

Article

Sustainability of Ski Tourism in China: An Integrated Model of Skiing Tourists' Willingness to Pay for Environmental Protection

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Abstract: This study aimed to explore ski tourists' willingness to pay for environmental protection for the sustainable development of a ski tourism destination as a valuable tourism market in China. The result of the structural model revealed that the integrative models of the Theory of Planned Behavior (TPB) and the Norm Activation Model (NAM) have the most significant explanatory power. The ski tourists' willingness to pay can be enhanced by volitional, nonvolitional and altruistic factors. Additionally, the moderating and mediating roles of perceived authenticity on the integrative model have also been confirmed. This study is the first to provide a conceptual framework merging the TPB and NAM in the domain of environmental protection behavior in the Chinese ski tourism field for sustainable tourism development.

Keywords: ski tourism; willingness to pay; perceived authenticity; theory of planned behavior; Norm Activation Model; sustainable tourism resource



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1. Introduction

As a global market worth hundreds of billions, ski tourism has become one of the most popular snow activities in winter. This activity has also been promoted by the Chinese government in recent years. This is partly because China will be hosting the Winter Olympics in Beijing in 2022, and the participation of 300 million Chinese athletes in winter sports, including skiing, has been planned by the Chinese government. Based on the feedback from the ski tourism market, the number of Chinese skiing participants had already reached 21.13 million in 2018, which amounts to an increase of 14.4% relative to 2017. Chinese ski tourists are part of a new emerging skiing market growing at a high speed, and thus provide an ideal research target to explore this special tourist group's perception of environmental protection and their intentions regarding this issue. Undoubtedly, the travel restraints introduced due to the emergence of COVID-19 have significantly affected Chinese ski tourism, especially as the pandemic spread in Southeastern China at the beginning of 2020, which is the peak ski season. Nevertheless, industrial output has helped to maintain an optimistic attitude regarding Chinese ski tourism after this crisis.

However, it seems that there is a lack of sufficient academic attention regarding this group, not only in what refers to their tourism experience, but also to the ways in which their attitude about the potential environmental risk of ski tourism is demonstrated. Therefore, this study chose Chinese skiing tourists as the empirical study group to discuss their understanding and behavioral intentions as regards the environmental protection of ski tourism. The natural environment, especially snow quality, represents a valuable tourism resource for a skiing travel destination [1]. Thus, if they are to meet sustainable development goals, ski tourism destinations cannot develop without considering the natural environment. Moreover, the most crucial issue is climate change, which will directly influence ski tourism as this is a highly climate-sensitive market [2], and this

issue has already attracted a large amount of attention with regard to both academic and industrial aspects. While previous studies only concentrated on climate change and its potential risk for ski tourism, the natural environment that ski tourism relies on is a physical asset that involves not just the climate and snow, but also other elements, such as rocks and forests. These are usually fragile and vulnerable, given their limited capacity. As such, environmental protection in the context of ski tourism must take these natural elements into consideration in addition to concern for climate change. Skiing tourists, as the main users of such a natural environment, are undoubtedly responsible for the protection of sustainable ski tourism.

This research, therefore, aims to offer a more comprehensive understanding of the environmental protection intentions of skiing tourists in a ski tourism destination context. In particular, a discussion of altruistic behavior requires the theoretical foundation of rational choice theories, such as the theory of Planned Behavior (TPB) [3], which employs social-psychological constructs, such as attitude, subjective norms and perceived behavioral control, in predicting environmental protection intentions/behaviors. On the other hand, such a protection decision can also be treated as a pro-social behavior, which often relies on the Norm Activation Model [4], utilizing the awareness of consequences, ascribed responsibility and personal norms in explicating pro-environmental behaviors. This is confirmed by researchers [5,6] who have asserted that a mixture of theories based on self-interest and pro-social motives can be efficient in predicting pro-environmental intentions/behaviors. Therefore, a combination of both the planned behavior framework with a self-interest basis and a norm activation framework with a pro-social basis in studying skiing tourists' environmental protection intentions was conducted. In this study, the concept of willingness to pay, which has been widely used in resource conservation and green tourism development [7–9], was adopted to represent skiing tourists' environmental protection intentions.

In addition, the sustainable development of tourism is also addressed by the United Nations Environment Programme and the World Tourism Organization [10], which indicated that tourists' needs should be taken into account (Mamula, Popovic-Pantic, Paunovic and Filipović, 2021). Given that ski tourism is one of the types of sports tourism considered to be of special interest [11], these tourists' experience of skiing could potentially affect their environmental protection intention. Meanwhile, the understanding of the effect of ski tourism in terms of authenticity offers significant insights and guidance to researchers for future investigations of skiing tourists' experiences. Therefore, this study also incorporates skiing tourists' perceived authenticity as a moderating and mediating variable in the integrated model. Consequently, the broad objective of this study is to test the capability of the integrative research model in predicting skiing tourists' willingness to pay for environmental protection, of conducting modeling comparisons with three proposed models (an integrative model of TPB and NAM; TPB; and NAM) and of testing the mediating and moderating effects of their perceived authenticity within this model.

2. Literature Review

2.1. *Ski Tourism and Its Participants*

2.1.1. Current Development of Ski Tourism in China

Ski tourism, as a sports tourism activity, is the combination of skiing and tourism [12]. With respect to the specific content of ski tourism, it consists not only of the participation in skiing but also in the engagement with ski resorts, destinations, instruments and events [12,13]. In this study, ski tourism was considered as tourists who take part in skiing and thereby obtain a feeling of adventure and challenge, and a sense of accomplishment, excitement and conquest related to the use of physical power, intelligence, ski technology, merit, the experience of undulation of the snow field and the cold climate [14].

