1380.14–2070 USD)	14	4.27
	15,000–20,000 yuan (2070.14–2760 USD)	5	1.52
	Above 20,000 yuan (Above 2760 USD)	6	1.83

#### 4. Results

#### 4.1. Model Fit Tests

The study involves several latent variables and tests of hypothesised relationships. Both the independent and dependent variables are latent variables that may be subject to measurement errors. Therefore, traditional statistical analysis methods such as regression analysis cannot be used, since they do not allow measurement errors in independent variables. Instead, structural equation modelling was selected using SPSS (Statistical Product Service Solutions) 22.0 and AMOS (Analysis of Moment Structure) 24.0 since it is suitable for analysing hypothesised relationships involving latent variables.

A two-stage strategy proposed by Anderson and Gerbing was used in this study to validate the hypothesised model [96]. In the first stage, the measurement model was validated by confirmatory factor analysis (CFA), which mainly examined the goodness of fit, the convergent and discriminant validity of each latent variable, and determined the relationship between each observed and latent variable. In the second stage, the fit and path coefficients of the model hypothesis were measured by constructing a structural equation model with five latent variables: tourist motivation, cognitive image, perceived image, satisfaction, and intention to revisit.

## 4.2. Reliability Test and Convergent Validity

Cronbach's  $\alpha$  (alpha) and the composite reliability (CR) of each latent variable widely used in related studies were used to judge the criteria for test reliability (Table 3). Cronbach's  $\alpha$  values ranged from 0.741 to 0.917 and the CR of each latent variable was between 0.747 to 0.920. Therefore, the research questionnaire met reliability requirements since the values exceed 0.7 [97].

Table 3. Internal and convergent reliability.

		UNSTD	S.E.	t-Value	р	STD.	SMC	CR	AVE	Cronbach's α
T	TM1	1.000				0.783	0.613			
Tourist	TM2	0.789	0.093	8.477	***	0.612	0.375	0.747	0.498	0.741
Motivation TM3	1.036	0.119	8.727	***	0.712	0.507				
Cognitive	CI1	1.000				0.790	0.624			
U	CI2	1.200	0.065	18.401	***	0.936	0.876	0.903	0.757	0.901
image	image CI3	1.110	0.062	17.847	***	0.878	0.771			
Perceived	PI1	1.000				0.711	0.204			
	PI2	1.196	0.113	10.579	***	0.779	0.563	0.789	0.556	0.789
image	PI3	1.069	0.101	10.572	***	0.745	0.468			
	SA1	1.000				0.866	0.750			
Satisfaction	SA2	0.775	0.088	8.846	***	0.647	0.419	0.766	0.527	0.757
	SA3	0.693	0.079	8.815	***	0.642	0.412			
D	RI1	1.000				0.871	0.759			
Revisit	RI2	0.974	0.044	22.138	***	0.908	0.824	0.920	0.793	0.917
Intention	RI3	1.122	0.052	21.684	***	0.892	0.796			

Note: \*\*\* p < 0.001.

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Convergent validity mainly examines the size of the contribution of each test statement, which is judged by the standardised factor loadings, T-values, and significance levels of each test indicator, and the average extracted variance of each latent variable. The standardised factor loadings of each measurement ranged from 0.612 to 0.936, the T-values were between 8.477 to 22.138, and the average extracted variance (AVE) ranged from 0.498 to 0.793, all of which were significant (p < 0.001) (Table 3). The AVE value exceeds the minimum required value of 0.50 [98] for all latent constructs except for tourist motivation, which has a CR of 0.747. Since AVE is a more conservative measure than CR, Fornell and Larcker argue that if a construct has an AVE value below 0.5, but it is a strongly reliable construct (CR value above 0.6), its convergent validity is still adequate [99]. Therefore, the low AVE of tourist motivation might be acceptable in this study because it does not produce major reliability and discriminant validity problems. Thus, the results of the data analysis indicate good convergent validity for each latent variable.

#### 4.3. Discriminant Validity

The discriminant validity measurement verifies whether there is a significant difference between two latent variables of different dimensions. It is generally accepted that the observed variables have better discriminant validity when the value of the square root of the average extracted variance of each latent variable is greater than the value of the correlation coefficient [100]. The correlation coefficients between each latent variable are smaller than the average extracted variance of each latent variable, indicating sufficient discriminant validity between the latent variables (Table 4).

