



## High-quality Development Model of Industrial Integration of Sports Characteristic Towns in Northeast China

Song Zhiliang<sup>1</sup> and Nopporn Tasnaina<sup>2</sup>

Faculty of Sports Science and Technology, Bangkokthonburi University, Thailand

<sup>1</sup>E-mail: 76268950@qq.com, ORCID ID: <https://orcid.org/0009-0008-1411-3571>

<sup>2</sup>E-mail: aipia2489@gmail.com, ORCID ID: <https://orcid.org/0009-0001-6086-0657>

Received 11/12/2023

Revised 30/12/2023

Accepted 08/01/2024

### Abstract

**Background and Aims:** The integrated development of industries is an important part of promoting the supply-side reform of sports-characteristic towns in China and cultivating a new economy and new driving force for sports development. This study aimed to develop a model to operate sports tourism events in Northeast China. and to confirm the developed model by stakeholders on satisfaction, appropriateness, and practicability.

**Methodology:** The researcher performed the following research steps. The first step was to survey the current situation of 1200 customers in 6 cities in Northeast China. After that, a total of 20 experts were interviewed. Subsequently, the researcher entered the step of gathering ideas and placing elements on different levels, involving a total of 22 experts. When confirmed by the experts, all three dimensions of elements were brought into prioritization using the Analytical Hierarchy Process (AHP) hierarchical model.

**Results:** (1) The demand characteristics of the consumption market in small towns with sports characteristics in Northeast China are mainly young and middle-aged men with higher educational background, more knowledge worker, and higher per capita monthly household income; Most consumers have a strong sense of sports and leisure, and recognize the role of sports and leisure, but do not have a deep understanding of sports and leisure items, consumers are keen on mountain sports, water sports, air sports, and so on, most consumers stay a short time, the amount of consumption is low, to the weekend short-distance personal or family-based travel. (2) The evaluation system of influencing factors of industry integration development of the small town with sports characteristics mainly includes five first-level indexes, such as government support, technological innovation, market demand, etc., industry development guide funds, government support provisions and other 18 secondary indicators. (3) There are three most representative models in the industry integration development of small towns with sports characteristics in our country. Vertical extension mode, horizontal extension mode, mixed cross mode.

**Conclusion:** The high-quality development model of industrial integration of sports-characteristic towns in Northeast China could be summarized as First-Level Indicators with a total of 5 aspects and Second-Level Indicators with a total of 18 aspects. All experts opined that the resulting model was reliable. When put into practice, relevant agencies could apply it.

**Keywords:** Northeast Region; Sports Characteristic Town; Industrial Integration

### Introduction

*The integrated development of industries is an important part of the supply-side reform of sports-characteristic towns in China.* The integrated development of industries is an important part of promoting the supply-side reform of sports-characteristic towns in China and cultivating a new economy and new driving force for sports development. To seize the opportunities for supply-side reform and development, sports-characteristic towns actively rely on good resource endowments and regional unique advantages to accelerate the integration and development of sports and leisure, tourism



and vacation, health and elderly care, and cultural and entertainment industries. Guided by the improvement of supply quality, they increase the reform and innovation efforts of the sports industry, stimulate supply vitality, ensure the supply of rich and diverse sports products and high-quality and efficient sports services, Improve the total factor productivity of sports characteristic towns and accelerate the significant improvement of the productivity level of the sports industry within the town area. Through the deep integration and development of industries, sports characteristic towns will ultimately continuously extend the sports industry chain, innovate the circulation and sales methods of sports products and services, improve the production efficiency and added value of sports products and services, and expand the sports industry from production functions to life and ecological functions. This will enable sports-characteristic towns to continue to generate new technologies, formats, products, and models for industrial development.

*Industrial integration development is a necessary measure for the high-quality development of sports-characteristic towns in China.* Although the status of sports-characteristic towns at the national level is gradually improving, they also face several important problems in their development: firstly, the market introduction ability of new products and services is poor. The new products and services launched by sports-characteristic towns are not closely linked to the actual needs of consumers, and there is an insufficient in-depth exploration of the consumer market, making it difficult to meet the market development needs of people's consumption transformation and upgrading. Secondly, the foundation of the sports industry is weak. The sports and leisure-themed projects in sports characteristic towns are not prominent enough, the industrial development is not focused enough, the functions of products (services) are relatively single, and the awareness of industrial integration is weak. Thirdly, the problem of homogenization is severe. Although the layout of the 96 sports characteristic towns in China's first batch of pilot projects has a wide range of characteristic sports projects, overall, the phenomenon of homogenization is still prominent, especially the weak integration of industrial functions in small towns, and the general lack of overall planning and design of functional characteristics. It can be seen that the development of sports-characteristic small-town industries in China is currently facing bottlenecks in the practical field, and there is an urgent need to seek new models for the development of sports and leisure characteristic small-town industries. The integrated development of sports characteristic small-town industries can solve prominent problems such as poor consumer import ability, weak foundation, and serious homogenization of the sports industry, thus achieving innovation in sports functions, upgrading of town organizational structure, and development of new sports formats.