With respect to the research of ski tourists, a gender difference regarding ski experience has been revealed in which adventure and speed are the main demonstration of male ski tourists, while the female group are more careful and practice speed control. Klenosky,

Gengler and Mulvey [15] pointed out that achievement, belonging, fun, excitement and security are the main factors which decided the ski tourists' experience. Meanwhile, in the context of Chinese ski tourists, it has been identified that the influence of ski tourism needs depends on demographic characteristics, such as age, income level and education background. Their needs in ski tourism can be divided into nonfamily/entertainment, sport/lifestyle and problem solving/knowledge [16] according to their ski frequency. The ski frequency, snow quality and security of instruments have also been identified as efficient pathways to improve ski tourists' loyalty [17,18]. For the consumption decision making of ski tourism, price and travel partners are the two main influence factors [19]. Besides this, the structural link between perceived value, satisfaction and behavioral intention has been identified in ski tourism as well [20].

Compared to the relatively developed ski tourism in Western countries, ski tourism in China is a new emerging tourism activity as the first ski field in China was built in 1996 in Northeastern China. However, this tourism activity has grown quickly in China along with the increase in personal income, cultural development and the national economy. There are 770 snow fields in China and there were 209 million participants of ski tourism up until 2019. However, there is still a research gap regarding Chinese ski tourists and their perception of ski experience. In addition, despite the rich research results of the ski tourism market, how ski tourists perceive such ski tourism experience from a social psychological aspect needs in-depth study. Therefore, this study adopted existentialism and self-determination theory as the theoretical foundation to explore their perception construction of the concept of authenticity.

2.1.2. Environmental Issues in Ski Tourism

Ski tourism is a climate-sensitive tourism activity. Therefore, the key issue of ski tourism from an environmental aspect is climate change and its effect on this type of tourism. Indeed, this topic has been discussed since the 1980s in countries that are famous for ski tourism, such as Canada and the US (Harrison, Kinnaird, McBoyle, Quinlan and Wall, 1986; McBoyle, Wall, Harrison and Quinlan, 1986), Australia (Galloway, 1988), Switzerland (Abegg, 1996; Abegg, König, and Maisch, 1994) and Germany (Paunović and Jovanović, 2017). According to the review by Steiger, Scott, Abegg, Pons and Aall (2019), the main research fields of climate change in the context of ski tourism cover sensitivity assessments, impact and vulnerability assessments, tourists' perception and behavioral response, integrated vulnerability assessments and the ski industry perception in recent decades of discussion. It is clear that both academic and industrial groups have already noticed the serious impact of climate change, in particular, the warming weather, on the sustainable development of ski tourism given the evaluation of ski tourism's sensitivity and vulnerability and economic impact (Scott, Hall et al., 2012; Scott and Steiger, 2013; Scott, Steiger, Rutty, Pons and Johnson, 2017; Steiger, 2012; Steiger and Abegg, 2013, 2015, 2017; Steiger and Stötter, 2013). Meanwhile, the perception and behaviors of tourists, as one of the important stakeholders of climate change and ski tourism sustainability, have also been taken into consideration.

However, current research on ski tourists mainly concentrates on understanding their perceptions and responses to the impacts of climate change for the purpose of anticipating potential changes in ski tourism demand at the destination and regional market scale (Scott, Steiger, Rutty, Pons and Johnson, 2020). Thus, ski tourists' adaption to climate change in pre-trip decisions or reactions to weather and snow conditions during a ski holiday or even the long-term becomes the major topic of their perception and behaviors (Dawson, Scott and McBoyle, 2009; Rutty et al., 2017; Steiger, 2011b; Rutty et al., 2015b; Töglhofer et al., 2011).

Based on the above review of the environment issues in current ski tourism, it is clear that although the environmental impact of ski tourism is not just climate change but includes wider elements and factors, there is lack of in-depth comprehensive research on environmental protection for sustainable development. On other hand, previous studies

of ski tourists' behavior ignored their response to the environmental effect of ski tourism; moreover, as resource users, it is their natural responsibility to be part of environmental protection. However, there are still research gaps in how they perceive the environmental protection of ski tourism, and furthermore, whether and how they are willing to support environmental protection.

2.2. Theoretical Framework Construction

2.2.1. Theory of Planned Behavior and Norm Activation Model

The theory of planned behavior (TPB) is a socio-psychology theory that describes an attitude-behavioral relationship [3]. The TPB helps to explain and predict human behavior in a specific context, especially with behavior over which individuals have incomplete volitional control [21]. Empirical research has shown that the TPB is currently one of the most parsimonious and powerful theories for predicting various social behaviors [22], which has been applied to explain various situations and behaviors in tourism and hospitality [23,24].

Compared to TPB, NAM highlights higher moral standards and obligations within certain human behavior where the individual is willing to challenge themselves physically or mentally to benefit others. The Norm Activation Model (NAM) tends to explain human behavior in terms of altruism and pro-social orientation. Within hospitality and tourism studies, the NAM has been applied to explain pro-social behaviors, which are relevant to environmental and sustainability issues, such as organic food choice behavior [23], green lodging choice behavior [25] and tourists' perceived responsibility among cultural heritage [26].

