

Research on Development Strategies of Ice and Snow Sports, Culture and Tourism Industry in Liaoning Province Based on SWOT Analysis

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Abstract: Against the backdrop of the continuous booming of the ice and snow economy in the post-Winter Olympics era and the deepening of the "300 million people participating in ice and snow sports" strategy proposed by China, Liaoning Province, leveraging its geographical advantage as a part of the "World Golden Belt for Ice and Snow" and the significant opportunity of hosting the 15th National Winter Games in 2028 (hereinafter referred to as the "15th National Winter Games"), is promoting the ice and snow sports, culture and tourism industry to become a core growth engine for regional economic revitalization. This paper adopts the SWOT analysis method to systematically sort out the development status of Liaoning's ice and snow sports, culture and tourism industry, and proposes a four-dimensional development strategy of "strengthening advantages, making up for shortcomings, seizing opportunities, and preventing threats". It provides theoretical support and practical paths for Liaoning to build a demonstration site for the integration of ice and snow sports, culture and tourism in northern China and achieve the goal of a total scale of 250 billion yuan in the ice and snow industry by 2030.

Keywords: Ice and Snow Sports, Culture and Tourism Industry; SWOT Analysis; Liaoning Province

1. Introduction

Since the successful hosting of the 2022 Beijing Winter Olympics, China's ice and snow economy has entered a high-quality development stage in the "post-Winter Olympics era"[1]. Policies such as "300 million people characteristic food, and northern homestays, and launched many consumer products with regional

participating in ice and snow sports" have clearly proposed to cultivate the ice and snow industry as a new driving force for optimizing the economic structure. As the main host of the 2028 "15th National Winter Games", Liaoning Province is accelerating the construction of ice and snow venues, improving the competition system, and integrating cultural and tourism resources[2,3]. It aims to solve the pressure of traditional industrial transformation through the integrated development of the ice and snow sports, culture and tourism industry. Based on this, this paper uses the SWOT analysis method to comprehensively analyze the internal advantages and disadvantages, external opportunities and threats of Liaoning's ice and snow sports, culture and tourism industry, and then puts forward targeted development strategies, which is of great significance for promoting the transformation of Liaoning's ice and snow industry from "scale expansion" to "quality and efficiency improvement".

Liaoning Province is located in the core area of Northeast Asia and within the "World Golden Belt for Ice and Snow" at 42 degrees north latitude. The average winter temperature ranges from -8°C to -15°C, and the snow cover period lasts for 4 to 5 months, which provides natural endowments for the development of the ice and snow industry[3]. As a major sports province, Liaoning has cultivated many Olympic champions and world champions. The 15th National Winter Games will be held in Liaoning, which will further promote the development of Liaoning's ice and snow sports, culture and tourism industry, expand its scale, enrich its events, and increase investment in the ice and snow industry. In addition, Liaoning has integrated ice and snow sports with intangible cultural heritage folk customs, characteristics. However, the current ice and snow sports, culture and tourism industry in

Liaoning is still facing the dilemma of "being large but not strong". On the one hand, compared with Heilongjiang's "ice and snow sightseeing + ecology" model and Jilin's "ice and snow vacation + hot spring" model, the industrial characteristics of Liaoning have not yet been highlighted. On the other hand, problems such as insufficient supply of high-end products, strong seasonal dependence, and short industrial chain have restricted the improvement of industrial competitiveness.

2. SWOT Analysis of the Development of Ice and Snow Sports, Culture and Tourism Industry in Liaoning Province

2.1 Strengths

2.1.1 Superior geographical, climatic and resource endowments

Liaoning Province has mountainous and hilly landforms in the east and west, and the Liaohe Plain in the middle, which naturally forms topographic conditions suitable for the construction of ski resorts. Areas such as Guanmen Mountain in Benxi, Qianshan Mountain in Anshan, and Saerhu in Fushun all have the foundation for building medium and high-end ski resorts. At the same time, Liaoning's winter climate has the characteristics of "cold and dry" and "small temperature difference between day and night", which not only ensures the stability of snow cover but also reduces the discomfort of tourists caused by severe cold during outdoor activities[4,5]. In addition, Liaoning has unique cultural resources such as the Shenyang Imperial Palace, Shengjing Ancient City, and industrial heritage, which can form a differentiated "culture + ice and snow" combination with ice and snow resources.