*Industrial integration development is the main experience of long-term development of foreign sports characteristic towns.* From the development experience of developed countries in the world's sports industry, most of them create a sports-characteristic industry chain through the construction of sports-characteristic towns (cities), thereby promoting the rapid development of the sports industry. Many internationally renowned sports characteristic towns, based on their unique resource advantages, have formed a "large dispersed and small concentrated" industrial integration space carrier through the effective connection of the sports industry chain and the optimized configuration of the transportation network, highlighting the industrial agglomeration effect and creating unique sports and cultural brands, which has a particularly significant driving effect on the economic growth of the town. For example, the town of Wimbledon in the UK has relied on its long-standing Wimbledon industry to gather





infrastructure, wedding tourism, and specialty cuisine as the main components of local income. The town relies on the famous Wimbledon event brand to significantly improve residents' living standards; The small town of Montebello in Italy has continuously integrated the pre-production and postproduction processes with sports shoe manufacturing as its core, transforming into a huge industrial cluster focusing on the field of sports shoe manufacturing. The small town's sports shoes have a very high market share in the global market, attracting over 8600 local employees, and its annual sales revenue has exceeded 1.5 billion euros; The Swiss town of Davos has unleashed the infinite potential of the sports industry through the comprehensive development of exhibitions, health care, and sports. Every year, the number of people who go on vacation in the town during the peak skiing tourism season exceeds 500000 and is hailed by Europeans as the "paradise on earth" for skiing and outdoor sports.

With the advent of the era of "Sports City" and "Global Tourism", and China's release of the "14th Five-Year Plan" tourism development plan, the resource integration and development of tourism and sports industries have been favored by all sectors of society. Building a town with sports characteristics is an important measure to promote urbanization under the background of new urbanization, and an important measure to develop the sports industry under the background of supply-side structural reform. At the same time, it can promote poverty alleviation through sports. Therefore, how to solve the deficiencies in the sports industry, sports tourism resources, products, markets, and industries in Northeast China and better develop sports tourism is an urgent problem to be solved. The purpose of research on the high-quality development path of industrial integration of sports towns in Northeast China is to seek a brand-new development model of sports tourism. With the background of global tourism, by analyzing the development of industrial integration of sports towns, it is proposed that their development process to explore the existing problems in sports towns, the development ideas, development models, and development countermeasures of Sports city are explored.

## Objectives

1. To enrich the research content related to sports characteristic towns.
2. To provide practical guidance for the market entities of sports-characteristic towns.
3. local governments provide support and guidance for the integrated development of the tourism industry in sports characteristic towns.

## Literature Review

### Localize research

*Relevant research on the industrial integration and development of sports-characteristic towns*

Tang (2017) regards "characteristic industry + tourism industry" as the two core structures that must be followed in the development of characteristic towns. Characteristic industries are the inner cornerstone of development, and the tourism industry is the source of power for development. The dual cores drive the integration of characteristic town development. Among them, characteristic industries should develop in three directions: strategic emerging industries, transformation and upgrading of traditional industries, and full return of historical classic industries. Liu (2019) believes that the main path for the integrated development of agricultural characteristic towns lies in the support of integrated development of agricultural production and industrial chain, the support of integrated development of agricultural product sales and Internet technology, the support of integrated development of agricultural





ecological cultural resources and rural characteristic tourism, the support of integrated development of agricultural production and modern New technology integration development support. Pan (2018) believes that industrial integration is of great significance to the development of Wuxi's characteristic tourism towns. It is specifically manifested in optimizing the supply of products and services, meeting the diversified consumption needs of tourists, encouraging enterprises to reform and innovate, and enhancing the core competitiveness of the tourism industry. Gu (2018) put forward suggestions for promoting the integrated development of the tea tourism industry in characteristic towns: to formulate a scientific and reasonable development plan for the Shuman Township tea garden-style town project in Wuzhishan City; to build a regional brand from the overall level; The strategic opportunity for the "farm" action; increase policy support. Based on the macro background of rural revitalization, Yang (2019) proposed to promote the industrial integration and development of agricultural characteristic towns through industrial chain extension, business innovation, and leading enterprises. Qiao & Wang, (2019) summarized the relevant theories of industrial integration of characteristic towns as innovation theory, industrial chain theory, industrial cluster theory, and growth pole theory, and proposed that policy-driven, market development, industrial integration subjects, production factors, and infrastructure are The influencing factors of the industrial integration development of characteristic towns in China are finally put forward for reference based on foreign experience: innovating and optimizing the policy system supply system to provide policy support for industrial integration development; cultivating and strengthening the advantages of characteristic industries to lay the foundation for industrial integration development; strengthening The construction of the urban-rural integration development market system will create new market opportunities for industrial integration; promote the interaction and integration of industrial entities, explore new carriers and new models for industrial development; scientifically integrate and allocate township resources to provide essential guarantees for industrial integration; improve Infrastructure conditions to facilitate the development of industrial integration. Fan & Chen, (2020) researched that under the background of population aging, my country's elderly care service development model is also constantly reforming and innovating, and healthcare towns have emerged as the times require. They not only rely on the three traditional industries, but also cooperate with the medical industry and health industry, tourism industry and cultural industry, etc., and have increasingly become a new type of supply model in the field of socialized elderly care services. To sum up, the relevant research on the industrial integration development of other types of characteristic towns mainly focuses on three aspects: the theoretical basis of the industrial integration development of small towns, the influencing factors of the integrated development of small town industries, and the direction and path of industrial integration development of small towns.

