Research on the Image Communication of Northeast Cities in The Post-Winter Olympics Era

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Abstract. In this article, under the background of the post-Winter Olympics era, we analyze and study the image dissemination of the northeast city with unique ice and snow resources, Based on the analysis results of the survey questionnaire and the author's observation and thinking on the current situation of image communication in northeast China, Analyzing the effect of the Beijing Winter Olympics on the image dissemination of northeast China, And find out that the corresponding problems, at the same time, In-depth research on the image of northeast city under traditional media, new media, cultural products and the characteristic festival activities in northeast China, Deep into the northeast urban culture, Exploring the spiritual connotation of the northeast city, To reexplore the new image shaping ways and communication strategies of northeast cities in the post-Winter Olympics era, To build the northeast of ice and snow and establish the overall communication view of the northeast city image, Fundamentally, the image of the northeast city is "re-shaped" and "new dissemination"..

Keywords: Beijing Winter Olympics; Northeast China City image; Ice and Snow Economy; Propagation Medium; Northeast revitalization.

1. Study method and process

1.1. Data sources and samples

Shaping the city image is an important means for the city to develop economy, spread culture, absorb talents and educate talents. City image is the main premise for the audience to read, understand and understand the city and form the city impression, which is the result of the accumulated impression formed by the disseminator, communication object, media and audience. Communication is of great significance to the shaping of modern city image, and showing people with an open attitude is one of the prerequisites for the comprehensive rejuvenation of Northeast China. In order to pay attention to the media image of northeast cities and form a positive modern image, it is necessary to study the role of various media in the construction of city image.

In view of the above problems and the existing situation, based on the theory of city image theory, through the questionnaire method to analyze the audience after the games under the cognition of the northeast city image, explore the effect of the winter Olympics on the northeast city image spread, for the northeast city image spread explore new path, to promote the northeast city influence, the revitalization of the northeast city development strategy.

The research data of this paper came from the questionnaire survey conducted on college students, and the sample is mainly from college students of Jilin University. In the process of design questionnaire, the author queries a large number of information, and focus on Beijing Olympics and northeast city reports, through different platform of northeast city image and during the winter Olympics and after the northeast city image key research and analysis, the survey questionnaire combined with the project theme design, and distribute the questionnaire. We collected 213 questionnaires and obtained the preliminary survey results. In the personal information section, we got the proportion of women (68.1%) larger than men (31.9%), the proportion of people aged 19-25 was the largest, up to 70%, and young people aged 19-25 and those under 18 accounted for more than 85%. The respondents were mainly located in the three northeastern provinces, Shandong province and Henan provinces, including 12 other provinces, covering 17 provinces, 5 autonomous regions

and 4 municipalities directly under the Central Government. The family seat covered most parts of the country. In conclusion, the sample selection is more balanced and appropriate.

1.2. Operating variables

1.2.1 Dependent variables: the overall image of the northeast city in the eyes of the respondents

In this study, investigating the image of northeast cities, the following questions were measured: "You think the overall image of northeast cities" (from 1= "very negative" to 5= "very positive"). The measured mean value is 3.72, and the overall image is good.

1.2.2 Independent variables:

X1 for the number of types of media forms that you often see / contact / use. In measuring respondents often see or contact or use the number of media form of media, this study in the measurement in the questionnaire through the following questions: "the following media form, you often see / contact / use is" options respectively contains the traditional media (newspapers, magazines, radio, television, etc.), short video platform (TikTok, quickly, etc.), video platform (iQIYI, tencent video, youku video, bilibili, etc.), literature, film and television works, activities in several aspects. The study asked respondents to choose from the above options the form of media they often see or exposed to. The higher the proportion of the selected media forms, the greater the possibility that the propaganda content will be discovered and concerned.

X2 is the number of types of factors that paid attention to the Northeast during the Winter Olympics. The interviewees were asked the following multiple topics: " What channels do you learn about Northeast China?", requiring them to choose at least one and three options, including seven:" traditional media reports such as TV and radio "," "new media platforms such as Douyin and Weibo", "literature, film and television works", "festival activities", "personal experience", "introduction by others" and "others".

X3 is the impression of Bingdun Dun, the mascot of the Beijing Winter Olympics. In the survey, he asked the respondent, " What is your impression of the mascot of the Beijing Winter Olympics?"(From 1=" very annoying "to 5=" very like "), the larger the value, the better the impression of the mascot ice pier.

X4 is the coefficient of the publicity effect of the Winter Olympics. The publicity effect coefficient of the Winter Olympics will be measured from 1= "very poor" to 5= "very good".