	Tourist Motivation	Cognitive Image	Perceived Image	Satisfaction	Revisit Intention
Tourist Motivation	0.706				
Cognitive Image	0.280	0.870			
Perceived Image	0.291	0.708	0.764		
Satisfaction	0.281	0.677	0.645	0.726	
Revisit Intention	0.207	0.467	0.446	0.441	0.891

Note: Bold numbers are the square roots of AVEs.

# 4.4. Structural Modelling and Hypothesis Testing

The constructed structural equation model was fitted using the maximum likelihood method and the initial model was modified based on modification indices to confirm the reliability and validity of the scale and ensure theoretical feasibility. The final fitting results show standardised parameters of all path coefficients (Figure 2). Evaluation indexes of the model's goodness of fit showed a  $\chi^2/df$  value of 1.923, while root mean square error of approximation (RMSEA) was 0.053 (Table 5). The absolute fitness index, value-added fitness index, and simplified fitness index of the model all meet the evaluation criteria, indicating that the overall validity of the final model is good.

Seven hypotheses were supported while three did not pass the test (Table 6 and Figure 2). Tourist motivation had a positive and significant effect on cognitive image (standardised direct effect  $\beta$  = 0.28, p < 0.01), which supports hypothesis H1a. Cognitive image had a statistically significant positive effect on perceived image (H2a), satisfaction (H2b), and revisit intention (H2c). Perceived image had a positive effect on satisfaction and revisit intention (H3a and H3b). Satisfaction had a positive effect on revisit intention, with increased satisfaction correlating with the increased likelihood of tourists returning and recommending the destination (H4). Hypotheses H1b, H1c, and H1d were rejected

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since there is no significant relationship between tourist motivation and perceived image, satisfaction, and revisit intention.

Table 5.	Model	fitness	test	(N =	328)	١.
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T'. I I	Absolute Fitness Index			Value-A	Value-Added Fitness Index			Simplified Fitness Index			
Fitness Index	RMSEA	SRMR	GFI	AGFI	NFI	CFI	IFI	PGFI	PNFI	PCFI	
Evaluation standard	<0.07	<0.05	>0.9	>0.9	>0.9	>0.9	>0.9	>0.5	>0.5	>0.5	
Fitting value Judgment	0.053 YES	0.044 YES	0.944 YES	0.916 YES	0.943 YES	0.971 YES	0.972 YES	0.629 YES	0.718 YES	0.740 YES	

Table 6. Hypotheses testing using the modified model.

Hypothesis	Path	Standardized Coefficient	t-Value	p	Standard Error	Result
H1a	TM→CI	0.28	3.845	***	0.071	Supported
H1b	$TM \rightarrow PI$	0.1	1.641	0.101	0.037	Unsupported
H1c	$TM \rightarrow SA$	0.067	1.103	0.270	0.04	Unsupported
H1d	$TM \rightarrow RI$	0.05	0.782	0.434	0.051	Unsupported
H2a	$CI \rightarrow PI$	0.68	9.517	***	0.044	Supported
H2b	$CI \rightarrow SA$	0.432	4.613	***	0.063	Supported
H2c	$CI \rightarrow RI$	0.219	2.292	**	0.079	Supported
H3a	$PI \rightarrow SA$	0.32	3.401	***	0.103	Supported
H3b	$PI \rightarrow RI$	0.166	1.651	*	0.136	Supported
H4	$SA{ ightarrow}RI$	0.172	1.827	*	0.115	Supported

P: \* p < 0.1, \*\* p < 0.05, \*\*\* p < 0.01.

# 4.5. Mediating Effect Analysis

Although there are no significant direct effect between tourist motivation and revisit intention, they may have indirect effect (Figure 3). There is one potential mediating effect in the research model: tourism motivation influences the revisit intention through cognitive image. Therefore, we further analysed the possible mediating effects.

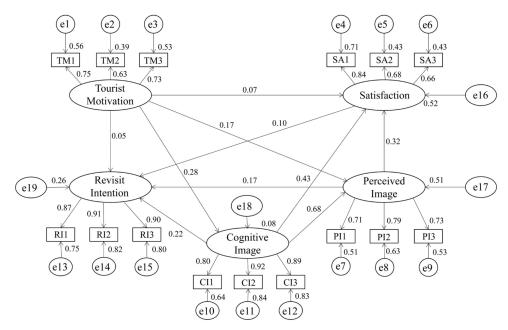


Figure 3. Path diagram of the structural equation model.