*Relevant research on the industrial integration and development of sports-characteristic towns*

(1) Relevant research on the status quo of industrial integration and development of sports-characteristic towns. Liu (2019) believes that there are problems in the integrated development of Dawei marathon sports and leisure characteristic towns in the construction of basic supporting facilities, the connection between the leisure sports industry and other industries is relatively loose, and the level of organization and management of sports events needs to be improved. Wang (2018) believes that the "naked heart" sports and leisure characteristic town currently has deficiencies in sports tourism products, tourist resource allocation, human resource management, publicity planning and promotion,





etc. Yang (2018) believes that the industrial integration of sports and leisure characteristic towns in Shangluo City takes "sports +" as the leading mode of business integration development, covering three business models such as sports training business, daily outdoor sports business, and sports competition business. At the same time, it is combined with "+" The "sports" business model is supplemented, including three models of holiday sports, folk sports, and cultural sports.

(2) Relevant research on the connotation of industrial integration and development of sports and leisure characteristic towns. The sports and leisure towns conform to the internal integration mechanism of industrial integration and development and are the product of organic integration between the sports industry, tourism, and communities with certain functions. Shen & Yang (2017) believe that industrial association is the prerequisite for promoting the cross-border integration of the sports industry in characteristic sports and leisure towns, the system supply is the policy guarantee to promote the cross-border integration of the sports industry in characteristic sports towns, and consumer demand is the key factor for sports and leisure characteristic towns. The internal driving force for the town's sports industry to achieve cross-border integration, and the development of science and technology is an important means for the sports industry in sports and leisure towns to achieve cross-border integration. Shen & Dong (2018) believe that the core of the development of sports and leisure characteristic towns is to realize industrial agglomeration and cross-border integration. world fusion. Wang, et al (2018) regarded industrial integration and agglomeration as the economic logic of the development of characteristic towns. Industrial integration can lead to the healthy development of sports and leisure characteristic towns, which can reduce production costs, guide demand, and stimulate innovation and other meanings. Ni & Liu, (2018) believe that sports towns have both the functions of industrial transformation and cultural reconstruction. It is necessary to clarify the function type positioning of towns based on resource endowments, and at the same time use industrial associations and technological innovations as the driving force to achieve "deep industry, multiple function, fine layout, and new mechanism", and then promote the innovation and development of sports and leisure characteristic towns. Hu (2018) believes that the development of sports and leisure characteristic towns must follow the laws of industrial development, clarify industrial development trends and market laws, and implement precise governance models during the establishment, operation, and normal periods to avoid development homogeneity and industries without consumption, etc. unpleasant sight. Xie & Guo (2019) believe that healthy sports and leisure characteristics in towns can promote the interactive and integrated development of the sports industry and the elderly care industry, thereby promoting economic growth. However, there is currently a lack of research literature at the level of specific development models.

(3) Relevant research on countermeasures for the industrial integration and development of sports and leisure characteristic towns. Wang (2018) proposed to attach importance to the development of characteristic sports tourism experience product types, broaden the channels of media publicity and promotion, increase the intensity of external publicity and promotion, and pay attention to countermeasures such as the introduction and training of compound talents to promote the industrial integration of "naked" sports and leisure characteristic towns develop. Gao (2018) proposed that sports and leisure towns in Shandong Province should build a sports-characteristic industry value chain, dig deep into various resources, and fully integrate with sports culture to promote the development of industrial integration. Xu (2018) believes that to develop a sports and leisure characteristic town, we must adhere to the "sports +" strategy, and promote the interactive integration of the sports industry and







other industries based on sports as the core. Chen (2018) proposed that the diversified means to promote the integration and development of sports and leisure characteristic town industries are as follows: take a single characteristic sport as the core of integration, attract the comprehensive development of different industries; carry out diversified sports and leisure experience projects, and cultivate industrial development clusters; Enhance the core influence of sports events and create a new business card for characteristic industries; Oriented by health needs, create a sports health complex. and proposed that the main path to promote the integrated development of sports and leisure characteristic towns in my country is: to transform the sports and leisure environment through food and housing, change the way of sports and leisure through travel and travel, expand the space for sports consumption through shopping and entertainment, and Business and Leisure optimizes the function of sports and leisure, consolidates sports and leisure education through learning and agriculture, changes the way of sports and health preservation through family and nourishment, enhances the experience of sports and leisure through strangeness and danger, and cultivates sports and leisure life through emotion and innovation. It can be seen that the academic circles have reached an agreement on the overall direction of implementing "sports +" in sports and leisure characteristic towns to achieve industrial integration and development, but the specific process of integration and development is still unclear.

