

A Study on the Perceptions and Attitudes of Local Residents in Harbin towards the Impact of Ice and Snow Tourism

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Abstract: The vigorous development of ice and snow tourism in Harbin has had a profound impact on the lives of local residents. This paper takes Harbin as an example to study the perception and attitude of local residents towards the impact of ice and snow tourism. By constructing a resident cognition-emotion-behavior model and designing a scale from three aspects: economy, social culture, and environment, 435 valid questionnaires were analyzed. The results show that ice and snow tourism has significantly promoted local economic development, increased employment, income, and service levels, but some residents feel the pressure of rising prices. In terms of social culture, the city's reputation and residents' cultural pride have been enhanced, but the pressure on the use of public facilities has emerged. In terms of the environment, urban construction and residents' environmental awareness have been strengthened, but traffic congestion and the destruction of ice and snow landscapes are prominent. Despite this, residents generally hold a positive attitude towards the development of ice and snow tourism, support the tourism industry, and are willing to provide assistance to tourists. Finally, the paper puts forward suggestions from the aspects of economic regulation, optimization of public facilities, environmental protection, and the development of all-season tourism to promote the sustainable development of ice and snow tourism in Harbin.

Keywords: Ice and Snow Tourism; Residents' Perception and Attitude; Sustainable Development; Cognition-emotion-behavior Model; Tourism Impact

1. Introduction

In recent years, Harbin has made remarkable achievements in the field of ice and snow tourism with its unique advantages in ice and

snow resources. Ice and snow tourism not only brings a large number of tourists to the city, but also changes the lives of local residents to a certain extent. However, the development of ice and snow tourism is like a double-edged sword, which has brought many positive impacts and inevitably had some negative impacts. As important participants and witnesses of the development of ice and snow tourism, local residents' perception and attitude towards the impact of ice and snow tourism are crucial in the sustainable development of Harbin's ice and snow tourism. The paper believes that there is a complex interaction between the cognition, emotion and behavior of local residents in the development of ice and snow tourism, and through in-depth study of the perception and attitude of local residents, it can better balance the pros and cons brought about by the development of ice and snow tourism, promote the harmonious coexistence of the tourism industry and the local community, further promote the development of Harbin ice and snow tourism in a more scientific, reasonable and sustainable direction, and realize the organic unity of economic, social and environmental benefits. Make ice and snow tourism truly a powerful driving force for Harbin's economic growth and social progress. "Erbin" has also become a cultural information symbol with wide popularity, high recognition, high community recognition, and strong monetization ability [1]. Harbin's popularity is out of the circle, and it can be seen that it is inseparable from the active participation and support of local residents. High-quality experiences can greatly meet the expectations and needs of tourists, resulting in profound psychological satisfaction and pleasant emotions [2]. Local residents are the direct creators of the ice and snow tourism scene, and they bring tourists a unique tourism experience with their hospitality and unique folk culture, which has become a vivid business card of Harbin's ice and snow tourism. Different scholars have studied tourism development from

different perspectives. By reviewing the relevant research on the perception of red culture authenticity, emotional arousal, travel desire, income expectation, and tourism involvement, Xu Chunxiao et al. constructed a theoretical model based on the Arousal Theory [3]. Li Chen and other scholars took the Yudaokou Forest and Grassland Scenic Area as an example to reveal the positive and negative perceptions and attitudes of destination residents towards the positive and negative impact of tourism from three aspects: economic, social, and environmental [4]. Xu Songjun and others constructed a research model that includes red cultural awe, red cultural identity, government trust, and tourism development support, and clarified the influence mechanism of red cultural awe on residents' cognition and behavior [5] (see Table 1 for details).

At present, most of the existing research is on

how to achieve sustainable development in national parks, rural tourism and cultural tourism, and less research is on tourist destinations such as Harbin, which are dominated by ice and snow tourism and have strong seasonality. In addition, the existing research rarely closely relates residents' perceptions and attitudes with the sustainable development of ice and snow tourism, and it is difficult to provide practical suggestions for the scientific planning and long-term development of Harbin's ice and snow tourism from the perspective of residents. In order to comply with the requirements of sustainable development, the sustainability research of new quality productivity in the ice and snow economy is paid attention to [6]. Therefore, this paper delves into the perception and attitude of local residents in Harbin on the impact of ice and snow tourism, and provides reference for future research.