2.2.2. Integrative Theoretical Framework

While the two behavior theories describe individual behavior from different perspectives and have been successfully applied within the tourism context, they both have respective drawbacks. TPB may not provide a sufficient explanation of behavior beyond volitional and nonvolitional [27]. Additionally, the motivational, emotional and automatic processes that are vital in explaining human behavior with self-interest motives were neglected in the TPB [28]. Likewise, NAM may fail to reflect the likely influence of volitional and nonvolitional behavior highlighted within the TPB [25]. Moreover, previous research has shown that the NAM better explicates an individual's pro-environmental/pro-social decision-making process and behavior when integrating several variables that are essential in a particular context. Meanwhile, amending the linkages in the original NAM to relate to the incorporated essential variables in that context could also improve the NAM's explanatory power.

Therefore, to avoid the shortfalls of each theory and to obtain a comprehensive analysis of ski tourists' willingness to pay regarding environmental protection, this study conducted an integrative framework merging these two theories, as suggested by Liu, Sheng, Mundorf, Redding and Ye [29], given the greater predictive power of the integration of TPB and NAM [25,30]. Indeed, the feasibility of the possible integration of these two models in an empirical study has been confirmed by previous studies [23,31]. Therefore, integrating these two theories is deemed to be beneficial and may help to explain skiing tourists' altruistic behavior of willingness to pay for environmental protection. Hence, according to the studies discussed above, nine hypotheses are presented as follows:

Hypothesis 1. *The integrated TPB–NAM model is significantly superior to the original TPB in predicting the behavioral intentions of skiing tourists' and their willingness to pay for environmental protection.*

Hypothesis 2. *The integrated TPB–NAM model is significantly superior to the original NAM in predicting the behavioral intentions of skiing tourists' and their willingness to pay for environmental protection.*

Hypothesis 3. *Skiing tourists' attitudes (ATT) are positively related to their willingness to pay for environmental protection.*

Hypothesis 4. *Skiing tourists' subjective norms (SN) are positively related to their willingness to pay for environmental protection.*

Hypothesis 5. *Skiing tourists' perceived behavioral control (PBC) is positively related to their willingness to pay for environmental protection.*

Hypothesis 6. *Skiing tourists' willingness to pay for environmental protection is positively related to their willingness to pay behavior.*

Hypothesis 7. *Skiing tourists' awareness of the consequences of their actions is positively related to their personal norms (PNs).*

Hypothesis 8. *Skiing tourists' ascription of responsibility to their actions is positively related to their personal norms (PNs).*

Hypothesis 9. *Skiing tourists' personal norms (PNs) are positively related to their willingness to pay for environmental protection.*

2.3. Moderating and Mediating Roles of Perceived Authenticity

The conceptualization of perceived authenticity is built on the notion of existentialism, which is explained as activity-related authenticity [32] and is initially described as high level of engagement with the tourism activity and their bodily feelings during the activity [33] as the intrapersonal dimension of existential authenticity. It is demonstrated as sensory perception when taking part in sports [32,34]. However, existential authenticity emerged not only from bodily experience but also from the challenge of uncertainty in the sports journey and the self-discovery in the sports setting [35]. On the other hand, the importance of peers accompanying the individual was confirmed as interpersonal existential authenticity [32,36]. In sum, the authenticity in sports tourism is generated from active sporting experiences interacting with both tourists themselves and the surroundings, such as people and the place itself [33,36]. However, the identification and validation of the structural construction of authenticity in sports tourism need further comprehensive study.

Previous studies have identified that authenticity is an important factor in influencing behavioral intention [37,38]. In this study, perceived authenticity refers to the skiing tourists' existential state of being, which would help them to be more confident and comfortable when illustrating their willingness to pay for environmental protection in a ski tourism destination. Therefore, when perceived authenticity works as a moderator and a mediator, it is logical to postulate that this concept would enhance these tourists' altruistic willingness to pay intention, then posit a stronger effect on their willingness to pay behavior. Hence, we posit the following hypotheses:

Hypothesis 10. *Skiing tourists' perceived authenticity moderates the relationship between their willingness to pay intention and behavior.*

Hypothesis 11. *Skiing tourists' perceived authenticity mediates the relationship between their attitude and willingness to pay intention.*

Hypothesis 12. *Skiing tourists' perceived authenticity mediates the relationship between their subjective norms and willingness to pay intention.*

Hypothesis 13. *Skiing tourists' perceived authenticity mediates the relationship between their perceived behavioral control and willingness to pay intention.*

Hypothesis 14. *Skiing tourists' perceived authenticity mediates the relationship between their personal norms and willingness to pay intention.*

In keeping with the hypotheses proposed earlier, a conceptual model was developed for the study, which is presented in Figure 1.

