

Review and Prospect of China's Ice-Snow Tourism Research in Recent 20 Years

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ABSTRACT. *The development of ice-snow tourism has a long history. With the experience tourism products and sports leisure tourism products being favored by tourists, many domestic scholars have paid attention to and discussed ice-snow tourism. In the face of the rapid development of ice-snow tourism, it is necessary and reference to sort out the context of China's ice-snow tourism research and look forward to future research trends. This paper uses the literature combing method to analyze and sort out the research content of domestic scholars on China's ice-snow tourism in the past 20 years, and proposes possible future research directions. In the future, research on ice-snow tourism can be further studied in terms of environmental protection, the construction of the entire ice-snow industry chain, the differentiated development of ice-snow tourism products, and the happiness of ice-snow consumers.*

KEYWORDS: *Ice-snow tourism; Review; Research content; Research prospect*

1. Introduction

Ice-Snow tourism is based on the tourism resources of ice-snow climate as the main tourist attraction, and a collective term for all forms of ice-snow attraction experience activities [1]. China is rich in ice-snow tourism resources and has a long history of ice-snow activities. Among them, the three northeast provinces, the northwestern region, the Central Plains, and parts of the southwest have very good ice-snow resources. These snow and snow resources have been gradually developed, and the snow and snow tourism market has also expanded year by year and gradually formed. It has various snow sports and snow culture. At the same time, national policies encourage and actively promote the development of the ice-snow industry. In 2016, the State Council issued the National Fitness Plan. In the same year, the General Administration of Sport and the Development and Reform Commission released the Popular Winter Sports Popularization Plan, the Ice-snow Sports Development Plan, and the National Ice-snow Venue Facilities Construction Plan, which brought new enlightenment and development orientation to provinces and regions with advantageous ice and snow resources to develop ice and snow tourism [1]. With people's love of ice-snow sports, ice-snow tourism will maintain a sustained development trend. According to the statistics of the "China's Ice-snow

Industry Development Research Report” in 2018, the number of ice rinks in China has reached 334, the number of ski resorts has reached 738, and the number of skiers during the 2017-2018 cross-snow season reached 19.3 million[2]. The 2022 Winter Olympics will bring important opportunities for China's development of ice-snow tourism and snow sports. It is expected that China's ice-snow industry will develop rapidly in the next decade. After the Winter Olympics, China is expected to become the world's largest ski sports market. The scale of ice-snow tourism industry production will exceed 1 trillion yuan[1].

The demand for ice-snow tourism in China is strong, and the ice-snow consumption market continues to heat up. However, scholars' research on ice-snow tourism lags far behind the development reality. The research content is relatively single and the research level is not deep. This article analyzes and summarizes the literature on ice-snow tourism in China collected by CNKI, and aims to summarize and analyze the research content of ice-snow tourism, and propose possible future research directions.

2. Research Status

2.1 Data Sources and Number of Documents

Cross-database search of “Journals, PhD, Masters, Domestic Conferences, International Conferences, and Academic Series” with the theme of “Ice-Snow Tourism” and “Winter Tourism” and keywords of “Ski Tourism”. From January 1st2000 to December 31st, 2019, a total of 2,079 research papers on Ice-Snow tourism were found. Among them, Yang Shuren and other scholars (2000) first published “Thoughts and Countermeasures for Developing Winter Mass Sports and Developing Winter Sports Tourism Industry” during the search period, and pointed out that winter sports is one of the best sports programs for residents' fitness and sports consumption in the north It is proposed that the sports tourism industry is a new growth point for China's economic development. During the research period, there were 265 master's theses, 15 doctoral dissertations, and 174 core journal articles. Generally speaking, although the number of papers published on ice-snow tourism in China is large, the number of high-quality papers is small. From the time of publication, the number of ice-snow tourism publications before 2007 was relatively small, and since 2008, the number of documents has increased. See figure 1.

