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Impact of Tourists' Perceived Value and Sense of Social Responsibility on the Low-Carbon Consumption Behavior Intention: A Case Study of Zhangjiajie National Forest Park

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Abstract: People's increasing attention towards environmental issues and carbon emission level per capita of consumption has made the influencing factors of low-carbon consumption behavior a research hotspot. In this study, a random sample of tourists in Zhangjiajie National Forest Park in China were surveyed by questionnaire to examine the impact of tourists' perceived value and sense of social responsibility on the low-carbon consumption behavior intention. Results suggest that tourists' perceived value has a direct and significant positive effect on the sense of social responsibility and low-carbon consumption behavior intention. Tourists' sense of social responsibility demonstrates a significant positive impact on consumption attitude, with the latter having a positive impact on tourists' low-carbon consumption behavior intention. A sense of social responsibility and the consumption attitude are found to play an important intermediary role between perceived value and tourists' low-carbon consumption behavior intention. Some suggestions for managing and promoting tourists' low-carbon consumption behavior intention are also put forward in this paper.

Keywords: perceived value; sense of social responsibility; low-carbon tourism; low-carbon consumption behavior intention

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1. Introduction

Tourism is a vital constituent force of the global economy. As of 2018, it contributed over USD 8.8 trillion, representing 10.4% of the worldwide gross domestic product (GDP), according to the United Nations World Tourism Organization (UNWTO, 2018) [1], and accounted for one in ten jobs, according to the World Tourism Council (WTTC, 2019). Despite its positive contribution to economic growth, many studies have shown that tourism is also a primary contributor to global climate change [2,3]. The United Nations Environment Programmer (UNWTO) and the World Meteorological Organization (2008), for instance, estimate that direct carbon emissions from tourism account for 5% of total global carbon emissions, increasing to close to a 14% share, when other factors are considered. Recent studies, meanwhile, suggest that tourism's global carbon footprint accounts for about 8% of global GHG emissions [4]. In recent years, although Chinese tourism, as a strategic pillar industry, has boosted domestic tourism revenue, it has also generated high carbon emissions, with China's total carbon emissions from tourism accounting for 2.7% of the country's total [5].

The notion of carbon emission reduction has gained immense significance in recent years, with the gradual transition to a low-carbon tourism industry having thus become a key area of interest to the academic community. In this respect, many scholars have summarized the key variables affecting tourism-related carbon emissions, most notably energy consumption, technological development, and domestic and international visitors [6,7]. Although tourism is marked by high emissions, it includes a wide range of applications for promoting clean energy development, promoting energy renewability, and reducing energy consumption [1]. Modifications in its production model play an important role

in promoting a global shift towards sustainability. From an industry perspective, factors such as economic scale, technological advances, environmental regulation, energy mix, and prices are all directions for addressing the sustainability of tourism. However, the consumption behavior of domestic and international visitors is an essential aspect; the products or services provided by the tourism industry must meet the needs of tourists, and tourists are the core of the tourism industry [8]. Therefore, the solution to the carbon emission problem of the tourism industry depends not only on the policy measures of international organizations and governments, but also on the active participation of consumers. Therefore, the low-carbon behavior of tourists can directly reduce carbon emissions and resource consumption, promoting the high-quality development of low-carbon tourism [9].

Clearly, the consumption behavior of tourists occurs in a different context from that of ordinary consumers in the so called "unusual" environment of tourism. This unusual environment comprises all environments other than the one in which people normally live, work, study, socialize, etc. Based on experience, Chen (2017) classifies the usual environment into a broad experience and a special experience [10], and the essence of tourism is a special experience in an unusual environment. It is in this change from the usual to the unusual environment that tourism activities achieve a geospatial displacement and a change in the psychological dimension. Consequently, the high-carbon consumption behaviors that tourists may develop are shaped by several influencing factors that include changes in the tourist's attitude [11], cognition [12], hedonic appeals [13], binding [14,15], environmental tensions [16], and uncertainty in the outcomes of this behavior [17] in an unusual environment.

Tourists are important players in the tourism industry, prompting significant changes and sustainable development; hence, further exploration and clarification of their low-carbon behavioral intentions is a key topic requiring urgent attention. Many factors influence the consumption behavior of tourists and their behavioral intentions to consume. Although perceived value, as a critical antecedent variable, plays an essential role in explaining individual behavior [18], the previous literature seems to maintain a stronger focus on the various factors that influence consumer behavior due to the perceived value of the tourist. These factors include such things as satisfaction [19–25] and intention to revisit (loyalty) [8,9,14,26], as well as various dimensions of the perceived value itself [27,28], which was showed to have a positive effect on consumer behavior and intentions regarding consumption behavior.

The present study is founded on the notion that a sense of social responsibility consists of individuals or groups undertaking and fulfilling the corresponding responsibilities and obligations for society's benefit, under certain social conditions [29]. Many scholars have established the current situation regarding a sense of social responsibility, along with its influencing factors [19,30–37], and conducted pathway studies on the cultivation of a sense of social responsibility [33,38,39]. While foreign studies tend to focus more on the impact of corporate social responsibility on the industry [25,39–45], there are many interpretations of a sense of social responsibility in particular contexts [46], such as during the COVID-19 epidemic [47–49], or the embodiment of a sense of social responsibility in the retail industry [50], etc., Although theorists focus on revealing low-carbon consumption behavior, which is more of an antecedent variable [51–56], they concentrate mainly on its relationship with low-carbon consumption behavioral intentions, using a theory of planned behavior [57–59] approach, and on the willingness to pay for low-carbon product premiums [60,61].

Given that academic research on the driving mechanism of the low-carbon consumption behavior intention of tourists is insufficient, little attention has been focused on linking perceived values, sense of social responsibility, and low-carbon consumption behavioral intentions and studying their influencing pathways. As a result, practical implications for reducing carbon emissions from tourism are limited, and with energy consumption and carbon emission control at the core of the consumption chain, low-carbon consumption is

bound to become an important part of implementing China's "carbon peaking and carbon neutrality goals" [62].