2.1.2 Solid competition foundation and high public participation

As a major sports province, Liaoning has a profound accumulation in the field of ice and snow sports and has successively cultivated Olympic champions such as Wu Dajing and Han Cong, creating a strong atmosphere for mass ice and snow sports. At the same time, relying on projects such as "Millions of Citizens on Ice and Snow" and "Campus Ice and Snow Sports Promotion Plan", Liaoning has promoted ice and snow sports to enter campuses and communities. Up to now, 320 primary and secondary schools in the province have offered ice and snow sports courses, and the participation rate of teenagers in

ice and snow sports has reached 38%[4], providing a large consumer group for the ice and snow sports, culture and tourism industry.

2.1.3 Significant transportation and location advantages

Liaoning Province is a transportation hub in the three northeastern provinces. High-speed railway lines such as the Harbin-Dalian High-speed Railway and Shenyang-Dandong High-speed Railway run through major cities in the province. The driving time from Shenyang to ice and snow scenic spots in Benxi, Fushun and other places is within 1.5 hours, forming a "1-hour ice and snow tourism circle". Shenyang Taoxian International Airport and Dalian Zhoushuizi International Airport have opened more than 200 routes to cities such as Beijing, Shanghai and Guangzhou, and the convenient transportation network provides a guarantee for the introduction of tourists from other provinces. In addition, Liaoning is adjacent to the Beijing-Tianjin-Hebei region, which is the core source of ice and snow tourism in China[6]. The location advantage has laid a foundation for Liaoning to undertake tourists from other provinces.

2.2 Weaknesses

2.2.1 Insufficient supply of high-end venues and products

At present, most of the ice and snow venues in Liaoning are small and medium-sized. Among the 68 ski resorts in the province, only 8 have a drop of more than 500 meters, and there is no international ski resort with a drop of more than 800 meters, which cannot meet the competitive and vacation needs of high-end skiers. In terms of ice venues, there are only 12 professional ice hockey rinks and speed skating rinks, which are concentrated in central cities such as Shenyang and Dalian, resulting in limited ability to host competitions[7]. At the product level, the traditional "skiing + sightseeing" model is still dominant, and the supply of products such as high-end ice and snow resort hotels, ice and snow theme parks, and ice and snow research bases is insufficient.

2.2.2 Insufficient depth of industrial integration and short industrial chain

Liaoning's ice and snow industry has not yet formed a pattern of in-depth integration of "sports, culture and tourism". On the one hand, the combination of ice and snow and culture mostly stays on the surface, such as simple Manchu costume displays and ice and snow

sculptures, without in-depth exploration of the connotations of Shengjing culture and industrial culture. On the other hand, the linkage between ice and snow and sports is limited to the holding of competitions, and the industrial chain of "competition + training + equipment sales" has not been formed[7,8]. In addition, the industry has a strong seasonal dependence, and most of the summer is dominated by "idle venue maintenance", resulting in low resource utilization efficiency.

2.2.3 Shortcomings in professional talents and operation management

The ice and snow sports, culture and tourism industry requires compound talents with knowledge of ice and snow sports, cultural and tourism operation, and competition planning, but there is a significant gap in relevant talents in Liaoning Province. At the same time, some ice and snow enterprises still adopt the traditional "ticket economy" operation model and lack digital operation capabilities, such as technologies such as online booking, intelligent navigation, and big data tourist source analysis, resulting in both low customer experience and low operation efficiency.

2.3 Opportunities

2.3.1 Continuous release of policy dividends

At the national level, the "Opinions on Further Unleashing Consumption Potential and Promoting Sustained Consumption Recovery" clearly proposes to "expand ice and snow consumption and promote the integration of ice and snow sports with cultural and tourism". At the local level, Liaoning Province has issued the "Implementation Plan for Promoting the High-Quality Development of the Ice and Snow Economy to Help Achieve New Breakthroughs in Comprehensive Revitalization", proposing to build a "Northeast Asian Innovation Demonstration Zone for the Integration of Ice and Snow Sports, Culture and Tourism" by 2030, and establish a 5 billion yuan ice and snow industry development fund for venue construction, talent introduction and product research and development. In addition, the right to host the "15th National Winter Games" has brought national-level financial and technical support to Liaoning[4]. At present, 12 supporting venues for the "15th National Winter Games" have been started in Shenyang, Anshan, Fushun and other places, and are expected to be completed in 2027, which will significantly

improve Liaoning's capacity to host ice and snow competitions.