### Foreignize Research

Foreign countries do not have the concept of characteristic towns, and mainly research on industrial clusters similar to characteristic towns, which mainly involve the concept, characteristics, and functions of industrial clusters. Scott (1988) was the first to study the concept of service industry clusters and believed that service industry clusters have strong adaptability to external connections caused by changes in the external environment and the importance of the labor market relationship network. It has become another important reason for enterprises to settle in clusters. Rosenfeld (1997) believes that industrial clusters promote the cooperation and sharing of professional infrastructure projects, labor market management, and service work, strengthen cooperation and jointly respond to changes in crises, challenges, and opportunities, and build It is a communication bridge for commodity trading services and enterprise dialogue and exchanges, and then gathers some enterprises with similar, related and complementary relationships that have certain geographical boundaries and are relatively concentrated. Carvajal et al. (2004) believed that Japan's economic clusters have a high degree of diversity and are not limited to a single industry. They are mainly composed of many manufacturing companies, and these companies gather in specific economic zones. With the continuous improvement of Japan's manufacturing level, the dissemination of relevant experience and knowledge between clusters has been intensified, and the sustainable development of the industry has been achieved while promoting the transformation of industrial structure. In addition, Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT) proposed to create intellectual clusters to accelerate the promotion of research and development (R&D) activities of new technologies, and the Japanese Ministry of Economy, Trade and Industry (METI) specially formulated an industrial cluster development plan, to support the revival of the local industrial sector. Boutroy et al. (2015) studied the leading commodity chain of "mountain and nature sports tourism" in the Alps region, and introduced its structure and territorial characteristics in detail, including expanding the spatial scale and diversifying and integrating related functions. Geum, et al (2016) compared the innovation practices of the nautical cluster in Auckland, New Zealand, and the surfing cluster in Victoria, Australia, and found that although many





existing studies focused on internal resources and end users as sources of innovation in the sports sector, inter-organizational linkages were the key factors for the sports industry cluster. Organizations provide a rich source of innovation. Shi (2018) applied cluster theory To the study of the equestrian industry, it reveals the process of the equestrian industry intertwined with commercial activities and lifestyles and develops into a micro-cluster. It believes that education, knowledge transfer, and dissemination of technical know-how are important activities for normal operation and innovation within an equestrian micro-cluster.

### Conceptual Framework

History, type, and experience of industrial integration and development of foreign characteristic sports towns.

The dynamics of evolution and demand characteristics of industrial integration of sports towns in my country.

Evaluation System of Influencing Factors for Industrial Integration and Development of Sports Characteristic Towns.

Industrial integration development model of characteristic sports towns in Northeast China.