The objective of this study, therefore, is to explore the psychological drivers of tourists' low-carbon consumption behavior intentions. Our analysis addressed the perspective of perceived worth and social responsibility awareness, drawing on various literary streams, and focusing on their relationship and the influence of low-carbon consumption behavior intention. The analysis also expands the research on low-carbon consumption behavior, currently concentrated on usual environmental consumption, to the unusual tourism environment in order to enrich the research content and scope of low-carbon consumption behavior. We hypothesized that the perceived value of tourists has a positive effect on the sense of social responsibility, consumption attitude, and low-carbon consumption behavior intentions in an unusual environment. Thus, there is both a positive and significant effect of tourists' sense of social responsibility on tourists' consumption attitude, as there is also a similar effect on tourists' consumption attitudes towards low-carbon consumption behavior intentions, with a sense of social responsibility and consumption attitude playing an important intermediary role. We will take tourists as a particular research object and analyze the specific factors that affect consumer behavior intention when they move from a usual environment to an unusual one. Based on the results of this analysis, we propose specific measures to promote sustainable tourism development and achieve the "carbon peaking and carbon neutrality goals."

2. Hypothesis Derivation and Methods

2.1. Perceived Value and Consumption Attitudes

In psychology, perception, as a critical antecedent variable, plays a vital role in explaining individual behavior [18]. When exploring the relationship between perceived value and behavioral intention, scholars often investigate attitude as a mediating variable, arguing that perceived value is directly affected by attitude. Perceived value often acts as a pre-influence variable on behavioral intention through attitude [63]. Han et al. (2003) also suggested that customer perceptions do not directly affect behavioral intentions. Nevertheless, attitudes act as a mediating variable to influence customers' behavioral intentions [64] indirectly, with perceived benefits encouraging users to form positive attitudes toward travel [65]. Although previous research emphasized that perceived value could directly influence attitudes, the findings of this study empirically support this argument. Further, these findings also suggest that consumers' behavioral tendencies can be influenced by different attitudes, which are also simultaneously influenced by perceived value. For example, it can be shown that perceived value also indirectly affects product redistribution behavior through waste minimization attitudes [66]. Some scholars have also argued that perceived value directly affects behavioral intentions and a circuitous response to behavioral intentions through attitudes [67]. Therefore, this paper proposes the following hypothesis, H1.

H1. *The more positive the tourists' perceived values, the higher their consumption attitude will be.*

2.2. Sense of Social Responsibility and Consumption Attitudes

Numerous scholars have interpreted the definition and connotation of socially responsible consumption, studying the influence of low carbon responsibility consciousness on consumption behavior. Kim and Chung (2011) found that a sense of social responsibility has become a human value that reflects individual perceptions, value judgments, and beliefs about minimizing environmental harm [68]. The studies have found that a sense of social responsibility influences consumers' attitudes toward purchasing organic skin/hair care products, influencing their willingness to buy such products [69]. It is believed that when people have a strong sense of social responsibility, they are more concerned about protecting the environment, which may influence personal attitudes toward environmental issues [70]. Bech-Larsen (1996) argued that social responsibility awareness leads to positive consumption attitudes toward specific products and brands [71]. More specifically,

low-carbon consumption awareness is also influenced by individual differences, while group culture and social ethics indirectly affect personal low-carbon awareness [72], with environmental consumption behavior being influenced by values, attitudes, and subjective norms [73]. This paper agrees more closely agrees with the statement that only when a person has a sense of social responsibility can they be more explicit about their responsibilities, correct their attitudes, and thus be able to consume more rationally. Therefore, it is necessary to introduce social responsibility awareness as one of the antecedent variables in studying low-carbon consumption behavior intention. The study presented in this paper attempts to determine the consequence of social responsibility awareness on low-carbon consumption behavior intention in the context of tourism. Hence, it prompts the hypothesis given below:

H2. *The more positive the tourists' sense of social responsibility, the higher their consumption attitude will be.*

2.3. Perceived Value and Sense of Social Responsibility

Tourism consumption is non-functional, experiential, and sensory consumption, where perceptual rationality overcomes value rationality [17]. The tourists' perceived value will change when they enter the unusual environment, and their ecological value and social value are reduced. Tourists become top consumers who transcend the temporal and spatial limitations of daily and weekend consumption and enter the utopian world of ecstasy, pursuing luxury consumption free from moral responsibility, unlimited according to the principle of pleasure [74]. The tourist's quest for a good travel experience and the psychological pursuit of relaxation and comfort while traveling can lead people to abandon their sense of responsibility and become more inclined to indulge in unsustainable forms of consumption behavior [13]. For example, there is no doubt that air travel emits large amounts of CO_2, which we also know to be closely related to global climate change. Nevertheless, few tourists are willing to give up their experience of efficient and fast transportation to reject airplanes in favor of trains, or cancel their trips altogether because of greenhouse gas emissions [17]. Due to the change in perceived value, tourists' sense of social responsibility is affected. In this respect, and based on the above literature, the said linkage will be examined in the following hypothesis:

H3. *The more positive the tourists' perceived values, the higher their sense of social responsibility will be.*

2.4. Perceived Value and Low-Carbon Consumption Behavior Intention

Research has shown a link between perceived value and behavioral intention, although existing scholars differ on the relationship between the two, mainly on whether the perceived value directly affects behavioral intention. Monroe (1990) proposed that customers' perceived value is both positive and negative. When customers have positive perceived value, they will continue their subsequent purchase behavior, while when they have a negative perceived emotion, they will choose to stop their purchase behavior [75]. Customer perceived value is one of the direct antecedents of behavioral intention [76,77], and the higher the tourists' perceived value, the greater their behavioral tendency to revisit or recommend in the future [22]. B&B tourists' perceived value does not directly affect behavioral intention, and there are significant positive effects of two variables on behavioral intention, namely overall satisfaction and place attachment. Perceived value indirectly affects behavioral intention through the above two variables [19], which is exemplified by Yu et al. (2019), who concluded that perceived value positively affects consumers' willingness to share rides [78]. This paper argues that perceived value indirectly affects behavioral intention through attitude as a mediating variable, directly affecting behavioral intention. Based on the arguments above, Hypothesis 4 is presented below.