Table 1. Summary of Related Studies

Related Research	Theoretical Framework	Variables
Xu Chunxiao et al.	Tourism participation ability - Tourism impact perception - Natural protection awareness	Perception of Red Culture Authenticity Emotional Arousal Travel Desire Income Expectation Tourism Involvement
Li Chen et al.	Conceptual model of tourism destination residents' tourism perception	Economic perception Political perception Social perception Resident satisfaction Economic perception
Xu Songjun et al.	Broaden-and-build theory of positive emotions	Red culture awe Red culture identity Government trust Tourism development support

2. Model Construction

2.1 Model Construction

With the changes in the economic, social, and cultural environment of tourist destinations, local residents' requirements and perceptions of life are also changing, and the impact of tourism development on community residents' subjective well-being is dynamically changing [7]. Adhere to innovation-driven development, promote the integrated development strategy of "ice and snow +" and "+ ice and snow" and other multi-formats, actively introduce emerging formats to create a unique ice and snow tourism product system, continuously promote the upgrading of the ice and snow tourism industry, and realize the high-quality development of ice

and snow tourism [8]. This study takes the spontaneous participation of local residents in the construction and service of ice and snow tourism due to Harbin's popularity as the research starting point. Behind this participation behavior lies the role of residents' cognition and emotion towards ice and snow tourism. The impact of tourism development on the subjective well-being of destination residents has different levels of complexity [9]. To deeply explore the relationship among residents' cognition, emotion, and behavior in the process of ice and snow tourism development, a resident cognition-emotion-behavior model was constructed (see Figure 1). In the dimension of economic impact perception, factors such as increased employment opportunities, income improvement, and rising prices are taken into

account; the dimension of social and cultural impact perception includes the progress of local residents' ideological concepts, the enhancement of cultural pride, and the impact on lifestyles; the dimension of environmental impact perception covers urban environmental improvement, increased garbage, and intensified resource consumption. Through the setting of these dimensions, the residents' perception of the impacts of ice and snow tourism can be comprehensively reflected. At the same time, residents' satisfaction with ice and snow tourism, such as friendly attitude towards tourists and development status, is taken as variables. Behavioral variables focus on residents' support for participating in ice and snow tourism and providing services to tourists. Next, a scale will be designed according to the constructed theoretical model to collect more accurate data and further analyze the specific functions and relationships among various variables. Tourism destination residents' perception depends on their degree of interaction with tourism activities and their subjective evaluation of tourism impacts. In the interaction with ice and snow tourism, local residents will form views and attitudes towards tourism activities based on their own experiences and perceptions. This interaction includes not only direct participation in tourism-related work but also indirect impacts from tourism activities in daily life.

Based on the above ideas, this study constructs three independent variables: economic perception, environmental perception, and social perception, as well as the mediating variable of resident satisfaction and the dependent variable of resident behavior. Economic perception sets relevant items from six perspectives: income, employment, investment, service, industry, and prices; social and cultural perception sets relevant items from four perspectives: visibility, ideological concepts, use of public facilities, and cultural pride; environmental perception sets items from four perspectives: urban construction, transportation, and ice and snow landscape facilities. Resident satisfaction is reflected from three aspects, and resident behavior is set from two perspectives: residents' attitude towards the tourism industry and their attitude towards tourists (see Figure 1).