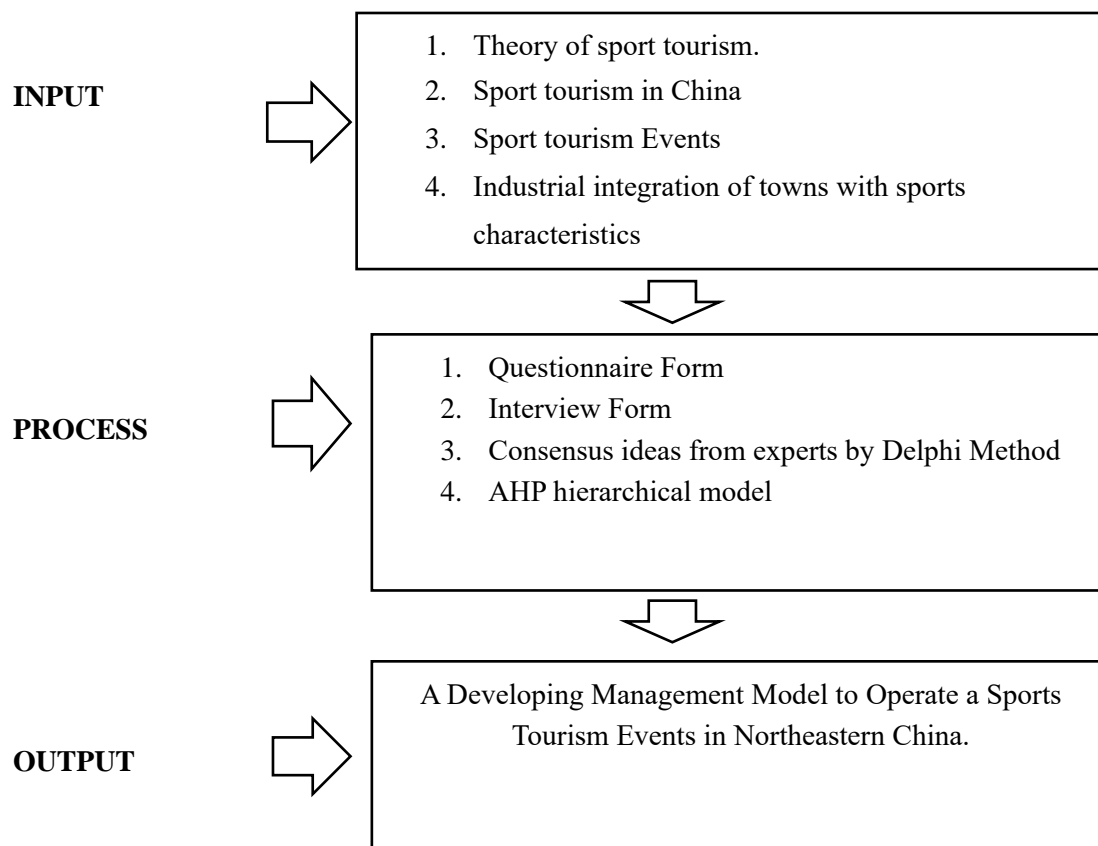


Figure 1 Conceptual Framework

## Methodology

### Population and sample

#### 1. Population specification and size (present specification and sample size formulation)

1.1 Select 6 persons in charge of enterprises in characteristic sports towns, 8 university scholars in relevant research, and 6 local government officials in characteristic sports towns to build a comprehensive evaluation system for the factors affecting the integration and development of industries in characteristic sports towns and determine. The weight of each first-level index and second-level index in the influencing factors of industrial integration and development of characteristic towns.

1.2 A total of 1,200 consumers in the 6 characteristic sports town projects were distributed the "Questionnaire on Demand Characteristics of Small Consumers with Sports Characteristics in Northeast China" to investigate the overall characteristics of the market demand for the integrated development of characteristic town industries.

Six unique sports cities in Northeast China had a variety of sports characteristics throughout the year. The researcher randomly divided the number of consumers who participated in the research by allocating proportions according to the following table.





Table 1 The research population and sample in six sports cities in northeast China.

Sport city	Population	Sample
Dalian City	2333	140
Dandong City	3623	217
Yingkou City	3963	238
Qiqihar City	3718	223
Yanbian City	3895	234
Meihokou City	2468	148
<b>Total</b>	<b>20000</b>	<b>1200</b>

## 2. Sampling techniques

### 2.1 Sample size and how to calculate or find it.

(1) The experts selected by the expert interview method and Delphi method include 8 scholars, 6 business operators and 6 government officials, basically covering the scope of the author's research.

(2) From the first batch of 6 characteristic sports towns in Northeast China named by the state, each randomly interviewed 200 consumers and obtained the industrial integration of characteristic sports towns in Northeast China through stratified and random questionnaires. Basic status quo.

### 2.2 Sampling techniques/sample properties

(1) Use snowball to select the experts' groups.

(2) Use purpose sampling to select qualified experts according to the selection criteria, the criteria for selecting qualified experts were: Qualified experts had to have at least ten years of experience in the position and had to be well-versed in the development of urban sports tourism industries in Northeast China.

## Research instrument

1. Selection of Influencing Factors and Indicators for Industrial Integration and Development of Sports Characteristic Towns in Northeast China (First and Second Rounds)

2. Questionnaire on the weight of the first-level indicators of the factors affecting the industrial integration of sports-characteristic towns in Northeast China

3. Questionnaire on the weight of secondary indicators of factors affecting industrial integration of characteristic sports towns in Northeast China

4. Interview Outline (Local Government, Enterprises, University Scholars)

5. Survey Questionnaire on Consumer Demand Characteristics of Sports and Leisure Characteristic Towns

## Data collection (methods and tools)

According to the project plan and requirements, investigators conducted the following data collection work:

1. Recover questionnaires from small-town consumers and make statistical analyses.

2. Using the Delphi method, through two rounds of questionnaire surveys, the content and weight of the first and second-level indicators among the influencing factors of the industrial integration development of small towns are analyzed.

3. Organize, summarize, and refine the 3 groups of expert interview outlines collected from local government officials, small-town enterprises, experts, and scholars.



## Data Analysis

1. Analyze data from research papers and related studies, and use content analysis for data analysis.

2. Analysis of interviews with 20experts using Delphi

2.1 Data obtained from Delphi's first round of interviews with 20 qualified individuals was employed for content analysis.

2.2 Using the data obtained from the second and third rounds of the Technical Estimation Scale questionnaire, the data were analyzed through central trends such as the median, mode, and interquartile range of statistical measures. details as follows.