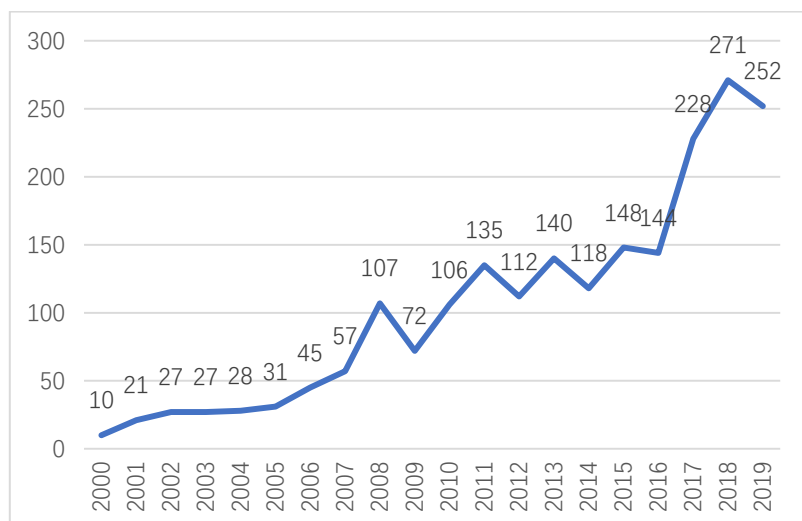


Figure.1 Research Papers on Ice-Snow Tourism Published in Domestic Academic Journals from 2000 to 2019

2.2 Distribution of Research Institutions

According to the search statistics of China Knowledge Network (CNKI), 40 research institutions that published ice-snow tourism papers from 2000 to 2019 were found, and 17 research institutions that published more than 15 documents during the research period. See Table 1. The distribution of China's research institutions for ice-snow tourism has obvious regional characteristics, of which 31 research institutions are located in the three provinces of Northeast China.

Table 1 Number of Major Research Institutions and Literature on Ice-Snow Tourism in China from 2000 to 2019

Research institute	Literature quantity (article)	Research institute	Literature quantity (article)
Harbin University of Commerce	91	Jilin University	35
Harbin Normal University	78	Suihua University	28
Heilongjiang University	75	Northeast Forestry University	25
Harbin Institute of physical Education	64	Heilongjiang Institute of Technology	24
Qiqihar University	47	Mudanjiang Normal University	24
Harbin Institute of Technology	42	Northeast Agricultural University	22
Jilin Sport University	40	Liaoning Normal University	17
Northeast Normal University	39	Harbin University of Science and	16

		Technology	
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2.3 Research Topic Distribution

According to the results of statistical analysis, there were a total of 32 research topics in China's ice-snow tourism published papers during the research period, of which high-frequency topics included ice-snow tourism, ski resorts, winter tourism, ski tourism, etc. At the same time, Heilongjiang Province, Harbin, Jilin Province have also become high-frequency keywords with obvious regional characteristics. According to the search results of core journals, it was found that the subject terms of ski tourism, ice-snow tourism, ski resorts, tourism industry, and ice-snow tourism resources are at the forefront. The development of ice-snow tourism in Northeast China has been widely concerned by scholars. See figure 2.

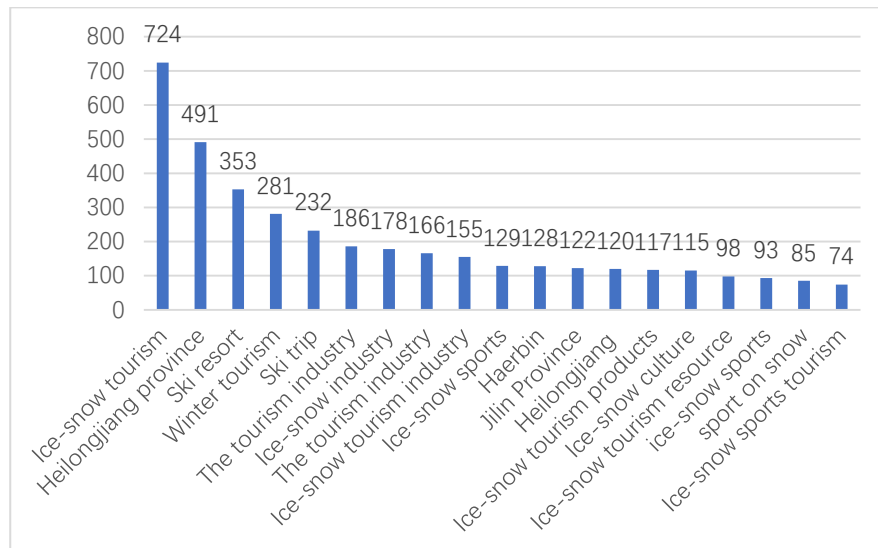


Figure.2 Some High-Frequency Keywords Appeared in the Research Literature on Ice-Snow Tourism in China from 2000 to 2019

3. Research Content

According to the literature search results, the research contents, main research methods and characteristics of ice-snow tourism during the research period were analyzed and sorted out, as shown in table 2. It can be seen that in the past 20 years, the research on ice-snow tourism in China mainly includes the development of ice-snow tourism resources, the development competitiveness of ice-snow tourism, the development of ice-snow sports and leisure tourism, the development of

ice-snow industry and the consumer behavior of ice-snow tourism.