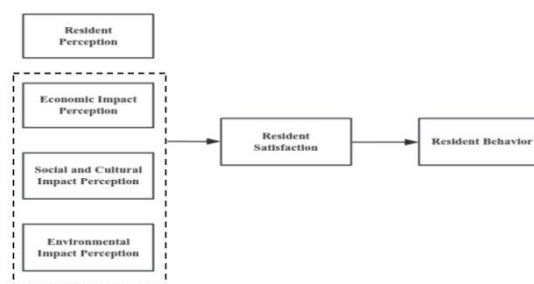


Figure 1. Resident Cognition - Emotion - Behavior Model

2.2 Scale Design

The questionnaire mainly includes four parts: demographic characteristics, residents' perceived impacts, residents' attitudes towards tourism development, and residents' behavior. The first part includes demographic items such as gender, age, and education level. The second and third parts refer to the scales designed by domestic scholars such as Li Chen and Xuan Guofu [4], and determine the items of economic impact perception, social and cultural impact perception, and environmental impact perception in combination with Harbin's actual situation. The fourth part refers to the scale designed by domestic scholars such as He Xiaorong [10] to design items of residents' behavior. The latter three parts all adopt a Likert scale, that is, 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), and 5 (strongly agree) are used to indicate the strength of the respondents' attitudes.

2.3 Data Collection

Local residents of Harbin were selected as the research objects, and questionnaires were distributed by snowball sampling. Online distribution was adopted, and residents were invited to fill in the questionnaires through online means such as electronic questionnaires, WeChat, and QQ. A total of 497 questionnaires were distributed from May 19 to 23, 2025. After excluding incomplete answers, questionnaires with the same option for all answers, and other questionnaires that did not meet the answering requirements, a total of 435 valid questionnaires were obtained, with an effective rate of 87.51%. The basic information of the respondents is shown in Table 2.

Table 2. Basic Information of Questionnaire Respondents

Demographic Characteristic Variable		Category	Frequency(%)
Gender	Male	167	38.4
	Female	268	61.6

Age	Under 18	22	5.1
	18-25	48	11.0
	26-35	93	21.4
	36-45	89	20.5
	46-55	124	28.5
	55 and above	59	13.6
Education Level	Junior high school and below	47	10.8
	Senior high school/technical secondary school	128	29.4
	College/undergraduate	229	52.7
	Postgraduate and above	31	7.1
Residency/Work Time in the Local Area	<1 year	13	3.0
	1-5 years	56	12.9
	6-10 years	45	10.3
	11-15 years	35	8.0
	>15 years	286	65.7
Current Occupation	Individual operator/self-employed	65	14.9
	Government/institution staff	81	18.6
	Enterprise employee	96	22.1
	Student	41	9.4
	Retired	61	14.0
	Others	91	21.0
Monthly Income	≤3000	92	21.1
	3001-5000	122	28.0
	5001-8000	127	29.2
	8001-15000	57	13.1
	≥15000	37	8.5
Correlation between Family Income and Tourism Industry	Relatively large	91	20.9
	Very large	165	37.9
	Not very large	63	14.5
	No correlation at all	38	8.7
	Moderate	78	17.9

3. Data Analysis

3.1 Sample Overview

The demographic characteristics of Harbin residents' perception of the economic impact of ice and snow tourism are shown in Table 2. The proportion of female respondents is larger, with 167 males (38.4%) and 268 females (61.6%); the vast majority of respondents have lived in the local area for a long time, with 286 people (65.7%) living for more than 15 years; the income level is relatively medium, with 29.2% of the surveyed residents having a personal monthly income between 5001 and 8000; the largest number of respondents are aged between 46 and 55, accounting for 28.5% of the total sample; the education level is relatively high, with 229 people (52.7%) having a college/undergraduate degree; most of the surveyed residents are enterprise employees, accounting for 22.1% of the total. 165 surveyed residents believe that the correlation between

family income and the tourism industry is very large, accounting for 37.9% of the respondents (Table 2).

3.2 Reliability Test

First, a reliability test was conducted on the items in the questionnaire. Existing studies often judge the internal consistency of the questionnaire by calculating the Cronbach's Alpha coefficient. Generally speaking, an α reliability coefficient between 0.7-0.8 indicates general reliability; 0.8-0.9 indicates good reliability; above 0.9 indicates excellent reliability. The overall Cronbach's α coefficient of the scale is 0.925, indicating excellent reliability.