The median of the analyzed data (Median: MDN) is the median value of all data, analyzed according to Likert's Rating scale for the five-level questionnaire. Set the scoring value of the weight range to five levels, which have the following meanings:

Level 1 experts least agree with this statement. The second level means that the experts agree with the statement. Level 3 indicates moderate expert agreement with the statement. Level four indicates that experts strongly agree with the statement. A fifth level indicates that the experts most agree with the statement.

## Results

### 1. Selection of influencing factor evaluation system indicators

This study uses the Delphi method to determine the influencing factors of industrial integration and the development of sports-featured towns in Northeast China. Repeat for 2-4 rounds to ensure that different opinions from experts ultimately converge. This study consulted 6 leaders of sports-characteristic town enterprises, 8 university scholars engaged in relevant research, and 6 local government officials of sports-characteristic towns on the influencing factors of industrial integration and development in sports and leisure-characteristic towns in China. See 6-1 for indicators.

Table 2 Results of modification after the second round of expert consultation

Level 1 indicators		Level 2 indicators
China's sports and leisure characteristics small town industry integrated development Indicators of influencing factors	A government support	A1 Industrial development guidance funds
		A2 Government Support Terms
		A3 Attract the enterprise number and the investment amount
		A4 Number of talents introduced
	B enterprise competition and cooperation	B1 Number of people working in the sports industry
		B2 Number of people working in the tourism industry
		B3 Sports industry labor productivity
		B4 Labor productivity of the tourism industry
	C market demand	C1 Income from the sports industry





Level 1 indicators	Level 2 indicators
	C2 Tourism industry income
	C3 Total number of consumers
	C4 Consumers consume per capita
D technical innovation	D1 R & d funding
	D2 Number of R & D personnel
	E1 Small town scenic spot grade
E industrial integration environment	E2 Convenient transportation
	E3 Capital investment in sports venues
	E4 The Wi-Fi network benefit rate

## 2. Determination of Index Weights for the Evaluation System of Influencing Factors

First, normalize the formed judgment matrix by column; Secondly, the judgment matrix normalized by column is then summed by row; Finally, normalize the factor vectors of the judgment matrix by row to obtain the final comprehensive evaluation weight vector. The judgment matrix models and weight calculation results of each secondary factor are shown in Tables 6-2, 6-3, 6-4, 6-5, and 6-6, respectively.

Table 6-2 Judgment Matrix and Weights of Government Support Factors

A	A1	A2	A3	A4	weight
A1	1.00	2.00	3.00	4.00	0.47394
A2	0.50	1.00	2.00	3.00	0.26605
A3	0.33	0.50	1.00	2.00	0.15329
A4	0.25	0.33	0.50	1.00	0.10672

Table 3 Judgment Matrix and Weights of Enterprise Competition and Cooperation Factors

B	B1	B2	B3	B4	weight
B1	1.00	3.00	3.00	4.00	0.50136
B2	0.33	1.00	2.00	3.00	0.19223
B3	0.33	0.50	1.00	2.00	0.18327
B4	0.25	0.33	0.50	1.00	0.12314

Table 4 Market demand factor judgment matrix and weights.

C	C1	C2	C3	C4	weight
C1	1.00	2.00	3.00	4.00	0.49685
C2	0.33	1.00	1.00	2.00	0.20362
C3	0.33	1.00	1.00	2.00	0.20362
C4	0.25	0.50	0.50	1.00	0.09591



Table 5 Judgment Matrix and Weights of Technological Innovation Factors

D	D1	D2	weight
D1	1.00	3.00	0. 75000
D2	0.33	1.00	0. 25000

Table 6 Judgment Matrix and Weights of Industrial Integration Environmental Factors

E	E1	E2	E3	E4	weight
E1	1.00	3.00	3.00	4.00	0. 51659
E2	0.33	1.00	1.00	3.00	0. 18764
E3	0.33	1.00	1.00	3.00	0. 18764
E4	0.25	0.33	0.33	1.00	0. 10813

Based on the weight results of the first-level indicators determined earlier, the absolute weight calculation result of the second-level indicators is equal to the product of the relative weight of each second-level indicator and the weight of the first-level indicator in Tables 6-2, 6-3, 6-4, 6-5, and 6-6.

## Discussion

### Government Support Factors

Government support is an important driving force for the integrated development of industries, and it is also an important influencing factor in the integrated development of sports and leisure characteristic towns in China. It includes four secondary indicators: industry development guidance funds, government support clauses, number of enterprises and total investment, and number of talent introductions. Among them, industrial development guidance funds are the most important, with a weight of 0.47394, followed by government support terms and the importance of the number of enterprises and total investment, and the importance of the talent introduction quantity indicator is the lowest. This is consistent with Sun (2019) who studied “the integration path of the sports industry in the Yangtze River Delta under the background of “One Belt One Road”.