3.1 Development of Ice-Snow Tourism Resources

The earliest scholars studied ice-snow tourism resources in Inner Mongolia [4], Jilin Province [5], Beijing Mountain Area [6], Heilongjiang Province [7] and other places. The research content is mainly analyzed from the aspects of the location, composition, impact on the ecological environment, and resource characteristics of ice and snow resources. Northeast China's unique location advantage has created a wealth of ice-snow tourism resources and a long history of ice-snow development. It has formed a unique ice-snow tourism culture and provides an excellent foundation for the development of ice-snow tourism and the organization of ice-snow events. Du Yuan (2013) conducted an empirical study on ice-snow tourism earlier. Through the survey of tourists' experience of ice-snow tourism resources, the consumer source market and behavior characteristics were analyzed. The development of tourism resources provides a theoretical basis [8]. In recent years, research on the development of ice-snow resources has mainly focused on the aspects of resource integration, optimization, in-depth development, and value evaluation [9,10,11].

3.2 Competitiveness of Ice-Snow Tourism Development

The research on the competitiveness of ice-snow tourism mainly uses qualitative research [12] and the application of the Porter Diamond Competitiveness Evaluation Model [13]. From the perspective of ice and snow resources, tourism products, tourism facilities, consumer demand, tourism services, ice and snow marketing, operation and management, external environment, policy environment and other dimensions, this paper makes an analysis and evaluation. The research scope is mainly concentrated in Heilongjiang Province, Jilin Province and Hebei Province. According to the research and analysis results, it is found that there is still a lot of room for improvement in the equipment and facilities, service quality, and spatial layout of China's ice-snow tourism. A complete ice snow tourism system has not yet been formed, and comprehensive service facilities for ice snow tourism need to be further improved, Long-term development planning should be carried out for ice-snow tourism in various places. There is a shortage of professional talents. The development of domestic ice-snow tourism is homogeneous, and the competitiveness of foreign ice-snow tourism is strong. Scholars found weak development links and made targeted development suggestions by analyzing the competitiveness of developing ice-snow tourism in various places.

3.3 Ice-Snow Sports Leisure Tourism

Sports tourism is a tourism mode produced by the cross-integration of sports and tourism, and has developed into a new bright spot in modern tourism. With the improvement of people's living standards and the increase of leisure time, people are more and more pursuing a healthier lifestyle. Ice-snow sports, as an important way

for northern people's winter fitness and entertainment, have always been concerned by scholars. The research mainly analyzes the development of ice-snow sports [14], the ice-snow sports leisure industry and leisure culture [15], the problems and solutions in the development of ice-snow sports and ice-snow leisure [16], including the establishment of northeast ice-snow sports tourism management Alliance [17], protecting the ecological environment [18], implementing a multi-dimensional marketing strategy [19], building an industrialized business model [20], and the role of ice-snow sports and leisure tourism on national economic and social development [21]. With the advent of the mass leisure era, the ecological, cultural, and social benefits of sports ice-snow tourism should be coordinated and developed. Attention should be paid to the management of ice-snow sports venues, the cultivation and storage of professional talents, the creation of a culture of ice-snow sports, and the concept of leisure[22].

3.4 Ice-Snow Industry

The ice-snow industry is a tourism industry based on ice-snow resources. The core is ice-snow tourism projects and various ice-snow resources as the driving force, in order to stimulate the common development of multiple industries such as retail, catering and entertainment, manufacturing, and transportation. Chinese scholars' research on the ice-snow tourism industry is mainly concentrated in the three major fields of ice-snow tourism industry, ice-snow culture industry and ice-snow sports industry [23]. The early related research lacked a certain diversity in content, mainly based on the development model and development countermeasures of ice-snow tourism resources in the Northeast, and the research methods were mainly qualitative analysis [24]. As the economy enters the new normal and the successful bid for the Winter Olympics, scholars have also made new emphasis on the research of the ice-snow tourism industry, including research on the relationship between the innovation and development of the ice-snow industry and economic growth. [25] Analysis [26], the relationship between the "supply side" and the development of innovative ice-snow industries [27], the construction and development of ice-snow cultural industries [28], and the development of ice-snow sports events and industrial structures [29]. According to literature analysis, the current research focus lies on the innovative development of the ice-snow industry and the sustainable development of the ice-snow industry.