3.3 Validity Test

Before conducting exploratory factor analysis on variables, it is necessary to test the correlation among variables. The commonly used methods are Bartlett's test of sphericity and KMO measure of sampling adequacy. The KMO value

of the scale calculated by SPSS 25.0 software is 0.930, and the significance probability value P of Bartlett's test of sphericity is 0.000.

The above results show that the sample coverage of this sampling survey is wide, which ensures the reliability of the survey results and lays a scientific empirical analysis foundation for the study of Harbin residents' perception and attitude towards the impacts of ice and snow tourism.

3.4 Data Analysis

3.4.1 Analysis of Harbin residents' perception of the economic impact of ice and snow tourism

The survey results of Harbin residents' perception of the economic impact of ice and snow tourism are shown in Table 3. The results show that among the economic impact survey items, the approval rates (sum of strongly agree, agree, and neutral) of the top 5 items are all greater than 75%; among them, the approval rates of "improved local service level", "attracted more investment", and "enriched the types of local operating industries" exceed 90%; the approval rate of the item "the development of ice and snow tourism has increased local prices and personal income from tourism" is 74.7%, while

the approval rate of residents on the issue of "the development of ice and snow tourism has increased local prices" is 52.1%, and the disapproval rate (sum of disagree and strongly disagree) is 47.9%, with 26.0% of residents choosing "disagree" on this issue. This indicates that for the economic impact of rising prices, some residents hold opposing attitudes, reflecting that while the development of ice and snow tourism has brought positive effects to residents at the economic level, it has also brought certain living cost pressures. Although ice and snow tourism has brought significant positive impacts in promoting economic development and improving service levels, problems such as rising prices have also caused troubles to some residents. In the follow-up development of ice and snow tourism, the government and relevant departments need to balance the relationship between tourism development and residents' living costs, take effective measures to stabilize prices, protect residents' quality of life, and realize the sustainable development of Harbin's ice and snow tourism.

Table 3. Survey Results of Harbin Residents' Perception of the Economic Impact of Ice and Snow Tourism

Survey Item	Mean	Standard Deviation	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I think ice and snow tourism has increased personal income	3.26	1.395	28.0	12.6	34.0	8.3	17.0
I think ice and snow tourism has increased residents' employment opportunities	3.75	1.277	38.9	21.4	24.1	6.9	8.7
I think the development of ice and snow tourism has improved the local service level	4.06	1.054	44.4	28.3	20.7	2.8	3.9
I think ice and snow tourism has attracted more investment	4.06	1.078	45.5	25.7	21.6	3.0	4.1
I think ice and snow tourism has enriched the types of local operating industries	4.04	1.072	44.4	26.4	21.6	3.9	3.7
I think the development of ice and snow tourism has increased local prices	2.57	1.196	10.3	6.2	35.6	26.0	21.8

3.4.2 Analysis of Harbin residents' perception of the social and cultural impact of ice and snow tourism

It can be seen from Table 4 that regarding the social and cultural impacts of tourism development, residents' approval rates are generally high. 97.3% of the surveyed residents believe that the ice and snow tourism industry has improved the local visibility; 95.2% of the surveyed residents believe that local residents' ideological concepts have made obvious progress under the influence of ice and snow

tourism; 96.8% of the surveyed residents believe that the development of ice and snow tourism has prompted local people to be proud of local culture; 71.5% of residents believe that the increase in tourists from ice and snow tourism has reduced local residents' opportunities to use public facilities (museums, bathhouses, etc.), but 28.5% hold opposing views. This is mainly because local public facilities have adopted some diversion measures during the tourist peak season or have strong carrying capacity. Although the number of tourists increases in

winter, it has not seriously affected local residents' use of public facilities. On the whole, ice and snow tourism has brought positive impetus to Harbin in terms of social culture, improving the city's visibility, promoting the progress of residents' ideological concepts and the enhancement of cultural pride. However, in terms of the use of public facilities, some residents still have concerns. The management and allocation of public facilities can be further

optimized to better balance the needs of tourists and residents and make the social and cultural impacts more positive.