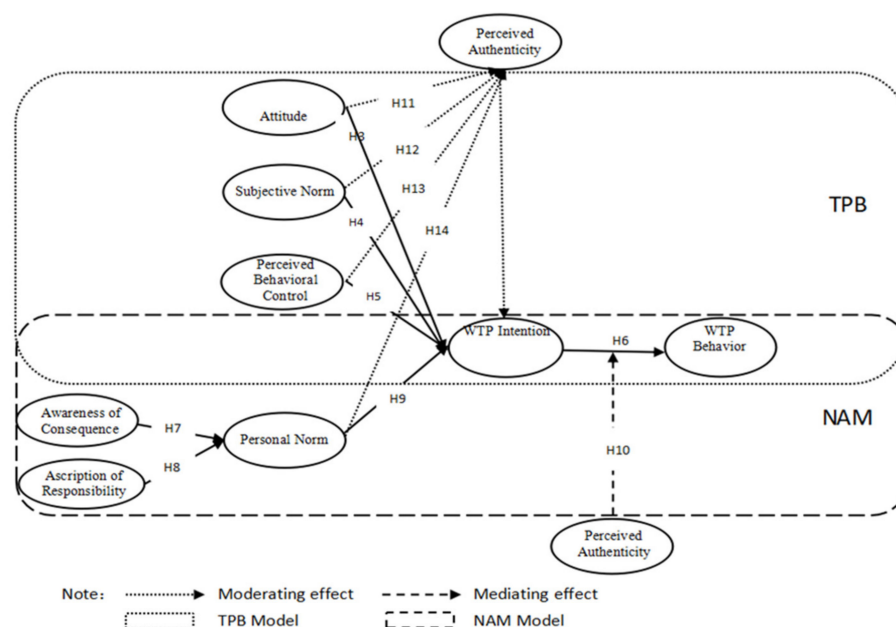


Figure 1. Proposed integrative theoretical model.

3. Methodology

3.1. Research Setting

Research Site

The research site of this study is the Changbai Mountain International Skiing Resort, which is the largest skiing resort in China. The resort is located at the foot of Tianchi Lake in the Changbai Mountains, Jilin Province. In 2015, this resort was listed as the first group of national-degree skiing resorts by the National Tourism Administration Bureau. The landscape and snow quality of this research site is the same as two other world-leading ski resorts in the Canadian Rockies and European Alps. This ski tracks at this resort have a total length of 30 km and are divided into 43 ski tracks, including 20 primary tracks, 14 medium-level tracks and 9 high-level tracks, which can accommodate 8000 skiers. During the snow season of 2015–2016, the resort was visited by more than 300,000 skiers.

Additionally, there are also many other winter sports at this resort, including skating, curling and ice hockey. Meanwhile, many large-scale competitions have been held at the resort, including cross-country skiing during the 6th Winter Games, Changbai Mountain station's national cross-country skiing champion series; Changbai Mountain summer skiing Festival; and bilateral and multilateral international skiing friendly competitions. However, according to the analysis of wind speed, snowfall and temperature required for skiing, the results in this resort showed that the snow quality, snowfall days and skiing climate suitability have reached nearly 99.7% since 1981. Therefore, this study chose this resort as the research site.

3.2. Instrument Design

The questionnaire used in this study incorporates nine measurement scales. Each scale was adopted from previously verified valid and reliably structured questionnaires. The scale of awareness of consequences (6 items), ascription of responsibility (3 items) and personal norms (4 items) was derived from previous studies using the NAM in tourism

and hospitality research [39–41]. The study's measurement scales of attitude (5 items), subjective norms (3 items), perceived behavioral control (4 items), willingness to pay (WTP) intention (3 items) and willingness to pay (WTP) behavior (3 items) employed items that were used in previous studies applying the TPB [23,42]. Minor modifications were made to alter the wording of the scale items for the appropriate context. The questionnaire of these models is listed in Appendix A.

The concept of perceived authenticity is composed of two value factors, which are interpersonal and intrapersonal aspects. In total, 4 items relating to intrapersonal values and 5 items to interpersonal values are adopted from the previous [33]. Consequently, the questionnaire contains a total of 40 items, which were assessed on a 7-point Likert-type scale ranging from 1 = strongly disagree to 7 = strongly agree. Additional demographic items were also included to obtain basic information such as gender, age, monthly income and occupation. The questionnaire was subsequently translated from English to Mandarin by following the back-translation process suggested by Su and Parham [43]. First, two bilingual researchers independently conducted the forward translation from English to Chinese. Second, the two versions of the translated Chinese questionnaires were revised by the same two researchers to correct possible translation errors. Finally, a bilingual doctoral student who majors in tourism management and English literature conducted the back translation from the Chinese version to English. This version was compared to the original questionnaire to check its accuracy and equivalence. Consequently, the scales were then pre-tested with 50 respondents who have ski tourism experience in the research site. Based on the pilot study, some items were slightly modified to enhance the clarity of the questions and to improve respondents' comprehension. As a result of this process, 40 items were included in the final questionnaire.

3.3. Data Collection

For the main survey initially, which was scheduled in Changbai Mountain International Ski Resort, due to the COVID-19 pandemic in the snow season of 2020 from January 2020, it was impossible to conduct an on-site questionnaire survey after the pilot test. Therefore, after consulting relevant experts, an online survey which targeted adult tourists who had skiing experience in Changbai Mountain Skiing International Resort was organized. According to the recommendation by [44,45] on the appropriate sample size, each item was expected to have at least 10 valid respondents. Therefore, this study obtained 822 usable questionnaires with 23 discarded incomplete questionnaires for the purpose of statistical bias.