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Bootstrapping was used to explore whether there is a mediating effect in these influencing relationships using 1000 replicates [101]. The asymptotic critical ratio (*Z*) and the confidence interval (CI) of the lower and upper bounds (95% bias corrected, or 95% percentile) were calculated to test the significance of indirect effects (Table 7). In general, the mediation effect is significant when neither the bias-corrected 95% CI nor the percentile 95% CI contains a value of 0 [102]. Tourist motivation had an indirect positive effect on revisit intention. In the direct effect, the 95% CI value of both contains 0, indicating that the direct effect is insignificant and tourist motivation indirectly affects revisit intention through the full mediating role of cognitive image.

		Point Estimate	SE	Z	Bias-Corrected 95%CI		Percentile 95%CI	
Latent Variables					LOWER	UPPER	LOWER	UPPER
	TOTAL	0.168	0.067	2.507	0.044	0.309	0.041	0.301
Revisit Intention	<b>INDIRECT</b>	0.128	0.043	2.977	0.057	0.228	0.056	0.227
	DIRECT	0.040	0.061	0.656	-0.065	0.181	-0.082	0.163

Table 7. Direct, indirect, and total effects.

# 5. Conclusions and Discussion

Cognitive image, perceived image, and tourist satisfaction have significant positive effects on tourists' revisit intention (hypotheses H2c, H3b, and H4). Cognitive image had the largest effect (0.219), followed by satisfaction (0.172), and perceived image (0.155). This is consistent with the findings of Qu et al. and Zheng et al. [103,104] indicating that the cognitive image of the destination is the primary factor influencing revisit intention. However, the results differ from the findings of Baloglu et al. and Guo et al., which stated that perceived image has a greater effect on revisit intention and recommendations [56,105]. Meanwhile, tourist motivation also played a positive role (0.05) on revisit intention, but this hypothesis does not pass the significance test and has a small degree of influence.

This study argues that birdwatching tourists have higher expectations of the natural environment element of the tourist destination image than other aspects, such as good accommodation and dining facilities, complete road signs and signage, and ease of arrival. Birdwatching-tourism destinations need to have a wide species variety, excellent natural conditions, and rich biodiversity. The main drivers of birdwatching-tourism destination choice are innate in the natural landscapes and ecosystems. This is consistent with the findings of Stemmer et al. on birdwatching tourists in Varanger, Norway; exceptional birdwatching quality and spectacular scenery were the strongest determinants of birdwatching destination choice [106]. The number of relatively well-developed birdwatching destinations in China are small, and different destinations have local bird species. Birdwatchers' recognition of the species and number of birds in a destination becomes the primary antecedent of their intention to revisit and recommend and increases the priority of their visit. Birdwatchers are highly likely to visit a birdwatching destination multiple times in order to photograph different species of birds or different forms of birds, and to recommend the location to others with similar interests. Similarly, building a positive perceived image of a destination enhances its attractiveness to tourists prompting them to revisit the destination.

The cognitive image of the destination significantly positively influences the perceived image, which is consistent with existing research findings [107–109]. Cognitive and perceived images showed positive and significant effects on tourist satisfaction and the degree of influence of the cognitive image (0.432, p < 0.01) was higher than that of the perceived image (0.32, p < 0.01). This suggests that birdwatching tourists pay more attention to the richness of bird species and biodiversity at the destination than to obtaining inner pleasure. Satisfaction directly affects revisit intention and plays a positive role (0.172, p < 0.1). This implies that the increased satisfaction of birdwatching tourists increases

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revisit interest, prioritisation of the same destination, and promotion of the destination to others. This finding supports many previous studies [110–113], and helps explain the view that satisfaction refers to visitors evaluating their experience [57]. In the development of birdwatching-tourism destinations, managers should focus on promoting physical attributes such as endemic and rare birds and the ecological environment, and take into account the psychological perception of the spiritual and emotional needs of the target market of the tourist destination, so as to increase tourist satisfaction and encourage tourists to revisit and recommend.