In general, ice and snow tourism has brought many positive impacts to Harbin in terms of social culture, but there are also some minor problems and challenges that need to be paid attention to and solved in the development process to promote the healthy development of local social culture.

Table 4. Survey Results of Harbin Residents' Perception of the Social and Cultural Impact of Ice and Snow Tourism

Survey Item	Mean	Standard Deviation	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I think ice and snow tourism has improved the local visibility	4.47	0.837	63.2	25.3	8.7	0.9	1.8
I think local residents' ideological concepts have made obvious progress under the influence of ice and snow tourism	4.06	1.006	43.9	25.7	25.5	2.3	2.5
I think the development of ice and snow tourism has prompted local people to be proud of local culture	4.28	0.912	52.4	28.0	16.3	1.4	1.8
I think the increase in tourists from ice and snow tourism has reduced local residents' opportunities to use public facilities (museums, bathhouses, etc.)	3.23	1.296	22.1	19.3	30.1	16.3	12.2

3.4.3 Analysis of Harbin residents' perception of the environmental impact of ice and snow tourism

The survey data shows (Table 5) that residents have a preliminary understanding of the environmental impact of tourism development. 94.5% of residents believe that "ice and snow tourism has accelerated urban construction"; 91.7% of residents believe that "ice and snow tourism has enhanced local residents' environmental awareness"; 87.6% of the surveyed respondents believe that "ice and snow tourism has caused serious damage to local ice and snow landscapes". Due to the strong seasonality of Harbin's tourism, a large number of tourists flood in during the winter tourist peak season, which may lead to excessive development and damage to ice and snow landscapes. Therefore, 81.2% of residents also believe that "ice and snow tourism has improved traffic conditions", while 18.8% of the surveyed

residents believe that tourism development has not improved traffic conditions. This is mainly because the arrival of a large number of tourists during the tourist peak season has significantly increased traffic flow, exceeding the carrying capacity of existing transportation facilities, leading to frequent traffic congestion. Moreover, the traffic planning around some scenic spots may be unreasonable, and problems such as narrow roads and insufficient parking spaces have further exacerbated traffic pressure. At the same time, it is necessary to increase investment and construction in transportation infrastructure, optimize traffic layout, and improve traffic diversion capacity. In addition, through publicity and education and other ways, the environmental awareness of local residents and tourists can be further enhanced to jointly create a good tourism environment and realize the sustainable development of Harbin's ice and snow tourism in terms of environment and transportation.

Table 5. Survey Results of Harbin Residents' Perception of the Environmental Impact of Ice and Snow Tourism

Survey Item	Mean	Standard Deviation	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I think ice and snow tourism has accelerated urban construction	4.09	0.982	43.0	32.0	20.5	3.2	2.3
I think ice and snow tourism has improved	3.47	1.220	26.9	20.2	34.0	10.8	8.0

traffic conditions							
I think ice and snow tourism has enhanced local residents' environmental awareness	3.84	1.068	35.6	24.6	31.5	5.1	3.2
I think ice and snow tourism has caused serious damage to local ice and snow landscapes	3.65	1.129	27.4	28.5	31.7	6.2	6.2

3.4.4 Analysis of Harbin residents' attitude towards tourism development

The survey data shows (Table 6) that the vast majority of respondents are satisfied with the current situation of local tourism (94.2%), and 5.8% of respondents hold opposing views, indicating that most local residents are satisfied with the current development situation of local tourism. However, due to the strong seasonality of Harbin's tourism industry, the income of local residents may be greatly affected during the off-season. It is necessary to continuously pay attention to and take effective measures to solve this problem in the future to protect the long-term interests of local residents and the sustainable development of the tourism industry. In terms of behavior towards the development of local tourism, 97.7% of the respondents believe

that local residents hold a friendly attitude towards tourists, and 94.4% of the respondents believe that on the whole, the advantages of developing tourism outweigh the disadvantages. The above results show that although local residents are highly satisfied with the current situation of tourism development and generally believe that the advantages of developing tourism outweigh the disadvantages, the problem of unstable residents' income caused by tourism seasonality is prominent. To address this issue, the local government and tourism departments can consider adopting a diversified tourism development strategy to alleviate the impact of tourism seasonality on residents' income and promote the healthy and sustainable development of Harbin's tourism industry.