### Enterprise Competition and Cooperation Factors

Overall, the competition and cooperation among enterprises in the integrated development of sports and leisure characteristic towns are mainly manifested in two aspects: enterprise scale and enterprise competitiveness. The number of employees in a company can to some extent reflect the overall scale of the company's development Therefore, the number of employees in the sports industry and the number of employees in the tourism industry are used as specific indicators to reflect the size of small-town enterprises. At the same time, the labor productivity of the sports industry and the tourism industry are used as specific indicators to reflect the competitiveness of small-town enterprises. These four aspects constitute the main part of the competition and cooperation factors for small-town enterprises with sports and leisure characteristics. This is consistent with Xu (2018) who studied “Research on the Construction and Operation of Sports Characteristic Towns in Zhejiang Province”.

### Market demand factors

The market demand for the integrated development of sports and leisure industries in small towns is mainly reflected in two aspects: expanding the demand scale of the integrated market and improving



the consumption level. The demand scale of the integrated market in small towns is mainly reflected in three aspects: sports industry income, tourism industry income, and the total number of consumers. The consumption level of the integrated market is mainly reflected in the per capita consumption of consumers. This is consistent with Hu & Zhu. (2020) that studied “High-quality integrated development research of sports industry and health industry”.

### **Environmental factors for industrial integration**

The external environment plays a certain role in the integrated development of sports and leisure characteristic towns in China. This study mainly selects the ecological environment, transportation environment, facility environment, and service environment as the main components of the external environment. The scenic area level represents the ecological environment, transportation convenience represents the transportation environment, sports venue investment represents the facility environment, and Wi-Fi network coverage represents the service environment. This is consistent with Fan & Chen. (2020) that studied “Research on the Development of Healthy Towns under the Background of Population Aging”.





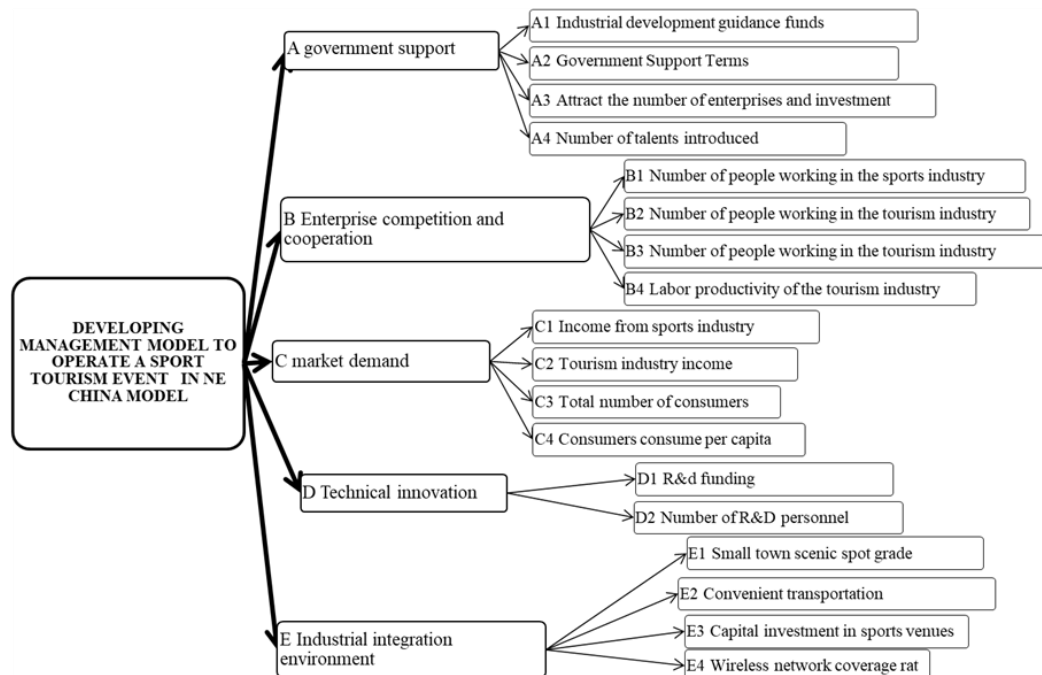


Figure 2 The Management Model to Operate a Sport Tourism Event in NE. China Model

## Recommendation

The high-quality development model of industrial integration of sports-characteristic towns in Northeast China could be summarized as First-Level Indicators with a total of 5 aspects and Second-Level Indicators with a total of 18 aspects. All experts opined that the resulting model was reliable. When put into practice, relevant agencies could apply it. After this study, the next research could explore and further develop this research model. Researchers may investigate the following related topics:

1. Strengthen planning guidance and establish the concept of integrated development.
2. Strengthen technological innovation and broaden channels for industrial integration.
3. Strengthen government guidance and supervision, and innovate integrated development mechanisms.
4. Adhere to market demand orientation and cultivate characteristic consumer markets.
5. Strengthen enterprise communication and cooperation, and cultivate integrated leading enterprises.