H4. *The more positive the tourists' perceived values, the higher their low-carbon consumption behavior intention will be.*

2.5. Consumption Attitudes and Low-Carbon Consumption Behavior Intentions

There is a significant correlation between consumers' attitudes toward environmental issues and their behaviors. Studies have shown that individual attitudes and perceptions of environmental problems influence consumers' intentions and actual behavior [79]. Researchers have found that attitudes are significant drivers of environmental behavior and behavioral intentions [79,80]. For example, Chan (1999) proposed that attitudes towards green product pursuit is a mediator influencing green purchasing behavior [81], while Ghani et al. (2013) identified the main factors influencing residents' decision to separate food waste regularly, with attitudes having the most significant impact on residents' behavior [82]. Attitudes, subjective norms, and ethical norms positively influence tourism investors' socially responsible investment intentions [83]. Studying hotel guests' intent to engage in environmentally accountable activity requires the addition of three variables: environmental awareness, perceived efficacy, and credibility of ecological action, with the study proving that attitudes and subjective norms positively impact hotel tourists' behavioral intentions [84]. Studies reported by Kumar et al. (2017) and Lin and Huang (2012) also demonstrated that consumers' attitudes towards environmental issues have a positive effect on green product purchase intentions [85,86]. On the basis of the above works, hypothesis H5 is proposed:

H5. *The more positive the tourists' consumption attitude, the higher their low-carbon consumption behavior intention will be.*

3. Methods

3.1. Questionnaire Design

In terms of the model, the variables were introduced in conjunction with the literature review—perceived value, and sense of social responsibility—were introduced to construct a model diagram of tourists' low-carbon consumption behavior intention. Domestic and foreign scholars referred to the research results of the relationship between perceived value, sense of social responsibility, consumption attitude, and low-carbon consumption behavior intention. The relevant research hypotheses were subsequently derived through theoretical explanation and logical deduction. Following this, an empirical analysis was conducted to design the initial measurement items of this study by combining the current, more mature scales. Please refer to Appendix A for details. On the basis of the previous statement, the initial articles were then optimized through pre-research data analysis, with the reliability and validity of the developed scales tested to form the official rankings of this study.

We refer to the research results of domestic and foreign scholars on perceived value and sense of social responsibility. Perceived value is measured using four dimensions: emotional value, functional value, ecological value, and social value (Anderson et al., 1974; Roberts, 1995; Webb et al., 2008; Yan and She, 2009) [87–90]; and sense of social responsibility is also measured using four dimensions, which include environmental protection, energy conservation, animal protection, and supervision and maintenance of rights (Sheth et al., 1991; Voss et al., 2003; Ko et al., 2010) [91–93]. This study combines the theory of planned behavior with tourists' low-carbon consumption behavior intention, and refers to the relevant achievements of other scholars in constructing a conceptual model of the low-carbon consumption behavior intention of tourists. The conceptual model of the present study is depicted in Figure 1 below.

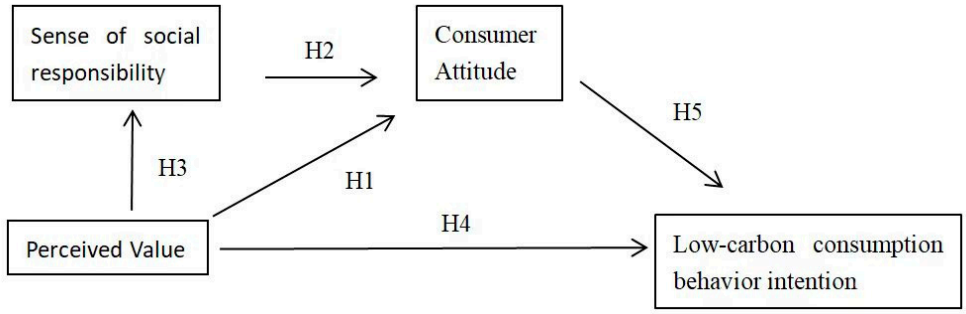


Figure 1. Model diagram of tourists' low-carbon consumption behavior intention.

3.2. Data Collection

Data were collected from Zhangjiajie National Forest Park in China, an AAAAA grade (the highest ranking) national tourist destination. The paper surveys were administered by a research team with the target period of November 2019, along with online research conducted on tourists who visited Zhangjiajie National Forest Park in April 2022. Questionnaires were distributed through a convenience sampling method, with 450 questionnaires issued. We screened out questionnaires with too many identical responses, omissions, short response times, and obvious patterns. A total of 420 valid samples were collected, providing a sample recovery rate of 93.4%. Of the 420 respondents, 55.1% were male and 44.9% were female. There were fewer visitors under 18 and over 61 than those between the ages of 18 and 30, which made up 95.6% of the sample's entire age range. For the study on occupation, it was found that employees of working enterprises and students of colleges and universities accounted for the highest proportion of respondents; these two groups accounted for 62.5% of the total number of respondents.

The collected questionnaires were analyzed by structural equation modeling. Firstly, this study imported the data from the validated questionnaires into IBM SPSS Statistics for Windows, version 22.0 (IBMCorp., Armonk, NY, USA) and conducted a confirmatory factor analysis (CFA). Secondly, this study used IBM SPSS AMOS Graphics for Windows, version 23.0 (IBMCorp., Armonk, NY, USA) to conduct structural validity, convergent validity, and discriminant validity analysis on perceived value and sense of social responsibility, respectively. Thirdly, this study tested all hypotheses, eliminated those that did not satisfy the conditions, and conducted model revisions. Finally, mediating effect analysis was conducted to derive the impact relationship.

4. Results

The present study applies exploratory factor analysis (EFA) to the entire sample for reliability. The total reliability of the scale is 0.959, which indicates that the scale has good reliability; the KMO value of the scale is 0.950, which meets the basic requirement of more than 0.8, and the Bartlett spherical test also reached a significant level, indicating that the validity of the data was suitable for factor analysis. These are illustrated in Table 1.

Table 1. Reliability and validity test.

Cronbach's Alpha	KMO	Bartlett's Test of Sphericity	Df	Sig
0.959	0.950	13,068.111	561	0.000

For better interpretation of the factor loading matrix, the present study uses a principal component factor analysis. The factor attribution of each topic can be determined from the rotated component matrix. The factor loadings were all greater than 0.7. The attribution factors were named as different dimensions of the variables, according to the topic content. These are illustrated in Tables 2 and 3.