This study conducted multiple linear regression analysis to determine the influence of the Winter Olympics on the overall image of northeast cities by determining the dependent and independent variables. We began this with a multiple linear regression analysis.

Use python for data modeling, and use pandas, seaborn, matplotlib, numpy and statsmodels libraries to clean the data and remove the dirty data. Multiple linear regression was performed on the obtained data. The results are obtained are as follows:

Table 1 Fitting results of the regression analysis

	coef	**Std err**	**t**	**P>| t |**	**[0.025**	**0.975]**
const	1.9842	0.403	4.919	0.000	1.189	2.779
X1	-0.0152	0.050	-0.305	0.761	-0.114	0.083
X2	-0.0602	0.076	-0.797	0.426	-0.209	0.089
X3	0.0774	0.078	0.994	0.321	-0.076	0.231
X4	0.3632	0.068	5.303	0.000	0.228	0.498

Coef represents the coefficient of the variable, sdt err is the standard error, and t and p values are used to test whether the regression coefficient for this independent variable is significant. [0.025 0.975] is chosen for the 95% confidence interval. The table regression equation is:

$$y = 1.9842 - 0.0152x_1 - 0.0602x_2 + 0.0774x_3 + 0.3632x_4$$

Take x_4 as an example, for every one unit of the publicity effect coefficient of the Winter Olympics, the overall image forecast value of northeast cities will increase by 0.3632. The scatter plot and the fitted line and residual plot are as follows:

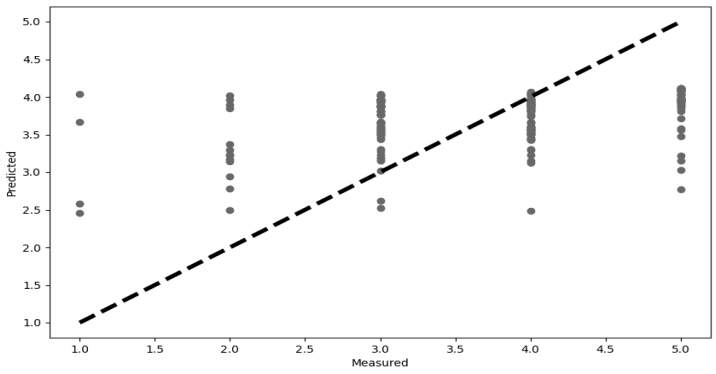

Figure 1 Scatterplot and fitted straight line of forecast results.

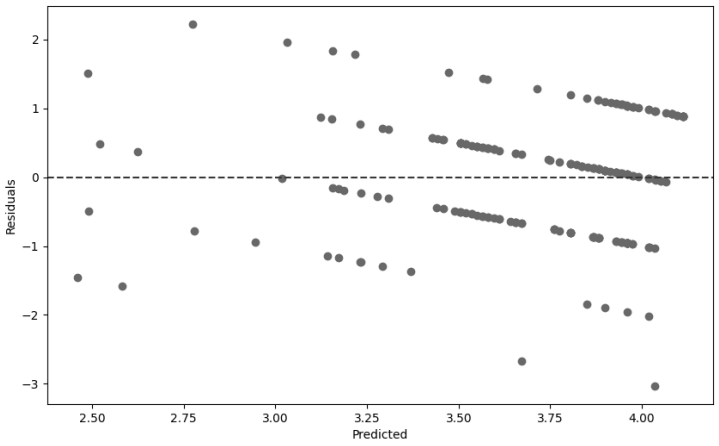

Figure 2 The residual plot of the prediction results

It can be seen from the data in the table and the scatter plot residual plot that the fitting effect is more significant. Concerned that the Std err of the independent variable is 0.068, which means that the standard error of the estimated value of the regression coefficient is 0.068; P>|t| is 0, less than 0.05; 0 is not included in the confidence interval of [0.025 0.975]; the above information is integrated , which means that the regression coefficient is significant, and then observe the fitting results of the other three variables, the coefficient of is the highest level of significance compared with the other three variables, and the fitting effect is the best. Therefore, the independent variable "the coefficient of the Northeast's publicity effect using the Winter Olympics" has the most significant impact on the dependent variable "the overall image score of Northeast cities in your opinion".

1.2.3 Other variables

Representative characteristics of the Northeast. This variable includes natural resources, film and television literary works, festival activities, dialects and northeast people. Respondents will be asked with the following questions: " What do you think of first when it comes to Northeast China?"We asked respondents to choose a minimum of one and a maximum of three. The options include "ice and snow", "Northeast cuisine", "film and TV series", "Northeast dialect", "Northeast sketch, errenzhuan", "Northeast Scenic area / scenery", "Northeast festival activities", "Northeast people (athletes, stars, Internet celebrities)", "Northeast Industry" and "others". The measurement results showed that the top three key words were "ice and snow", "Northeast dialect" and "Northeast cuisine".