Table 6. Harbin Residents' Attitude towards Local Tourism Development

Survey Item	Mean	Standard Deviation	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I think on the whole, the advantages of developing tourism outweigh the disadvantages	4.14	0.960	45.5	29.7	21.1	1.1	2.5
I hold a friendly attitude towards tourists	4.32	0.836	52.6	30.1	14.9	1.6	0.7
I am satisfied with the current development situation of local tourism	3.97	0.996	37.9	28.5	27.8	3.7	2.1

3.4.5 Analysis of Harbin residents' behavior towards tourism development

The survey data shows (Table 7) that the vast majority of respondents believe that they should actively support the development of tourism (98.6%), and 1.4% of respondents hold opposing views, indicating that most local residents actively support the development of local tourism. In terms of behavior towards the development of local tourism, 98.4% of the respondents are willing to take the initiative to provide help to tourists, and 98.2% of the respondents welcome the arrival of tourists. The above results show that local residents not only

hold a positive and supportive attitude towards tourism development but also show great enthusiasm and friendliness in practical actions, which provides a good humanistic environment for the further development of Harbin's tourism industry. Most residents spontaneously participate in tourism services to improve the quality of tourism services, enhance tourists' travel experience, further improve the competitiveness and attractiveness of Harbin's ice and snow tourism, and achieve a win-win situation between the tourism industry and the interests of local residents.

Table 7. Harbin Residents' Behavior towards Local Tourism Development

Survey Item	Mean	Standard Deviation	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I welcome the arrival of tourists	4.36	0.824	54.7	29.4	14.0	0.9	0.9
I am willing to take the initiative to provide help to tourists	4.31	0.833	51.3	31.5	15.6	0.5	1.1

I think we should actively support the development of tourism	4.40	0.804	57.2	28.0	13.3	0.5	0.9
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4. Conclusions and Suggestions

4.1 Main Research Conclusions

(1) From the perspective of economic impact perception, Harbin's ice and snow tourism has a significant role in promoting local economic development. Residents generally recognize its positive impacts in increasing employment opportunities, improving personal income, raising local service levels, attracting investment, and enriching the types of operating industries. However, some residents have also felt the pressure of living costs brought by rising prices during the tourist peak season.

(2) In terms of social and cultural impact perception, ice and snow tourism has greatly improved Harbin's city visibility. On the one hand, ice and snow tourism has promoted the dissemination and exchange of local culture, allowing more people to understand Harbin's unique ice and snow culture, and residents' cultural pride has been enhanced; on the other hand, the arrival of a large number of tourists has also put great pressure on some local public facilities, such as traffic congestion and overcrowding of public facilities such as museums and bathhouses.

(3) In terms of environmental impact perception, residents believe that ice and snow tourism has accelerated urban construction and enhanced local residents' environmental awareness. But at the same time, the environmental pressure brought by a large number of tourists, such as traffic congestion and damage to ice and snow landscapes, reflects a certain contradiction between tourism development and environmental protection.

(4) Local residents of Harbin hold a positive and affirmative attitude towards the development of ice and snow tourism, are satisfied with the current situation of ice and snow tourism development in Harbin, and are willing to welcome tourists and provide help to them.

4.2 Countermeasures and Suggestions

The popularity of Harbin is inseparable from the active participation and enthusiastic support of local residents. Local residents are an important foundation and core force for the development of Harbin's ice and snow tourism, and they play an irreplaceable role in tourism services, cultural

inheritance, and environmental protection. To further promote the sustainable development of Harbin's ice and snow tourism and give full play to the positive role of residents, targeted countermeasures and suggestions are put forward from the following aspects:

4.2.1 Economic level

To alleviate the living cost pressure on residents caused by rising prices, the government and relevant departments should strengthen the supervision of market prices during the tourist peak season, establish a price early warning mechanism, form normalized management and control, crack down on price gouging, ensure the price stability of residents' daily necessities and services, and reduce the living cost pressure on residents. At the same time, it is necessary to further explore employment opportunities in the ice and snow tourism industry chain, strengthen vocational skills training for residents, and improve their employability. In addition, encourage residents to develop diversified businesses related to ice and snow tourism, such as characteristic catering and handicraft production, to increase income sources and reduce dependence on a single tourism income.