3.4. Data Processing

The current study used SPSS 22.0, Amos 22.0 and PLS 2.0 to analyze the data. SPSS 22.0 was used for the descriptive analysis and exploratory factor analysis (EFA). Amos 22.0 in this study was applied for confirmatory factor analysis (CFA) to establish the concept of perceived authenticity. A confirmatory factor analysis was conducted to verify the validity and reliability of the data to ensure that perceived authenticity demonstrated qualified internal consistency [42]. Partial least squares–structural equation modelling (PLS-SEM) was used to examine the hypotheses. PLS-SEM is particularly advantageous, especially in the case of small samples, with several latent variables, and its use is recommended for its suitability for both predictive applications and theory building [46]. Additionally, the PLS product-indicator approach proposed by Chin, Marcolin and Newsted [47] was applied in this study to examine the moderating effects of perceived authenticity. PLS estimates moderating effects more accurately as it can account for the measurement error that attenuates the estimated relationships [48]. Additionally, it has been proven to be more accurate in interaction effect estimation and has been employed in tourism and hospitality-related industries [49]. To examine the mediating effect of perceived authenticity, this study followed the suggestion and steps proposed by Zhao, Lynch and Chen [50]. This approach

has been proposed as specifically suitable for PLS-SEM and successfully applied in the tourism study [51].

4. Results

4.1. Respondents' Demographic Profile

The profile of the respondents is presented in Table 1. Slightly more than half of the respondents were male (52.6%), while the remaining were female (47.4%). The majority of respondents were between 18 and 30 years of age, which shared more than 30% of the total samples. Respondents had a fairly high level of education—97.1% had college degrees or above. As for the monthly income of skiing tourists, 75.7% earn more than CNY 5000.

Table 1. Demographic profiles of respondents.

Item/Category	Percentage	Item/Category	Percentage
Gender		Monthly income (USD)	
Female	52.6	Below 300	24.3
Male	47.4	301–600	42.5
Age, years		601–900	18.6
18–30	34.3	901–1200	9.0
31–40	24.5	1200 above	5.6
41–50	23.1	Occupation	
51–60	14.2	Civil servant	18.5
61 or older	3.9	Senior manager	5.1
		Company employee	17.9
Education level		Private owner	9.6
High school or lower	8.3	Technical staff	16.9
College degree	46.8	Student	4.5
Bachelor	30.9	Teacher	14.4
Master and higher education	14.0	Medical staff	13.1

4.2. Confirmatory Factor Analysis of Perceived Authenticity

As the concept of perceived authenticity is fairly recent, this study conducted confirmatory factor analysis (CFA) to verify the factor structure of perceived authenticity. In the initial stages, all the items were included in the first-order CFA. Consequently, the model fit indices of the initial model of first-order CFA indicated a poor data fit and suggested the need for model modification. Therefore, this study followed up by deleting one item each time with large modification indices to undertake model modification [52]. Consequently, two items were eliminated, and the model fit was improved with the model fitting the data well [45]. Second-order CFA was then conducted to test the construction of perceived authenticity after the first-order CFA. The model fit of the second-order CFA showed similar results to the first-order CFA (see Table 2 for all CFA results). According to the results, the confirmatory factor analysis of the modified measurement model suggested a reasonably good fit [45]. Finally, seven items converged into the single concept of perceived authenticity. The seven items were partitioned into two component factors: interpersonal authenticity and intrapersonal authenticity.

Table 2. Results of model fit.

Model	X2/df	GFI	RMSEA	TLI	PGFI	NFI	CFI	RMR	SRMR	AGFI
First-order model 1	3.92	0.75	0.182	0.91	0.59	0.71	0.71	0.128	0.052	0.68
Second-order model	2.28	0.95	0.084	0.92	0.67	0.97	0.95	0.078	0.039	0.89

4.3. Measurement Model

The measurement model was firstly assessed through Cronbach's α , composite reliability, average variance extracted and discriminant validity to confirm the reliability,

validity and dimensionality of the constructs and all the scales in the integrated model [53]. After the assessment of the measurement model, the structural model was then estimated for the hypotheses by evaluating the structural model parameters. Analysis of the variables' reliability showed that the coefficients for each measurement scale were all greater than 0.7 and ranged from 0.704 to 0.955, indicating a good scale [54]. For the factor loading, some of the items (5, 6, 13) were deleted with outer loadings of less than 0.6. Results indicate that the outer loading for the remaining items was between 0.697 and 0.901. The composite reliability of all constructs was over 0.8. The evaluation of AVE for each measurement in this study was in the range of 0.669 to 0.832. The results of the PLS-SEM measurement model analysis for this study are shown in Table 3. For the discriminant validity, the square root of the average variance extracted (AVE) was compared with the correlation of latent constructs. The construct's AVE was expected to be greater than the variance shared between the construct and other constructs in the model [55].

Table 3. Constructs and measurement items.

Latent Variables (Cronbach's Alpha)	Indicators	Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)
Attitude (0.805)	Q9	0.816 ***	0.893	0.816
	Q10	0.901 ***		
	Q12	0.915 ***		
	Q11	0.917 ***		
Subjective norms (0.873)	Q14	0.819 ***	0.934	0.831
	Q20	0.808 ***		
	Q21	0.910 ***		
Perceived behavioral control (0.816)	Q22	0.912 ***	0.818	0.729
	Q23	0.963 ***		
	Q24	0.901 ***		
Personal norms (0.828)	Q15	0.925 ***	0.923	0.812
	Q16	0.919 ***		
	Q17	0.911 ***		
	Q18	0.927 ***		
Awareness of consequence (0.904)	Q1	0.892 ***	0.915	0.705
	Q2	0.914 ***		
	Q3	0.912 ***		
	Q4	0.937 ***		
Ascription of responsibility (0.892)	Q7	0.908 ***	0.928	0.732
	Q8	0.913 ***		
	Q9	0.957 ***		
Perceived authenticity (0.915)	Interpersonal	0.921 ***	0.936	0.654
	Intrapersonal	0.879 ***		
Interpersonal authenticity (0.925)	Q35	0.896 ***	0.924	0.798
	Q36	0.926 ***		
	Q37	0.914 ***		
Intrapersonal authenticity (0.812)	Q31	0.905 ***	0.912	0.842
	Q32	0.924 ***		
	Q33	0.913 ***		
	Q34	0.935 ***		
WTP intention (0.836)	Q25	0.906 ***	0.909	0.738
	Q26	0.889 ***		
	Q27	0.869 ***		
WTP behavior (0.820)	Q28	0.911 ***	0.876	0.825
	Q29	0.923 ***		
	Q30	0.897 ***		