2.3.2 Continuous expansion of the ice and snow consumer market

With the improvement of residents' income levels and the enhancement of health awareness, China's ice and snow consumption is shifting from "seasonal and regional" to "year-round and national". Among them, emerging consumer demands such as "family ice and snow vacation", "teenage ice and snow research", and "ice and snow health preservation" are growing rapidly, providing a direction for Liaoning to optimize its product structure[8]. At the same time, the deepening of the Beijing-Tianjin-Hebei coordinated development strategy has promoted the integration of regional tourism. Liaoning can further expand its tourist source market by virtue of the construction of the "Beijing-Tianjin-Hebei - Northeast Ice and Snow Tourism Corridor".

2.3.3 Accelerated empowerment of industrial integration technology

Digital and intelligent technologies have provided a new path for the integrated development of the ice and snow sports, culture and tourism industry. On the one hand, 5G and VR/AR technologies can be applied to the "immersive experience" of ice and snow venues, such as simulating ski trails through VR and restoring the historical scenes of Shengjing ice and snow through AR. On the other hand, big data and Internet of Things technologies can realize the intelligent management of ice and snow venues, such as dynamically adjusting snow quality and optimizing passenger flow distribution to improve operation efficiency. In addition, the rise of new models such as "ice and snow + e-commerce" and "ice and snow + live streaming" has provided opportunities for the industry to expand marketing channels[9].

2.4 Threats

2.4.1 Intensified regional homogeneous competition

The three northeastern provinces are all major agglomeration areas of the ice and snow industry. Heilongjiang has built a "ice and snow sightseeing + high-end vacation" brand with the "Harbin Ice and Snow World + Yabuli Ski Resort" as the core. Jilin has launched integrated "ice and snow + hot spring + ecology" products relying on the Changbai Mountain Scenic Area. In addition, emerging ice and snow destinations such as Chongli in Hebei have diverted some

high-end tourists by virtue of their advantages of "Winter Olympics heritage" and "extreme ice and snow scenery", resulting in Liaoning's ice and snow industry facing a competitive pattern of "being attacked from both front and rear".

2.4.2 Natural risks and seasonal constraints

Although Liaoning's winter climate is suitable for ice and snow sports, in recent years, affected by global warming, the average winter temperature in some areas has risen by 1-2°C, leading to an increase in the cost of artificial snow making and a decrease in the number of operating days[8,9]. At the same time, the problem of "seasonal dependence" in the ice and snow industry has not been solved. Most ice and snow venues are idle in summer, and only a small amount of revenue can be maintained through "indoor ice and snow parks", resulting in weak profitability of enterprises[10].

2.4.3 Rigid operation and management mechanisms

Some ice and snow enterprises in Liaoning are controlled by state-owned enterprises, and there are problems such as "long decision-making process and low market sensitivity". For example, some ski resorts still adopt the pricing model and cannot flexibly adjust prices according to market demand. At the same time, the role of the ice and snow industry association has not been fully played, and industry standards are not unified. For example, there is a lack of unified management for ski instructor qualification certification and ice and snow facility safety standards, resulting in insufficient consumer trust[11,12].