3.5 Ice-Snow Consumer Behavior

The research on ice-snow tourism consumer behavior started relatively late in China, but most of the research is based on empirical analysis. The hypothesis model is applied, and the influence relationship in the hypothesis model is analyzed through SPSS statistical software or structural equation, so as to study the behavior characteristics of ice-snow tourism consumer. Zhang Zhimin (2012) empirically analyzed the influencing factors of consumer loyalty from the perspective of experiential marketing [30]. Li Man, Chen Jing, and Zhou Jing (2013) used

Jingyuetan in Changchun as the research site to describe the demographic characteristics of ice-snow tourists, empirically analyzed the consistency of tourists' motivations and activity preferences, and satisfaction Degree and willingness to revisit [31]. Xiong Songsong (2013) introduced a consumer-perceived value by establishing a value-behavior model, and empirically analyzed the path relationship between perceived quality, brand equity, experience, perceived risk, perceived cost, and perceived value and purchase willingness of customers. The degree of influence of factors on purchase intention of ice-snow tourism [32]. Sun Guangrong (2016) studied the influencing factors of mass skiing in Shandong Province by questionnaire survey, mathematical statistical analysis, and AHP analytic hierarchy process [33]. Ruilin Zhang and Ling Ling (2017) used social network analysis (SNA) to analyze and study the multiple relationships between consumers and the experience of snow sports tourism [34]. Lu Wang (2017) subdivided service quality into service hardware quality and service software quality, divided the consumer sentiment of ice-snow tourists into positive and negative sentiment before and after consumption, analyzed the influence relationship between the four dimensions, and applied structural equations Perform data analysis to make recommendations for improving consumer satisfaction [35]. Wang Hengli and Zhou Wenjing (2018) used regression analysis to study the relationship between consumption motivation, cognition and consumption behavior of ice-snow sports consumers [36]. Wang Hengli (2019) further analyzed the impact relationship between consumer consumption expectations and service quality through a combination of quantitative and qualitative research [37]. Zhu Xiaoke, Yang Xuelei, Xue Yashuo, and Wang Yanqi (2018) used fuzzy comprehensive evaluation method and IPA analysis method to study the satisfaction of ice-snow tourists. Based on the results of this study, the advantages, maintenance, and opportunity areas of ice-snow tourism in Harbin were analyzed. And improvement area [38].

There are not many studies on ice-snow consumer behavior, but the research scope is no longer limited to Northeast China. A comprehensive empirical study on the factors affecting consumer behavior has been conducted. The research results have high scientific value.

Table 2 Overview of Chinese Literature on Ice-Snow Tourism from 2000 to 2019

Time	literature quantity	Main research contents	Main research methods	The characteristics
2000-2007	246	Snow and Snow Tourism Resources; Snow and Snow Tourism Market Development; Snow and Snow Tourism Culture; Snow and Snow Tourism Industry	Qualitative research; descriptive analysis	mainly focused on research fields such as the development of ice and snow tourism resources, the development of ice and snow sports tourism, and the enhancement of competitiveness, and began to pay attention to the image of ice and snow tourism and the