*** $p < 0.001$.

The results of the discriminant validity are presented in Table 4. All the extracted roots of variance were greater than the correlations; therefore, the discriminant validity of the measurement model of this study was confirmed.

Table 4. Discriminant validity.

	AC	AR	ATT	WTP-B	PBC	WTP-I	PN	PA	SN
AC	0.894								
AR	0.542	0.826							
ATT	0.751	0.552	0.845						
WTP-B	0.623	0.534	0.579	0.878					
PBC	0.673	0.618	0.395	0.702	0.814				
WTP-I	0.596	0.534	0.528	0.646	0.563	0.829			
PN	0.780	0.625	0.620	0.609	0.474	0.635	0.917		
PA	0.678	0.529	0.633	0.626	0.632	0.782	0.751	0.841	
SN	0.696	0.592	0.585	0.613	0.591	0.522	0.692	0.684	0.916

Note: ATT—attitude; SN—subjective norm; PBC—perceived behavioral control; AC—awareness of consequence; AR—ascription of responsibility; PN—personal norm; WTP-I—willingness to pay intention; WTP-B—willingness to pay behavior; PA—perceived authenticity.

4.4. Structural Model Identification

4.4.1. Integrated Model

After confirming the measurement model, this study subsequently assessed the path estimates of the integrative model. A nonparametric bootstrapping procedure with 5000 re-samples was performed to obtain the path coefficients, standard errors and t-statistics [56]. The results (Figure 2) indicate that the awareness of consequence ($\beta = 0.519$; $p < 0.001$) and ascription responsibility ($\beta = 0.447$; $p < 0.001$) affected personal norms. Additionally, attitude ($\beta = 0.348$; $p < 0.01$), perceived behavioral control ($\beta = 0.419$; $p < 0.01$) and personal norms ($\beta = 0.328$; $p < 0.05$) have a significant effect on ski tourists' WTP intention ($\beta = 0.506$; $p < 0.001$), which in turn influences their WTP behavior. On the other hand, subjective norms ($\beta = 0.039$; $p = 0.421$) do not affect WTP intention. Moreover, in the integrative model, WTP intention is explained by attitude, perceived behavioral control and personal norms 49.5% ($R^2 = 0.495$) of variance, while WTP behavior is explained by the WTP's 43.2% of variance ($R^2 = 0.432$). Therefore, only hypothesis 4 is unacceptable.

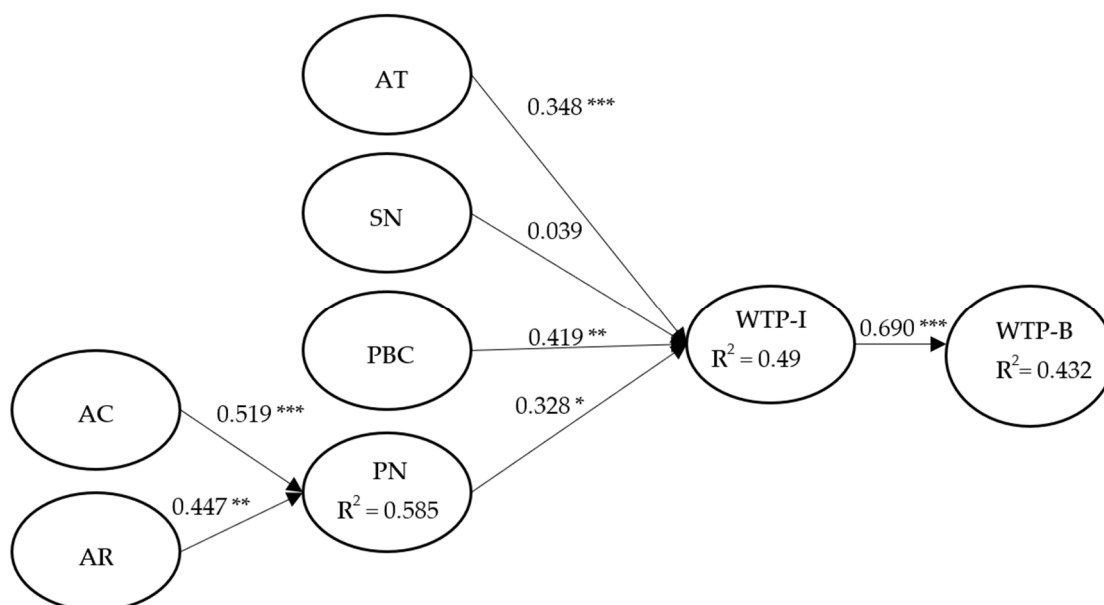


Figure 2. Structural results of integrative model. Note: *** $p < 0.001$; ** $p < 0.01$, * $p < 0.05$. ATT—attitude; SN—subjective norm; PBC—perceived behavioral control; AC—awareness of consequence; AR—ascription of responsibility; PN—personal norm; WTP-I—willingness to pay intention; WTP-B—willingness to pay behavior.