Table 2. Rotating component matrix of sense of social responsibility.

Items	Factor Loading			
	Environmental Protection	Energy Conservation	Supervision and Protection of Rights	Protection of Animals
ASR1				0.850
ASR2				0.796
ASR3				0.649
ASR4	0.721			
ASR5	0.845			
ASR6	0.656			
ASR7	0.776			
ASR8	0.808			
ASR9			0.714	
ASR10			0.732	
ASR11			0.793	
ASR12		0.803		
ASR13		0.857		
ASR14		0.841		

Table 3. Rotating component matrix of perceived value.

Items	Factor Loading			
	Emotional Value	Functional Value	Social Value	Ecological Value
PV1	0.741			
PV2	0.805			
PV3	0.82			
PV4	0.813			
PV5	0.714			
PV6				0.865
PV7				0.821
PV8				0.767
PV9			0.823	
PV10			0.686	
PV11			0.64	
PV12		0.813		
PV13		0.864		
PV14		0.811		

4.1. Results of the Structural Equation Model

4.1.1. Structural Validity

To delineate underlying factors of social responsibility, we conducted a confirmatory factor analysis (CFA). The researchers used standardized scales for the study, and the CFA results indicate a good model fit for sense of social responsibility. The results are shown in Table 4:

Table 4. Test of the degree of fit of the sense of social responsibility consciousness model.

x^2/df	RMSEA	CFI	IFI	TLI	NFI
3.602	0.079	0.955	0.956	0.943	0.940

The results of the CFA for perceived value show a good model fit, with the following results in Table 5:

Table 5. Test of the degree of fit of perceived value consciousness model.

x^2/df	RMSEA	CFI	IFI	TLI	NFI
3.732	0.081	0.963	0.963	0.952	0.951

4.1.2. Convergent Validity

There are two criteria applied in the analysis of convergent validity: (1) the average variance extracted (AVE) should be greater than 0.5; and (2) the composite reliability (CR) must be greater than 0.7. The results showed that both the AVE and CR met the requirements as shown in Table 6, the convergent validity of the ten constructs were satisfactory, and the scale had good convergent validity.

Table 6. Convergent validity.

Factor	Items	Path	Estimate	α	AVE	CR
sense of social responsibility	environmental protection	ASR1	0.826	0.705	0.6409	0.8419
		ASR2	0.854			
		ASR3	0.715			
	energy conservation	ASR4	0.791	0.864	0.6551	0.9046
		ASR5	0.873			
		ASR6	0.775			
		ASR7	0.781			
	supervision and protection of rights	ASR8	0.823	0.693	0.6825	0.8642
		ASR9	0.863			
		ASR10	0.910			
		ASR11	0.689			
	protection of animals	ASR12	0.873	0.727	0.7736	0.9109
		ASR13	0.937			
		ASR14	0.825			
perceived value	emotional value	PV1	0.867	0.892	0.7659	0.9424
		PV2	0.908			
		PV3	0.882			
		PV4	0.830			
	functional value	PV5	0.887	0.676	0.5243	0.7645
		PV6	0.804			
		PV7	0.769			
		PV8	0.579			
	social value	PV9	0.817	0.739	0.7664	0.9076
		PV10	0.925			
		PV11	0.881			
	ecological value	PV12	0.932	0.765	0.8534	0.9458
		PV13	0.904			
		PV14	0.935			
consumption attitude		AT1	0.885	0.689	0.6786	0.8614
		AT2	0.906			
		AT3	0.657			
low-carbon consumption behavior intention		TLCB1	0.891	0.738	0.8172	0.9304
		TLCB2	0.968			
		TLCB3	0.849			

4.1.3. Discriminant Validity

Tables 7 and 8 below show the correlation analysis, where all variables were significantly related. Environmental protection had a positive and significant relationship with energy conservation, supervision and protection of rights, and protection of animals; emotional value was significantly and positively related to functional value, social value, and ecological value. Ultimately, this correlation analysis provides evidence for the path model proposed in this study.

Table 7. Discriminant validity of social responsibility awareness.

	Environmental Protection	Energy Conservation	Supervision and Protection of Rights	Protection of Animals
environmental protection	0.641			
energy conservation	0.609 ***	0.655		
supervision and protection of rights	0.584 ***	0.784 ***	0.683	
protection of animals	0.695 ***	0.597 ***	0.506 ***	0.774
AVE square root	0.801	0.809	0.826	0.880

PS: *** means $p < 0.001$

Table 8. Discriminant validity of the perceived value.

	Emotional Value	Functional Value	Social Value	Ecological Value
emotional value	0.766			
functional value	0.236 ***	0.524		
social value	0.824 ***	0.241 ***	0.766	
ecological value	0.810 ***	0.163 **	0.775 ***	0.853
AVE square root	0.875	0.724	0.875	0.924

PS: *** means $p < 0.001$, ** means $p < 0.01$

4.2. Model Corrections

Table 9 shows that among the 29 hypotheses, 19 hypothetical paths meet the test criteria, with ten items deleted as they failed to meet the specified criteria. The present study recomputes the coefficient alphas and item-to-total correlations each time an item is deleted. The results show the measurement constructs' satisfactory factor structure and reliability.

Table 9. Theoretical structural equation model path analysis.