				construction of ice and snow tourism brands.
2008-2011	420	Opportunities for the development of ice and snow events; competitiveness of ice and snow tourism; ski tourism; tourism market; ice and snow economy; ice and snow festivals; ice and snow leisure; ice and snow tourism brands; marketing	Fuzzy evaluation method; gray system; Porter diamond model; IPA model; SWOT	Started empirical research, paid attention to the relationship between climate and winter ice and snow tourism, and the training of ice and snow talents. Ice and snow sports and recreation and hot spring tourism began to attract scholars' attention.
2012-2015	518	Ice and snow culture, industry clusters, development influencing factors, demand prediction, image positioning, ice and snow sports and leisure, mass ice and snow sports culture, characteristic product development, satisfaction, cultural and tourism integration, ice and snow economy, scenic area safety, ski resorts, low-carbon concepts, competition Force, marketing, environmental protection.	IPA, Grey Correlation, SPSS, Web Search Index, Amperometric Analysis, Delphi Method, Analytic Hierarchy Process, Cointegration Analysis, SWOT	Empirical research is valued, and various empirical research methods are applied. The safety of winter tourism has attracted attention. Consumers' perception of tourism has begun to focus on consumer behavior research. The relationship between environmental protection and the development of ice and snow tourism has drawn scholars' attention and research.
2016-2019	895	Low carbon concept, ice and snow tourism products, characteristic towns, ice leisure tourism culture, Internet +, Belt and Road background, global tourism, ice and snow leisure, satisfaction, ice and snow tourism industry, big data; influencing factors, competitiveness, cooperative development, Predicament, motivation, behavioral intention, prediction, snow and ice travel souvenirs, economic impact, ice and snow +, motivation mechanism, consumer behavior, marketing, leisure sports (leisure), Internet public opinion, economic development	SPSS, diamond model, knowledge map analysis, research model, structural equation; FAHP, diamond model, grounded theory, SWOT, composition method, Arc GIS	Concerns about the "Belt and Road", "global tourism", and "Internet +" have begun to increase, and continuous attention has been paid to consumer behavior and consumer satisfaction. In the context of the "Belt and Road" initiative, China-foreign cooperation in the development of ice and snow tourism has been proposed. In terms of developing characteristic ice and snow tourism and ice and snow economy, the development of characteristic ice and snow towns and ice and snow tourism products has been valued. Consumer satisfaction, consumption

				motivation, and consumption behavior continue to receive research attention.
Total	2079	-	-	-

4. Comments and Prospects

This paper summarizes the research on ice-snow tourism in China from 2000 to 2019 using HowNet's visual econometric analysis and literature combing method research. A total of 2079 articles have been obtained. According to a comprehensive analysis, the main research areas of China's ice-snow tourism are five areas: ice-snow tourism resource development, ice-snow tourism development competitiveness, ice-snow sports leisure tourism development, ice-snow tourism industry development, and ice-snow tourism consumer behavior. From the perspective of research methods, early research focused on qualitative research. With the deepening of research injection, research methods focused on empirical analysis, which further enhanced the scientificity and credibility of research results. Generally speaking, there are still some problems in China's ice-snow tourism research: (1) the early research content is macroscopic, and in recent years, the research content has gradually tended to be microscopic; (2) the early research methods are mainly qualitative research, some research content is similar, lack of innovation. In recent years, attention has been paid to quantitative research, and the combination of qualitative and quantitative research has made the research methods more scientific and advanced; (3) Many early research contents lack theoretical support and lack of theoretical depth research. In recent years, research trends have begun to focus on the mining and application of various supporting theories; (4) The research field mainly focuses on the integration of tourism and economics, consumer behavior, marketing, sports, and other disciplines. In the future, more disciplines should be merged to reflect the interdisciplinary nature of tourism and be subdivided. various research areas [23]. According to the statistics in Figure 1, it can be seen that from 2016, the number of Chinese literature on ice-snow tourism has suddenly increased. The reason for the analysis may be the impact of national policy guidance. Overall, the overall quality of the research literature on ice-snow tourism in China is not high. Based on existing literature and research results of foreign scholars, possible future research directions are proposed.

4.1 Coordinated Development of Environmental Protection and Ice-Snow Tourism

Ice-snow tourism has a very strong seasonality, in which the ski industry not only affects the local ecological environment, but also itself is extremely vulnerable to the impact of climate and environmental changes [23]. In recent years, global warming will bring certain challenges to the development of ice-snow tourism. Foreign countries have conducted in-depth and extensive research on this issue. Chinese scholars have just focused on this area of research. Subject to the constraints of its own resources and the sustainable development of the ecological

environment, it is of great practical significance to study how ice-snow tourism adapts to climate change and consumer environmental behavior.

4.2 Construction of the Entire Industry Chain for Ice-Snow Tourism

The ice-snow industry is an emerging industry, and the current industrial chain system is not yet perfect. In the future, how to construct and develop the entire ice-snow tourism industry chain [23], in-depth theoretical and empirical research is needed.

4.3 Development of Differentiated Ice-Snow Tourism Products

At present, the homogenization of ice-snow tourism products in China is relatively serious. Without the ice-snow products with local cultural characteristics, the brand should have insufficient influence. In the future, we should dig deeper into regional culture, integrate development with ice-snow tourism, form our own ice-snow brand, and carry out differentiated development [1]

4.4 Ice-Snow Tourism and Happiness

Starting from consumer psychology, based on factors such as flow experience, leisure involvement, positive emotions, and stress relief, the effects of ice-snow recreation, ice-snow sports, and ice-snow recreation on consumer happiness were studied.

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