This study also assessed the effect size (f^2), as demonstrated in Table 5. According to [57], the effect size (f^2) of 0.02, 0.15 and 0.35 represent small, moderate and large effects,

respectively. Consequently, the effect sizes (f^2) of this study were in the range of 0.029 to 0.621, which indicates that each path has at least a small to large effect. Moreover, to confirm the predictive validity of paths in this study, Stone–Geisser’s Q^2 was applied to assess predictive relevance [58]. When the endogenous variable Q^2 value is greater than zero, its explanatory variables verify predictive relevance [56]. A blindfolding procedure was subsequently conducted to calculate the Q^2 value via Smart PLS [56]. Results showed that all the Q^2 values are greater than zero (0.295 to 0.485); thus, the proposed model has good predictive relevance for all of the endogenous variables. Moreover, SRMR is suggested as the appropriate model fit index for the PLS-SEM, which is expected to be less than 0.1 [59]. The SRMR for the models ranged from 0.083 to 0.097, which indicated a good model fit in this study.

4.4.2. TPB Model

To compare the predictive power on WTP intention from three different models, PLS-SEM was subsequently applied to assess the TPB structural model. A nonparametric bootstrapping procedure with 5000 resamples was performed to obtain the path coefficients, standard errors and t-statistics [56]. The results indicate that attitude ($\beta = 0.353$; $p < 0.001$) and perceived behavioral control ($\beta = 0.594$; $p < 0.001$) affected WTP intention ($\beta = 0.626$; $p < 0.001$), which in turn influenced WTP behavior. On the other hand, subjective norm ($\beta = 0.078$; $p = 0.387$) had no effect on WTP intention. Moreover, the TPB model explains 41.2% of the variance in WTP intention, whereas WTP intention explains 43.5% of the variance in WTP behavior ($R^2 = 0.435$).

4.4.3. NAM Model

For the NAM model, a nonparametric bootstrapping procedure with 5000 resamples was performed to obtain the path coefficients, standard errors and t-statistics [56]. The results indicate that the awareness of consequence ($\beta = 0.516$; $p < 0.001$) and ascription responsibility ($\beta = 0.372$; $p < 0.001$) affected personal norms. Additionally, personal norms ($\beta = 0.624$; $p < 0.001$) have a significant effect on WTP intention ($\beta = 0.618$; $p < 0.001$), which in turn influences WTP behavior. Moreover, personal norms explain 57.4% of variance in WTP intention, whereas WTP intention explains 41.3% of variance in WTP behavior. Model comparison results are presented in Table 5.

Table 5. Model comparison and hypothesis identification.

Models Comparison			
Hypotheses	percent of variance explained % (R-square)		Remark
Hypothesis 1	Integrative model 49.5% ($R^2 = 0.495$) > TPB model 43.2% ($R^2 = 0.432$)		support
Hypothesis 2	Integrative model 49.5% ($R^2 = 0.495$) > NAM model 43.5% ($R^2 = 0.435$)		support

4.5. Testing for the Moderating Effect of Perceived Authenticity

The PLS product-indicator approach proposed by Chin, Marcolin and Newsted [47] was applied in this study to examine the moderating effect of perceived authenticity. This study followed the procedure suggested by [47]; the moderators of this study were multiplied to create an interaction construct to predict WTP intention and behavior, and when the interaction construct path was significant, then the moderating effect was confirmed. Results show that the moderating effect of perceived authenticity on the relationship between WTP intention and WTP behavior was significant ($\beta = 0.169$, $p < 0.001$). This indicates that perceived authenticity moderates the relationship between WTP intention and WTP behavior. In other words, the relationship between WTP intention and WTP behavior is enhanced when skiing tourists possess higher perceived authenticity.

4.6. Testing for the Mediating Effect of Perceived Authenticity

A nonparametric bootstrapping with 5000 resamples and the associated confidence interval was performed to examine the indirect ($a \times b$) and direct (c') effect [60]. Results of the mediation effects of perceived authenticity in this study are shown in Table 6. The results confirmed that the perceived authenticity partially mediates the relationship between the independent variable of perceived behavioral control and personal norms and the dependent variable of WTP intention. Additionally, a full mediating role of perceived authenticity was found between attitude and subjective norm and WTP intention. Both of the results of the moderation and mediation effects of perceived authenticity are illustrated in Table 6.

Table 6. Structural estimates of the moderating and mediating effects of perceived authenticity.