## References

- Boutroy, Eric & Bénédicte, Vignal & Soule, Bastien. (2015). Innovation theories applied to the outdoor sports sector: Panorama and perspectives. *Loisir et Societe*. 38 (3), 10.1080/07053436.2015.1083755.
- Carvajal, F., Vidriales, R., Rubio, S., & Martín, P. (2004). Effect of the changes in facial expression and/or identity of the models in a face discrimination task. *Psicothema*, 16, 587-591
- Chen, Y. (2018). Multiple development paths of sports towns from the perspective of industrial integration. *Journal of Sports Adult Education*, 34(4), 22-25.
- Fan, Y., & Chen, L. (2020). Research on the Development of Healthy Towns under the



- Background of Population Aging. *Technical Economics and Management Research*, 10, 112-117.
- Gao, X. (2018). *Research on the development status and countermeasures of sports and leisure characteristic towns in Shandong Province*. Qufu: Dissertation of Qufu Normal University.
- Geum, Y., Kim, M.S., & Lee, S. (2016). How industrial convergence happens: A taxonomical approach based on empirical evidence. *Technological Forecasting and Social Change*, 107, 112-120.
- Gu, J. (2018). Discussion on the integrated development of the tea tourism industry under the background of the construction of characteristic towns. *Contemporary Rural Finance and Economics*, 8, 10-14.
- Hu, C. (2018). Functional positioning, construction concept, and precise governance research of sports characteristic towns. *Sports and Science*, 39(3), 69-74.
- Hu, R., & Zhu, J. (2020). High-quality integrated development research of the sports industry and health industry. *Sports Culture Guide*, 11, 78-83.
- Liu, X. (2019). Agricultural characteristic towns: how to locate and how to build them. *Chinese Agricultural History*, 38(3), 132-138.
- Ni, Z., & Liu, L. (2018). Rural Revitalization and Regional Space Reconstruction: The Experience and Future of the Construction of Sports and Leisure Characteristic Towns. *Sports and Science*, 39(5), 56-62.
- Pan, Y. (2018). Research on the Development Model of Wuxi Special Tourism Town from the Perspective of Industrial Integration. *Modern Commerce and Industry*, 17, 16-18.
- Qiao, W., & Wang, J. (2019). Review of Research on Industrial Integration of Characteristic Towns. *Social Science Trends*, 3, 51-57.
- Rosenfeld, S. (1997). Bringing Business Clusters into the Mainstream of Economic Development. *European Planning Studies*, 5, 3-23.
- Scott, T.M. (1988). *The lithostratigraphy of the Hawthorn Group (Miocene) of Florida*. Florida Geological Survey Bulletin. 59, 148 p.
- Shen & Yang (2017). Sports Characteristic Town: A Practical Exploration of Cross-Border Integration of Sports Industry under the Background of Supply-side Reform. *Journal of Wuhan Institute of Physical Education*, 51(6), 56-62.
- Shen, K., & Dong, Q. (2018). The Local Exploration and Cultivation Path of the Construction of Sports Characteristic Town—Taking Keqiao Cool Play Town in Zhejiang Province as an Example. *Journal of Wuhan Institute of Physical Education*, 52(9), 25-31.
- Shi, X. (2018). International experience and enlightenment of the construction of sports-characteristic towns. *Journal of Guangzhou Institute of Physical Education*, 38(2), 39-67.
- Sun, F. (2019). Research on the integration path of the sports industry in the Yangtze River Delta under the background of "One Belt One Road". *Journal of Guangzhou Institute of Physical Education*, 39(2), 64-67.
- Tang, D. (2017). "Characteristic town" positioning and industrial integration development research. *China Business Theory*, 27, 137-139.
- Wang, et al (2018). Research on the Construction of "Internet + Sports" Related Industry Integration and Development Ecosystem. *Journal of Shandong Institute of Physical Education*, 34(2), 27-



33.

- Wang, R. (2018). *Research on the Development of Sports Tourism Resources in Sports and Leisure Characteristic Towns—Taking "Naked Heart" Sports Town in Deqing County as an Example*. Shanghai: Dissertation of Shanghai Normal University.
- Xie, Z., & Guo, Y. (2019). Exploration of the development model of healthy sports and leisure towns from the perspective of spatial distribution. *Journal of Shenyang Institute of Physical Education*, 38(2), 9-14.
- Xu, H. (2018). *Research on the Construction and Operation of Sports Characteristic Towns in Zhejiang Province*. Suzhou: Dissertation of Soochow University.
- Yang, F. (2018). *Research on the business model of sports and leisure towns in Yingpan Town, Zhashui County, Shangluo City*. Xi'an: Dissertation of Xi'an Institute of Physical Education.
- Yang, Y. (2019). Research on the industrial integration path of agricultural characteristic towns under the background of rural revitalization. *Shandong Textile Economy*, 3, 67-69