4.2.2 Social and cultural level

To further strengthen the positive social and cultural impacts of ice and snow tourism and reduce conflicts in the use of public facilities, the government and relevant departments can increase investment and construction in public facilities, scientifically and rationally plan and allocate public facility resources according to different needs in the tourist peak and off-seasons, and establish a scientific management mechanism. For example, implement a tourist diversion and staggered use system, or add temporary facilities during the tourist peak season to balance the needs of tourists and residents. In addition, residents can be organized to participate in the management and maintenance of public facilities to improve their awareness of caring for public facilities and jointly create a good social and cultural environment, so that the development of ice and snow tourism at the social and cultural level is more harmonious, stable, and sustainable. Taking the opportunity of the development of ice and snow tourism, further explore and promote Harbin's unique ice and snow culture, and strengthen the protection and inheritance of

cultural heritage. Cultural activities and cultural experience projects can be held to allow tourists to deeply understand local culture, while enhancing residents' cultural confidence and pride.

4.2.3 Environmental level

To effectively resolve the contradiction between tourism development and environmental protection, the government and relevant departments should strengthen the planning and supervision of tourism development, strengthen the supervision of the environment in and around tourist attractions, and increase the punishment for environmental damage. At the same time, encourage and guide tourism enterprises and tourists to establish environmental awareness and promote the concept of green tourism, such as advocating garbage classification and reducing resource waste. In addition, to address the problem of traffic congestion during the tourist peak season, the government should increase investment in transportation infrastructure, optimize traffic layout, and increase parking space supply. At the same time, strengthen traffic guidance and management, and promote public transportation and green travel methods, such as opening tourist special lines and encouraging public transportation, to alleviate traffic pressure. In terms of ice and snow landscape protection, a scientific and reasonable development plan should be formulated. The original style of ice and snow landscapes can be protected by setting tourist routes and limiting the number of tourists entering the scenic area. At the same time, strengthen the monitoring and maintenance of ice and snow landscapes, and timely repair damaged landscapes to ensure the sustainability of ice and snow landscapes. In addition, publicity and education activities on ice and snow landscape protection can be carried out to improve the awareness and attention of tourists and local residents to ice and snow landscape protection, form a good atmosphere of joint participation in protection by the whole society, realize the sustainable development of Harbin's ice and snow tourism in terms of the environment, and achieve the harmonious coexistence of tourism and the environment.

4.2.4 Tourism development strategy level

To address the problem of unstable residents' income caused by the strong seasonality of tourism, efforts can be made to develop four-season tourism projects. For example,

develop characteristic tourism activities such as forest health tourism, water sports, and mountain cycling in the non-ice and snow seasons to enrich the types of tourism products, attract tourists in different seasons, balance the annual tourist flow, and reduce the impact of the tourism off-season on residents' income. At the same time, strengthen tourism brand building and enhance the international influence of Harbin's ice and snow tourism. Use modern marketing methods, such as social media and tourism exhibitions, to increase the publicity and promotion of Harbin's ice and snow tourism, highlighting the advantages of Harbin's unique ice and snow culture and tourism resources. It is also possible to cooperate with internationally renowned tourism brands to hold internationally influential ice and snow tourism activities and attract more international tourists. Finally, establish a tourism feedback mechanism to timely understand the needs and opinions of tourists and residents. Collect feedback information from tourists and residents through questionnaires, online evaluations, complaint hotlines, etc., and timely improve and optimize the problems to enhance tourists' loyalty and revisit rate and realize the long-term stable development of the tourism industry.

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