Subjective Authenticity Moderating Effect						
Hypotheses	Beta	T value	f ²	Remark	SRMR	
Hypothesis 10	0.169	3.125 ***	0.074	support	0.080	
Subjective Authenticity Mediating Effect						
Hypotheses and paths	Specific indirect effects	Direct effect	Total effect	Type of mediation	Remark	SRMR
Hypothesis 11: ATT→PA→WTP-I	0.386 ***	0.198 N.S.	0.527 ***	Full mediation	Supported	0.078
Hypothesis 12: SN→PA→WTP-I	0.475 ***	0.055 N.S.	0.492 ***	Full mediation	Supported	0.089
Hypothesis 13: PBC→PA→WTP-I	0.392 ***	0.229 **	0.563 ***	Partial mediation	Supported	0.079
Hypothesis 14: PN→PA→WTP-I	0.472 ***	0.295 **	0.672 ***	Partial mediation	Supported	0.083

*** $p < 0.001$; ** $p < 0.01$.

5. Discussion and Conclusions

5.1. Discussion

This study was inspired by skiing tourists and stakeholders as an essential mediator in both environmental protection and sustainable tourism development [61]. We, therefore, sought to gain a better understanding of their WTP intention for environmental protection and behavior from three different theoretical models drawing on social psychology. The results provide the first empirical evidence that the integrated model of TPB and NAM provides the best explanation among these proposed models. This study echoes the findings of prior studies concluding that TPB, NAM and the integrative model of TPB and NAM are beneficial to explain human intention and behavior [62,63]. Such a result provided the first empirical evidence that skiing tourists' WTP intention can be explained by volitional and nonvolitional behavior and pro-social behavior.

A notable finding is that subjective norm has no direct effect over WTP intention, which implies that opinions from important others and pressure and belief from society do not cause the skiing tourists/stakeholders to engender WTP intention. Reviewing previous research, mixed and somewhat inconsistent results can be found in terms of the influence of subjective norm on behavioral intention in the tourism industry [23,63]. Additionally, this study also explored the mediating and moderating effects of perceived authenticity. For the mediating analysis, the findings indicated that perceived authenticity exerted a partial mediation effect on the relationships between PBC/PN to WTP intention, while the full mediation role was found in the relationships between attitude/subjective norm and WTP intention. The mediating analysis further provided an interesting insight. Although subjective norm has no direct effect on WTP intention, it indirectly transmits its influence through perceived authenticity. Regarding the moderating effect, results confirmed that perceived authenticity is an important moderator on the relationship between skiing tourists' WTP intention and behavior to environmental protection. It was also found that this effect is more salient for skiing tourists who possess higher perceived authenticity.

From a managerial perspective, the government or ski tourism management authorities should recognize the influential effect of attitude, perceived behavioral control and personal norms on skiing tourists' WTP intention of environmental protection. Likewise, allowing the skiing tourists to have more freedom and channels to support environmental protection is also important. Maintaining respectful communication and an open-minded attitude towards the way that these skiing tourists articulate environmental protection could lead to the development of ski tourism and further enhance sustainable tourism development.

5.2. Conclusions and Future Research Directions

This paper aimed to develop an integrated model of ski tourists' willingness to pay for environmental protection through the adoption of both NAM and TPB models. The proposed model incorporates the concept of perceived authenticity into ski tourism and assessed its role as a mediation factor to provide a more comprehensive investigation covering both the direct and indirect aspects of the casual links to ski tourists' willingness to pay for environmental protection. The results show that the proposed model has good explanatory power and confirms its robustness in predicting ski tourists' intentions to pay for environmental protection.

As with any research, care should be taken when generalizing the results of this study. First, the survey was conducted using web-based forms and employed a nonrandom convenience sample of the target respondents since the COVID-19 pandemic. The online survey method was appropriate for collecting data from participants with Internet experience and who were free of geographical constraints. However, generalization could be enhanced if future research is systematically sampled from an on-site survey after the pandemic. Second, in essence, all of the proposed causal relationships are supported, which is in accordance with previous studies of the two models in other research settings. While this study only chose one ski tourism destination as the research site, future study is expected to be conducted in more research sites, which represent different types of ski tourism contexts, such as mountain ski resorts and indoor ski destinations, to evaluate whether these structural links are supported or not.

Finally, the conclusions drawn from this study are based on cross-sectional data in a single ski season. Thus, it is only a snapshot of this integrated model. A stricter test of this argument, however, could be employed by using a longitudinal study in the future to evaluate this aspect, which could potentially investigate this research model in different time periods and make comparisons, thus providing more insight into the phenomenon of ski tourists' environmental protection behavior.

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Appendix A

Table A1. The questionnaire.

Subjective norm (SN)
Those important to me think I should go to ski tourism
Those important to me expect me to go to ski tourism
Those important to me will be delight if I take actions to go to ski tourism
Attitude (ATT)
Ski tourism in this park is foolish/wise
Ski tourism in this park is bad/good
Ski tourism is unenjoyable/enjoyable
Ski tourism in this park is unpleasant/pleasant
Ski tourism in this park is undesirable/desirable
Perceived behavioral control (PBC)
Ski tourism in this park is completely up to me.
It's easy for me to take actions to ski tourism in this park
I have resources, time, and opportunities to go ski tourism in this park I am confident that if I want, I can take actions to ski tourism in this park
Awareness of consequences (AC)
Ski tourism activities have negative impacts on natural environment
Ski tourism activities have negative impacts on wild animals and plants
Ski tourism activities lead to pollution
Ski tourism activities has negative environmental impacts on neighboring communities
Ascription of responsibility (AR)
Every visitor is jointly responsible for environmental deterioration in this park
Every visitor is partly responsible for environmental problems in this park
Every visitor must take responsibility for environmental problems in this park
Personal norm (PN)
I feel morally obligated to protect environment in this park
I feel personally obligated to protect environment in this park
I would feel guilty if I didn't do anything to protect environment in this park
According to my value, I should take actions to protect environment in this park

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