Table 1. Development Strategies of Ice and Snow Sports, Culture and Tourism Industry in Liaoning Province

Serial No.	SO Development Strategies	WO Development Strategies	ST Development Strategies	WT Development Strategies
1	Build the "ice-snow+culture+industry" characteristic model;	Accelerate the construction of high-end venues and product upgrading;	Differentiate competition to avoid homogenization risks;	Respond to climate risks and promote green development;
2	Expand into Beijing-Tianjin-Hebei and build a regional coordination network;	Strengthen talent cultivation and digital empowerment;	Improve standards and enhance service quality;	Extend industrial chains to enhance risk resistance;

3.1.2 Expanding the Beijing-Tianjin-Hebei tourist source market and building a regional coordination network

Relying on Liaoning's location and transportation advantages, join hands with the Beijing-Tianjin-Hebei region to carry out "joint promotion of ice and snow tourism": On the one

3. Development Strategies of Ice and Snow Sports, Culture and Tourism Industry in Liaoning Province

Based on the results of the SWOT analysis and the integration of factors affecting development, this paper proposes a four-dimensional integrated development strategy of "SO (Strengths + Opportunities), WO (Weaknesses + Opportunities), ST (Strengths + Threats), WT (Weaknesses + Threats)", as shown in Table 1.

3.1 SO Strategy: Relying on Advantages, Seizing Opportunities, and Building a Characteristic Integrated Brand

3.1.1 Building a characteristic "ice and snow + culture + industry" model

In-depth exploration of Liaoning's Shengjing culture, industrial culture, and red culture resources to create differentiated products: For example, launching the "Shengjing Ice and Snow Festival + Imperial Palace Light Show" in Shenyang, integrating cultural elements such as Manchu ice play and Shengjing temple fairs into the ice and snow experience; in industrial cities such as Anshan and Fushun, developing "industrial heritage ice and snow parks", transforming abandoned factories into indoor ski resorts, and launching "ice and snow + industrial history" courses combined with industrial research to attract teenagers. At the same time, taking the opportunity of the "15th National Winter Games", create a "competition + culture" IP, such as holding events like the "Shengjing Ice and Snow Marathon" and "Industrial Ice and Snow Carnival" to enhance the recognition of Liaoning's ice and snow brand[13].

hand, open "Beijing-Tianjin-Hebei - Liaoning ice and snow tourism special trains" and "ice and snow tourism chartered flights", and launch vacation packages to reduce tourists' travel costs; on the other hand, cooperate with travel agencies and online tourism platforms (such as Ctrip and Meituan) in the Beijing-Tianjin-Hebei region to

establish a tourist source sharing mechanism. In addition, integrate into the construction of the "Northeast Ice and Snow Tourism Corridor" and jointly develop "Northeast Ice and Snow Loop" products with Heilongjiang and Jilin provinces to achieve resource complementarity and mutual tourist flow.

3.2 WO Strategy: Making Up for Shortcomings, Leveraging Opportunities, and Enhancing Industrial Competitiveness

3.2.1 Accelerating the construction of high-end venues and product upgrading

Taking the hosting of the "15th National Winter Games" as an opportunity, focus on promoting venue construction, build an international ice and snow sports center with a high-drop international ski resort to meet the needs of international competitions and high-end vacations[14,15]. At the same time, introduce internationally renowned ice and snow resort brands (such as Club Med), build "ice and snow resort towns" in Benxi, Anshan and other places, with supporting facilities such as high-end hotels, hot spring resorts, and ice and snow theme parks, to increase the per consumption of ice and snow tourism. In addition, develop "four-season ice and snow" products, use indoor venues to carry out activities such as ice and snow training and curling experience in summer, and expand businesses such as "ice and snow + health preservation" and "ice and snow + exhibitions" in winter to reduce seasonal dependence.

3.2.2 Strengthening talent training and digital empowerment

Cooperate with universities such as Shenyang Sport University and Northeastern University to establish an "Ice and Snow Sports, Culture and Tourism Industry College", offering majors such as ice and snow competition operation, ice and snow equipment design, and cultural and tourism integration management; at the same time, introduce professional talents from Heilongjiang, Jilin, Europe and the United States, and provide policies such as housing subsidies and entrepreneurial support. In terms of digitalization, build a "Liaoning Ice and Snow Industry Smart Platform" that integrates functions such as booking of ice and snow venues across the province, competition information, and cultural and tourism recommendations to realize "one code access"; promote the application of VR/AR technologies in ski resorts and ice and snow parks to create

"immersive ice and snow experience projects" and improve customer experience.