	Estimate	C.R.	*p*	Result
environmental protection < emotional value	0.612	5.807	***	Y
energy conservation < emotional value	1.018	10.307	***	Y
supervision and protection of rights < emotional value	0.786	7.617	***	Y
protection of animals < emotional value	0.76	7.846	***	Y
environmental protection < functional value	−0.004	−0.078	0.938	N
energy conservation < social value	0.087	1.134	0.257	N
supervision and protection of rights < ecological value	−0.344	−3.962	***	Y
protection of animals < ecological value	0.277	3.436	***	Y
energy conservation < functional value	0.007	0.163	0.87	N
supervision and protection of rights < functional value	0.123	2.551	*	Y
protection of animals < functional value	0	0.003	0.997	N

Table 9. *Cont.*

	Estimate	C.R.	*p*	Result
environmental protection < social value	−0.254	−2.722	**	Y
supervision and protection of rights < social value	0.166	1.886	0.059	N
protection of animals < social value	−0.339	−3.982	***	Y
environmental protection < ecological value	0.309	3.44	***	Y
energy conservation < ecological value	−0.352	−4.587	***	Y
consumption attitude < emotional value	0.385	2.884	**	Y
consumption attitude < ecological value	0.463	5.734	***	Y
consumption attitude < functional value	−0.008	−0.209	0.834	N
consumption attitude < social value	0.116	1.569	0.117	N
consumption attitude < environmental protection	−0.097	−2.127	*	Y
consumption attitude < energy conservation	0.188	3.04	**	Y
consumption attitude < supervision and protection of rights	−0.047	−1.018	0.309	N
consumption attitude < protection of animals	−0.121	−2.508	*	Y
low-carbon consumption behavior intention < emotional value	0.316	3.961	***	Y
low-carbon consumption behavior intention < ecological value	−0.425	−5.905	***	Y
low-carbon consumption behavior intention < functional value	0.03	0.847	0.397	N
low-carbon consumption behavior intention < social value	−0.018	−0.268	0.789	N
low-carbon consumption behavior intention < consumption attitude	0.979	10.154	***	Y

PS: *** means $p < 0.001$, ** means $p < 0.01$, * means $p < 0.05$, Y indicates support; N indicates no support.

We modified the hypothetical model in this study by removing the insignificant path linkage. Based on goodness-of-fit statistics, the hypotheses from the model correlate significantly with the survey data results ($x^2/df = 3.299$, RMSEA = 0.074, IFI = 0.911, TLI = 0.900, CFI = 0.911). The modified goodness-of-fit index is brought more in line with the criteria requirements, the modified model fits better, and the other paths are verified after deleting the eleven paths that do not meet the criteria.

The relationship between variables can be determined by examining their path coefficients. Figure 2 presents the outcomes of the calculated SEM model. For the independent variable "perceived value", the path coefficients determined indicate that it has significant positive effects on the sense of social responsibility, consumption attitude, and low-carbon consumption behavior intention. Therefore, H1 and H4 are supported. For the variable, sense of social responsibility, the path coefficients found indicate that it has significant positive effects on consumption attitude. Thus, H2 is supported. For the variable "consumption attitude", the path coefficients found indicate that it has significant positive effects on low-carbon consumption behavior intention. Hence, H5 is supported.

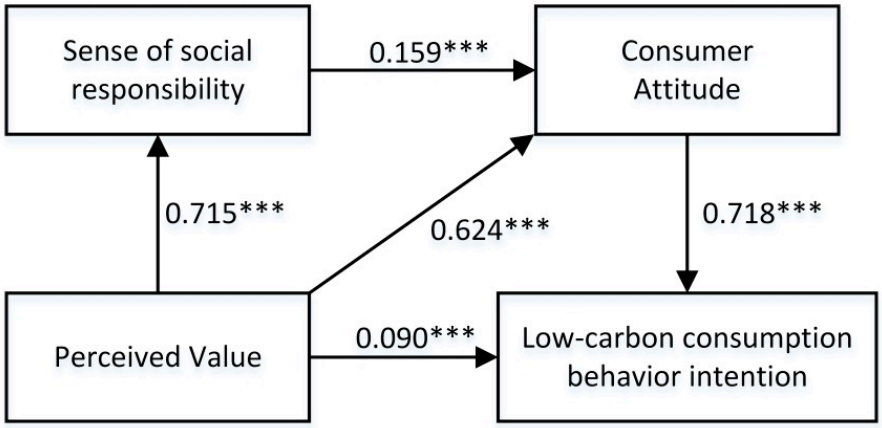


Figure 2. Direct effect model diagram of tourists' low-carbon consumption behavior intention. PS: *** means $p < 0.001$.

4.3. Mediation Analysis

As low-carbon consumption behavior intention is directly influenced by perceived value and consumption attitude, consumption attitude is directly influenced by perceived value and sense of social responsibility, and sense of social responsibility is directly influenced by perceived value, allowing perceived value to indirectly act on consumption attitude and low-carbon consumption behavior intention. This shows that there are complex multiple mediating effects in the model regarding the influence mechanism of low-carbon consumption behavior intention. A bootstrapping analysis was conducted to test the mediating relationships in the model, and the findings are presented in Table 10. The results showed that perceived value indirectly affected consumption attitude and low-carbon consumption behavior intention. Specifically, the perceived value indirectly affected consumption attitude through the sense of social responsibility (indirect effect = 0.142, $p < 0.001$). Moreover, perceived value had an indirect effect on low-carbon consumption behavior intention through consumption attitude (indirect effect = 0.604, $p < 0.001$) and through sense of social responsibility and consumption attitude (indirect effect = 0.110, $p < 0.001$). Lastly, sense of social responsibility yielded an indirect effect on low-carbon consumption behavior intention through consumption attitude (indirect effect = 0.587, $p < 0.001$).

Table 10. Results of mediation analysis using bootstrapping.

Path	Bootstrapping		95% Bias-Corrected CI		*p*
	Indirect Effect	Boot S.E.	Boot LLCI	Boot ULCI	
perceived value → sense of social responsibility → consumption attitude	0.142	0.068	0.022	0.291	0.000
perceived value → consumption attitude → low-carbon consumption behavior intention	0.604	0.071	0.454	0.736	0.000
perceived value → sense of social responsibility → consumption attitude → low-carbon consumption behavior intention	0.110	0.053	0.019	0.225	0.000
sense of social responsibility → consumption attitude → low-carbon consumption behavior intention	0.587	0.070	0.450	0.725	0.000