Tourism motivation plays a direct positive role on cognitive image and an indirect positive role on revisit intention. In this causal relationship, cognitive image plays a completely mediating role. This differs from previous studies indicating that tourism motivation directly affects revisit intention in rural tourism [23] and cultural and creative tourism destinations [114], and that destination attributes are the main reasons for tourists visiting the region [62]. This study argues that birdwatching tourism is ecotourism, wherein the superior natural environment and the richness of bird species at the destination are the primary conditions attracting birdwatchers. The primary motivation for tourists travelling to the destination is to view birds and enjoy the natural scenery and tourism motivation may only influence the likelihood of tourists visiting the birdwatching destination for the first time. Birdwatchers who are in the middle of a tour or at the end of a tour have knowledge of the physical attributes of the destination including information about the bird species, number, habitat location, and natural environment of the local area, which influences revisit intent, recommendations, and preferences. Thus, cognitive image can have a positive effect as a mediating variable of tourist motivation and revisit intention.

In general, our research shows that birdwatching tourism is a form of tourism that relies on the natural environment, which is the characteristic that sets it apart from ordinary forms of tourism, and also suggests that promoting sustainable development through the development of birdwatching tourism requires attention to the conservation of the natural environment in its management and development. This presents an interesting opportunity and a challenge for public policy makers to consider, balancing the potential positive and negative impacts of birdwatching tourism. On the one hand, managers of birdwatching destinations need to focus on protecting the special local natural environment and taking advantage of the superior natural conditions to attract more birds, and minimizing potential disturbance to the birds, especially during the breeding season and other vulnerable periods. On the other hand, managers should focus on creating products that evoke positive cognitive evaluations from birdwatching tourists, while not neglecting the improvement of soft environmental conditions, such as the supply of public services, to enhance the birdwatching tourism experience. This is because it will lead to a better cognitive image, increased satisfaction levels, and positive revisit intentions. Managers also need to focus on the involvement and interests of the local community; only when local communities are aware of the importance of birds and the economic benefits that birdwatching tourism can bring will they be able to invest in bird conservation and birdwatching-tourism management. Additionally, increasing the promotion of the destination is an effective way to raise awareness and identify potential birdwatchers. Raising the level of awareness of birdwatching tourists about birdwatching destinations is important, as the cognitive image is an important driver of birdwatching tourists' choice to revisit a destination. Attractive birdwatching-tourism features can be disseminated through appropriate communication channels; new media can be preferred as well as traditional media. It is important to promote the birdwatching-tourism project vigorously through various channels, e.g., local birdwatching-tourism organisations could organise regular tourism events/exhibitions as a way to increase tourists' recognition and understanding of the birdwatching destination, which will help attract birdwatching tourists to visit repeatedly and enhance the good reputation of the destination.

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#### 6. Limitations and Recommendations for Future Research

Revisit intention is an antecedent variable that can motivate authentic travel behaviour. The structural equation model developed in this study explored how tourists' tourist motivation, perceived and cognitive images of destinations, and tourists' satisfaction affect birdwatching-tourism tourists' intention to revisit and recommend. The model had good fitness and the research hypotheses are supported that reflect the causal relationship of each indicator in a scientific and reasonable way. This study answers questions missing in existing studies, which pay insufficient attention to birdwatching tourism and tourists' willingness to revisit.

The theoretical model used to investigate the relationships among tourist motivation, cognitive image, perceived image, satisfaction, and revisit intention is helpful in understanding the causal relationship among these constructs. However, more research is needed to validate and extend these concepts. First, our use of cross-sectional data may give rise to data-selection problems, which is a common problem in empirical studies based on individual survey data. Therefore, panel data or causality experiments can be applied to validate the findings of this study. Second, this study only analysed the revisit intention of tourists in a single birding-tourism destination and this should be expanded to other geographic regions. Finally, future studies could conduct qualitative research to investigate other untested variables.

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**Institutional Review Board Statement:** Ethical review and approval were waived for this study. In our study, participants were invited to join in the survey voluntarily and anonymously without offending their privacy and generating ethical issues. Therefore, we did not seek approval for this case or any human studies where non-routine procedures are not used, as in this study. Before all interviews, the content of the study was explained to the interviewees and their agreement was obtained.

**Informed Consent Statement:** Informed consent was obtained from all subjects involved in the study.

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