3.3 ST Strategy: Utilizing Advantages, Addressing Threats, and Consolidating Market Position

3.3.1 Differentiated competition to avoid homogeneous risks

Avoiding the advantages of "ecology + ice and snow" and "hot spring + ice and snow" in Heilongjiang and Jilin provinces, focus on Liaoning's "culture + industry + ice and snow" characteristics to create irreplaceable products: For example, launching the "Saerhu Ice and Snow Battle Live Performance" in Fushun, creating an immersive experience combined with historical events; launching "ice and snow + wetland" products in Panjin Red Beach, using the wetland ice surface in winter to carry out activities such as ice biking and ice fishing, forming a unique IP of "Red Beach in the South, Ice and Snow Wetland in the North". At the same time, for the teenage market, develop "ice and snow research camps", combining Liaoning's industrial and technological resources to launch characteristic courses such as "ice and snow + robots" and "ice and snow + aviation", which are different from the "ice and snow + ecology" research in Heilongjiang and Jilin.

3.3.2 Improving industry standards and enhancing service quality

Led by the Liaoning Ice and Snow Industry Association, formulate industry standards such as the "Liaoning Ski Instructor Qualification Certification Standard" and "Ice and Snow Venue Safety Operation Specification", and establish a "blacklist" system to publicize non-compliant enterprises[16]; at the same time, carry out the "Ice and Snow Service Quality Improvement Campaign" to train ski resort staff and tour guides on service etiquette, reducing the complaint rate of ice and snow tourism. In addition, promote the reform of state-owned enterprises, introduce social capital to participate in the operation of ice and snow venues, and adopt flexible models such as "market-oriented pricing" and "membership system" to improve the market sensitivity of enterprises.

3.4 WT Strategy: Resolving Weaknesses, Resisting Threats, and Ensuring Sustainable Industrial Development

3.4.1 Addressing climate risks and promoting green development

Strengthen cooperation with scientific research institutions to develop efficient and energy-saving artificial snowmaking technologies and reduce snowmaking costs; adopt "green building standards" in the construction of ski resorts, use clean energy such as solar energy and geothermal energy, and reduce carbon emissions. At the same time, establish an "ice and snow resource monitoring and early warning system" to monitor data such as temperature and snow depth in real time and adjust operation plans in advance. In addition, promote the localization of the ice and snow equipment industry, support enterprises in developing environmentally friendly ski suits and energy-saving snowmaking machines, and reduce dependence on the external market.

3.4.2 Extending the industrial chain to enhance risk resistance

Expand the upstream and downstream industrial chains around the "ice and snow sports, culture and tourism" industry: Focus on the development of ice and snow equipment manufacturing in the upstream, such as ski boards, ice skates, and snowmaking equipment; strengthen ice and snow competitions and training in the midstream, such as holding the "Liaoning Youth Ice and Snow League" and "Public Ski Training Camps"; extend supporting industries such as ice and snow cultural and creative products and ice and snow catering in the downstream, such as developing "Shengjing Ice and Snow" themed cultural and creative products and launching Manchu ice and snow food packages. At the same time, promote the integration of "ice and snow + e-commerce", and open "Liaoning Ice and Snow Goodies Live Broadcast Rooms" on platforms such as Douyin and Kuaishou to sell ice and snow equipment and cultural and creative products.

4. Conclusion

The development of Liaoning's ice and snow sports, culture and tourism industry has inherent advantages such as geography, resources and location, and also faces major opportunities such as hosting the "15th National Winter Games", policy support and market expansion. However, it also encounters challenges such as insufficient high-end products, insufficient industrial integration, and fierce regional competition. Through the SWOT analysis, it can be seen that Liaoning needs to adopt strategies such as "building a characteristic brand, upgrading high-

end products, conducting differentiated competition, and extending the industrial chain" to combine internal advantages with external opportunities, resolve weaknesses and threats, and promote the transformation of the ice and snow sports, culture and tourism industry from "scale expansion" to "quality and efficiency improvement". In the future, Liaoning Province should further strengthen the characteristic positioning of "ice and snow + culture + industry", improve the industrial infrastructure and service level by taking the opportunity of the "15th National Winter Games", and at the same time strengthen regional coordination and digital empowerment, ultimately realizing the sustainable development of the ice and snow sports, culture and tourism industry and injecting new impetus into the revitalization of the old industrial base in Northeast China.

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