5. Discussion

Low carbon consumption is a better way to consume if climate goals are to be achieved. This study attempts to reveal tourists' low-carbon consumption behavior intention and its path of influence. To this end, the study constructs a model of tourists' low-carbon consumption behavior intention. Specifically, it supports us in identifying the relevant factors (e.g., perceived value, sense of social responsibility, and consumption attitude) regarding low-carbon consumption behavior intention in the tourism process. This study contributes to developing tourism management literature related to low-carbon consumption behavior, with the findings supporting the research hypothesis, implying that tourists' perceived value and sense of social responsibility constitute the drivers of tourists' low-carbon consumption behavior intentions. These findings also support those of Lee et al. (2007), Yu et al. (2019), and Wu et al. (2018) [78,94,95]. Specifically, these findings support the study by Yu et al. (2019), which determined that value positively influences consumers' behavior intentions [78]. This finding is also reflected in tourism consumption, supporting Lee et al.'s (2007) study [94]. This paper finds that the more socially responsible tourists are, the more likely they are to develop low-carbon consumption behavior intention, supporting the study by Wu et al. (2018), which suggests that moral identity has an enhancing effect on tourists' moral behavior intentions [95]. However, this study extends beyond the existing research by correlating a perceived value with a sense of social responsibility and discussing their linkage. Subsequently, several practical implications for increasing the intention of low carbon consumption behavior of tourists were suggested, especially regarding China's "carbon peaking and carbon neutrality goals.

According to the results of the data analysis, environmental protection, energy conservation, animal protection, and supervision and maintenance of rights are relevant and can reflect the sense of social responsibility. Emotional value, functional value, social value, and ecological value are relevant and can reflect perceived value. The more positive the tourists' perceived values, the higher their sense of social responsibility. This is expressed by the fact that the more positive the emotional and ecological values, the higher the environmental protection, energy conservation, animal protection, and supervision and maintenance of rights; the more positive the functional values, the higher the supervision and maintenance of rights; and the more positive the social values, the higher the environmental protection and animal protection. The more positive the tourists' perceived values, the higher their consumption attitude and their low-carbon consumption behavior intention, mainly in the emotional value and ecological value dimensions. The more positive the tourists' sense of social responsibility, the higher the attitude towards consumption, expressed in the energy conservation and animal protection dimensions. The more positive the tourists' consumption attitude, the higher their low-carbon consumption behavior intention will be. The complex pathways between the four areas form a model of the low-carbon consumption behavior intention, demonstrating the relevant factors that influence the tourists' low-carbon consumption behavior intention.

According to the descriptive results, tourists are aware of the impact of their behavior on climate and, more importantly, take responsibility for unsustainable tourism consumption behavior and have a moral responsibility to travel green. In addition, this result is in line with Sun and Yang (2020) in that the functional aspect [96], which involves the emotional value, social value, and ecological value, was an important determinant for tourists' perceived value, showing that tourists will be more likely to develop an attitude of consumption, in some cases. For example, tourists experience the pleasures of low-carbon tourism; for example, they share the utility of building connections with other social groups (for example, making a good impression or creating a positive and healthy image, etc.), and they experience the emotional satisfaction of low-carbon tourism (not only because of the recognition of others, but also because they pursue environmental and ecological values). The study found a significant negative correlation between the function, utility, quality, cost, and consumption attitude obtained after tourism consumption, which may be because, in the usual environment, consumers' interest concerns are primarily expressed in monetary

terms. The previous studies showed that blind consumption, impulsive consumption, herd consumption, and other high carbon consumption behavior for tourists could be produced easily while they were in the exceptional, unusual environment of tourism [5,6,95,96]. Generally, the consumers' interests are mainly concerned with non-functional values in the tourism context.

The sense of social responsibility positively and significantly impacts tourists' consumption attitudes, which demonstrates that this hypothesis provides strong empirical evidence consistent with Axsen's (2012) findings [97]. Previous literature found that network communication, information dissemination by social groups, compliance with other people's behavior, organizational communication will affect consumers' perception of low-carbon consumption. When consumers transform themselves into low-carbon consumers, they are implicitly affected by the joint action of various modes of communication; the tourist's sense of social responsibility to conserve energy and protect animals directly and positively influences consumption attitudes. This indicates that the more energy-conscious and animal-conscious tourists are, the more positive low-carbon consumption attitudes they have, supporting previous study findings by different scholars. Previous studies have identified a strong relationship between social and environmental awareness and sustainable consumption behavior [98,99]. At the same time, the study found a significant adverse association between environmental protection and supervision and the protection of rights, which is supported by the outcomes of the studies by Severo (2021) [100]. The more negligible effect of residents' environmental awareness on social responsibility was observed in his study. Certainly, environmental awareness of tourists should be further strengthened. Environmentally unfriendly practices, such as littering and the use of disposable items causing white pollution, still exist in tourist attractions. Meanwhile, without damaging the core interests of tourists, the awareness of monitoring and defending rights is still relatively weak for tourists, and it is difficult to influence them to establish a consumption attitude.

We show that perceived value has a positive and significant effect on the sense of social responsibility, with the emotional value of perceived value having the most significant impact on energy conservation; this dimension elucidates that tourists are more motivated to conserve when they feel the pleasure of low carbon tourism. Then, the tourist' perception of the function, value, quality, and cost of a product during consumption affects the awareness of the monitoring and maintaining of rights. At the same time, the utility of association with other social groups after low-carbon tourism directly influences the awareness of monitoring and advocacy—a finding consistent with previous studies that have identified a close relationship between perceived value and sense of social responsibility in monitoring advocacy. Finally, the ecological value of the tourists' perceived value is positively related to the sense of social responsibility: the more tourists pursue specific ecological and environmental values, the more socially responsible they are. Previous findings further support this result, where Chueh (2020) [101], for example, suggests that consumers are more likely to consciously act to improve the environment when they are critically aware and concerned about protecting it. Overall, these results support Sharmin et al.'s (2020) [102] suggestion that millennials' environmental values influence their awareness of environmental sustainability, and that the higher the environmental awareness, the higher the concern for green products; the impact of consumption patterns on the environment is also of concern to more nature-loving tourists. Therefore, the previous studies supported that the perceived value could influence the sense of social responsibility of tourists.

Finally, we point out that perceived value and tourist consumption attitudes positively and significantly affect tourists' low-carbon consumption behavior intention. It is argued that the perceived value of tourists' low-carbon consumption behavior intention through the mediating variable "consumption attitude", and the emotional value and ecological value of "perceived value", can also directly influence low-carbon consumption behavior intention, which is supported by the outcomes of the studies by Wang et al. (2016). Attitude is the primary consideration in predicting behavioral intention [103], and consumption attitudes directly and positively influence low-carbon consumption behavior; generally,

when individuals are willing to implement a behavior, they are more likely to follow through with it. That is, tourists tend to be more inclined to low-carbon consumption behavior when they have consumption attitudes, validating the arguments of Aral and Sintas (2020) [104] and Peng et al. (2016) [105]. Liu et al. (2019) also concluded that attitudes indirectly affect low-carbon consumption behavior through low-carbon behavioral intentions [53], representing a typical positive behavior in the domain of tourism and tourism consumer behavior.

In China, carbon emission targets have recently been clarified, although these targets are limited to the overall macro level and sustainable use for power generation issues. However, carbon emissions from tourism have not been given sufficient attention, since the strategy system does not reveal the climate impact of tourism, or how to achieve carbon emission reductions from tourism. These issues should be discussed in detail, and the intention of the low carbon consumption behavior of tourists should be taken into account.

The findings of this study provide empirical support for a deep understanding of the complex path of perceived value → social responsibility awareness → consumption attitude → low-carbon consumption behavior intention. Considering the multidimensional nature of perceived value and the sense of social responsibility, the findings of this study are more detailed in comparison. The study clarifies the relative roles of the sub-dimensions in theory and indicates the direction for exerting efforts to enhance tourists' low-carbon consumption behavior intention in practice. More pertinently, it suggests the importance of the theoretical and practical significance of studying tourists' low-carbon consumption behavior intention from a multidimensional perspective [21].

6. Conclusions, Recommendations, and Study Limitations

6.1. Conclusions

Taking Zhangjiajie National Forest Park as an example, a research model including perceived value, social responsibility awareness, consumption attitude, and low-carbon consumption behavior intention was constructed. The overall model shows a significant positive influence of perceived value on social responsibility awareness, consumption attitude, and low-carbon consumption behavior intention. Although perceived value has a widespread occurrence in the research on low-carbon consumption behavior in previous decades, fewer studies exist regarding its impact on socially responsible awareness of the low-carbon consumption behavior intention.

According to the results, the following conclusions can be drawn: (1) The emotional value, social value, and ecological value perceived by tourists during the travel process will positively impact tourists' consumption attitudes; the more tourists feel the emotional satisfaction brought by low-carbon tourism during the trip, the more they will establish the attitude of low-carbon consumption. The ecological value has the most significant direct influence on the consumption attitude of tourists. (2) Functional value, i.e., the function, utility, quality, and cost that tourists obtain after low-carbon tourism, has little impact on establishing consumption attitudes of tourists. (3) The more substantial the tourist's sense of social responsibility to save energy and protect animals, the greater the impact on building consumption attitudes. The greater the tourists' low carbon consumption attitudes, the more likely they are to be inclined to low carbon consumption behavior. Tourists are more likely to be inclined to low-carbon consumption behavior when they feel the ecological and emotional value of such behavior. (4) The utility of association with other social groups after low-carbon tourism directly influences the awareness of monitoring and defending their rights.

In summary, the findings of this paper provide a more comprehensive picture of the psychological states and behavioral intentions generated by tourists in unusual environments and explain the mechanisms at play in developing low-carbon consumption behavioral intentions. The complex pathway of perceived value → low-carbon consumption behavioral intention and its influencing mechanisms are explored.

6.2. Suggestions

The above findings provide essential insights into guiding tourists to effectively generate low-carbon consumption behavior. In particular, the following paths can be pursued:

(1) Tourists' awareness of environmental protection or the popularization of environmental knowledge will affect the sense of social responsibility of tourists, which will further indirectly affect the intention of low-carbon consumption behavior of tourists. The study showed that including environmental issues in education and training courses effectively cultivated students' awareness of environmental protection. Tourism destinations can organically integrate environmental knowledge with tourism experiences to promote tourists' initiatives to adopt low-carbon consumption behaviors.

(2) Tourists in the low-carbon tourism environment bring the experience of emotional satisfaction, which would generate more consumption attitude, and affect their low-carbon consumption behavior intention. Tourists should be guided to personally experience low-carbon consumption behavior in tourism, getting close to nature through low-carbon consumption, and enhancing their feelings about pursuing environmental and ecological values.

(3) Cultivating tourists' awareness of energy conservation and animal protection will directly influence their attitudes toward low-carbon consumption, demonstrating the close relationship between social responsibility awareness and low-carbon consumption behavioral intentions. Given this, various methods can inspire tourists' moral responsibility to practice low-carbon consumption behavior. Meanwhile, information dissemination by social groups, conformity to others' behavior, and organizational communication could also influence tourists' perceptions of low-carbon consumption. Tourists with a strong sense of social responsibility will adapt their norms to those in the public environment, generating higher moral behavioral intentions, targeting reminders of environmental responsibility, and prompting more conscious adaptation of their behavioral standards.

(4) Changes in the consumption attitudes of tourists will directly and indirectly affect the intention of the low-carbon consumption behavior of tourists. When tourists have a positive attitude toward consumption, they tend to be more inclined toward low-carbon consumption behavior, thus a fundamental change should be made in the tourists' psychology of enjoyment, gradually developing a sustainable consumption attitude. This could be achieved, for example, by encouraging visitors to focus on non-material concerns instead of material ones, pay attention to resources and environmental issues, control their conduct, adopt a low-carbon travel mindset, and eventually develop the intention to engage in low-carbon consumption.

In summary, destination managers, enterprises, or communities do not need to limit themselves to improving only a single element to enhance tourists' low-carbon consumption behavior. Moreover, according to their specific situations, they can choose different paths to efficiently promote tourists' low-carbon consumption behavior.

6.3. Research Limitations

This study examines the low-carbon consumption behavior intention of tourists when traveling from the unique context of tourism. Due to the authors' academic levels, research funding, and time and energy limitations, several current limitations offer avenues for future research, mainly including the following:

(1) Since the domestic research on low carbon consumption behavior mainly exists at the macro level, the scales in this study are all from foreign-related literature, leading to two problems. Firstly, the translation is not accurate enough, and some questionable items still have unclear semantics; secondly, there is the problem of the cultural differences between China and foreign countries. This paper tries to select the more mature international scale of perceived value and social responsibility awareness, although the research scales of foreign scholars are not fully adaptable to Chinese tourists. Despite this, the data in

the questionnaire passed the reliability and validity tests and exploratory factor analysis, though there is still room for improvement.

(2) The data samples in this study were collected from limited sources from Zhangjiajie National Forest Park, which, as China's first national forest park, has a scenic area that is both influential and accessible, attracting tourists from all over the country every year. However, the influence of Zhangjiajie's treacherous terrain determines that there are fewer elderly tourists over 60 years old, with primarily young and middle-aged tourists being more typical.

(3) The sample size of this study is limited and unevenly distributed in terms of occupation, education level, economic ability, age, etc., and future research could address this issue by increasing the number of samples and case sites. Thus this study's potential applicability range could be expanded.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/f13101594/s1, Supplementary Material File S1: data analysis.

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Appendix A

Questionnaire on low-carbon consumption behavior intention of tourists to Zhangjiajie National Forest Park.

Dear Tourists.

Hello! Thank you very much for participating in this questionnaire. This questionnaire is anonymous, all personal information will only be used for my study, your relevant information will be kept strictly confidential. Please tick the relevant questions in the questionnaire or fill in the blanks, thank you again for your participation and support.

I. Basic information about the tourists (please underline "✓" in the corresponding questions 1–4 and fill in your home location in question 6)

1. Your gender:

☐ Male ☐ Female

2. Your age:

☐ 18 years and below ☐ 18–25 years ☐ 26–40 years ☐ 61 years and above

3. Your monthly income:

☐ RMB 2000 and below ☐ RMB 2001–3500 ☐ RMB 3501–5000 ☐ RMB 5001–8000 ☐ RMB 8000 and above

4. Your occupation:

☐ Civil servant ☐ Career worker ☐ Military personnel ☐ Corporate employee ☐ Farmer ☐ Individual household ☐ Retired person ☐ Teacher ☐ Student ☐ Other

5. Your education:

☐ Junior High School and below ☐ High School ☐ College and Vocational College ☐ Bachelor's Degree ☐ Master's Degree ☐ Doctorate

6. You are from: Province

II. Tourism characteristics (please underline "✓" in the corresponding ones)

7. How many people are travelling on this excursion:

☐ 1 person ☐ 2 persons ☐ 3–5 persons ☐ 6–9 persons ☐ 10 persons and more

8. How many times have you visited this site?

☐ First time ☐ Second time ☐ Third time ☐ Fourth time ☐ Fifth time and above

9. The duration of your stay in this scenic area is:

☐ Half day ☐ 1 day ☐ 2 days ☐ 3 days ☐ 4 days ☐ 5 days and above

10. Your travel companions are:

☐ With the group (organized by the tour operator) ☐ Family member ☐ Organized by the unit ☐ Accompanied by a friend or relative ☐ Alone

11. Your motivation for visiting this scenic area (multiple choices possible for this question)

☐ To experience and learn about nature ☐Study, research

☐ To visit less disturbed places and watch wild animals

☐ Leisure and holiday ☐ Summer holiday ☐ Other

12. Your expenses for a trip to this scenic spot are:

☐ RMB 500 and below ☐ RMB 501–1000 ☐ RMB 1001–1500 ☐ RMB 1501–2000 ☐ RMB 2001–2500

III. Sense of social responsibility, perceived value, consumption attitude and the low-carbon consumption behavior intention measurement project

Each option is divided into Strongly disagree, Disagree, Relatively disagree, Average, Relatively agree, Agree, Strongly agree. Please underline "✓" in the corresponding ones.

Scale			Question
sense of social responsibility	environmental protection	ASR1	I will try to avoid using disposable products that cause white pollution when travelling.
		ASR2	I will try to avoid creating litter during the trip.
		ASR3	I will not litter during the journey and will sort my rubbish.
	energy conservation	ASR4	When travelling I try to choose low carbon emission transport.
		ASR5	I try to choose low-carbon travel itineraries when creating my travel itinerary.
		ASR6	I will choose to stay in an eco-friendly hotel.
		ASR7	I will try to choose low carbon travel activities.
		ASR8	I will choose to eat green, eco-friendly food.
	supervision and maintenance of rights	ASR9	When I encounter false claims about low-carbon products during my travels, I will complain to the Consumer Council or the Department of Commerce and Industry.
		ASR10	I will report to the environmental protection department if I discover any environmental damage to businesses or individuals during my trip.
		ASR11	I will report to the police if I find anyone illegally hunting rare animals during my trip.
	animal protection	ASR12	I never buy tourism products made from endangered wildlife.
		ASR13	I never buy tourism products made by companies that mutilate endangered wildlife.
		ASR14	I never eat precious wildlife.

Scale			Question
perceived value	emotional value	PV1	Low carbon tourism can give me a pleasant feeling.
		PV2	I want to experience the difference low carbon tourism can make.
		PV3	I want to see more new things through low carbon tourism.
		PV4	I am curious about low carbon tourism.
		PV5	Low carbon tourism brings me a sense of harmony with nature.
	functional value	PV6	Low carbon tourism is a lesser experience than general mass tourism.
		PV7	High prices for products and services related to low carbon tourism.
		PV8	Promoting low carbon tourism makes no sense to me.
	social value	PV9	Low carbon tourism makes me make a good impression on others.
		PV10	Low carbon tourism gives me a positive and healthy personal image.
		PV11	Low carbon tourism makes people think I'm socially responsible.
	ecological value	PV12	Low carbon tourism can reduce environmental pollution.
		PV13	Low carbon tourism helps to improve the ecological environment.
		PV14	Low carbon tourism makes me feel that I am contributing to the preservation of the ecological environment.
consumption attitude		AT1	I think it is wise to buy low carbon tourism products.
		AT2	I think buying low carbon tourism products is good for the environment.
		AT3	I am willing to pay a little more for low carbon tourism products.
the low-carbon consumption behavior intention		TLCB1	I would prefer to buy a low carbon tourism product rather than a normal tourism product.
		TLCB2	I will buy low carbon travel products again on my next trip.
		TLCB3	I would recommend low carbon tourism products to others.

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