Representative festival in northeast cities. The question is " What do you know about the following representative festivals in Northeast China?"Respondents were asked to choose" Harbin Ice and Snow Festival "," Chagan Lake Winter Catch "," Changchun Film Festival "," Dalian Huai Appreciation Festival "," Changchun Automobile Expo "and" Other ". Options selected representative festivals of major cities in the three northeastern provinces, but "other" options are also set in the options for respondents to fill in other festivals in northeast China. The results of the questionnaire show that the top three representative festivals in Northeast China are respectively "Harbin Ice and Snow Festival", "Chagan Lake Winter Catch" and "Changchun Film Festival".

The image influence of the Beijing Winter Olympics on northeast China and the audience's active acceptance of the snow and ice resources in northeast cities. In order to measure the impact of the respondents on the Beijing Winter Olympics on the image of northeast China, the interviewees were asked the following three questions: ① " Do you think the Beijing Winter Olympics will help improve the image of the northeast city?"② " Will you ski and travel in northeast cities because of the performance of northeast athletes in the Winter Olympics?"③" If you open a large ice and snow culture experience hall in northeast China, will you come to experience it?"The above three questions are answered with" yes "value 1 and" no " value 0. The calculation results close to 1, indicating that the more positive the attitude towards the influence of Beijing Winter Olympics on the image of northeast China. Through XX calculation / XX analysis, the calculated average sample value is: 0.807512,0.71831, and 0.868545, respectively. It can be concluded that the holding of the Beijing Winter Olympics has positive significance and effect on the image construction of northeast cities. For the Winter Olympics related to ice and snow, the respondents pay more attention to the northeast cities rich in ice and snow resources, and have a positive impact on the image of northeast cities.

The publicity effect of the northeast cities during the Winter Olympics and the audience's recognition of the northeast cities. The question was " Have you noticed the publicity in northeast China during the Beijing Winter Olympics?"" Will you go to Northeast China to study / invest / travel because of the Winter Olympics?"The above two questions are answered as" yes "assignment 1 and answered as" No " assignment 0. The average calculated sample was 0.58216 and 0.530516 respectively, and the calculation results were around 0.5. It can be seen that the publicity effect of northeast cities during the Winter Olympics was not particularly significant, and northeast cities did not seize the opportunity of Beijing Winter Olympics and did not apply correct and effective methods for publicity.

2. The Winter Olympic Games opportunity: Ice and snow is also gold and silver mountains

2.1. Innate endowment: the image dissemination of the Winter Olympics and ice and snow sports in northeast cities

The ice and snow sports in northeast China are known to the Chinese people, but for most people who do not know much about ice and snow sports, their knowledge is unknown. And the high-profile Winter Olympics undoubtedly opens the door of ice and snow and ice for more people, brings great opportunities for the development of ice and snow sports in China, and stimulates the enthusiasm of the general public to participate in ice and snow sports. According to a statistical survey report on driving 300 million people to participate in ice and snow sports, by October 2021, the total of 24 percent participated in ice and snow sports. In addition, the participation of ice and snow sports in northeast China is significantly higher than that in other regions, which virtually drives the image dissemination of ice and snow sports in northeast cities. Realize the sustainable development of ice and snow resources, need to make full use of the northeast city innate endowment, through media means especially emerging media means to further build and spread after the games era of northeast city ice and snow sports image, subversion "northeast old industrial base" and other old northeast city image, reengineering "ice", "ice and snow sports" and other new northeast city image, to drive the

northeast ice and snow economic industry to provide basic security, accumulation of northeast city before the overall development and speed.

Impact improvement: The impact of the Winter Olympics and ice and snow cities. According to statistics, the total number of Chinese sports delegations for the Beijing Winter Olympics is 387, with 100 of the 176 athletes coming from the three northeastern provinces. In the research process, nearly 72% of the respondents chose to ski and travel in northeast cities because of the performance of northeast athletes in the Winter Olympics, which proved that the Winter Olympic Games and the excellent performance of northeast athletes will play a certain role in promoting the image development of snow and ice in northeast cities. The excellent performance of ice and snow athletes in northeast China in the Winter Olympics shows people their competitive advantage in this aspect, and the cultural influence of snow, ice and snow in northeast cities will also be strengthened.

Through consulting relevant materials, the author found that northeast China is the main gathering area of Manchu. Based on the needs of survival and development, the Manchu ancestors created and invented many ways of production and life adapted to the snow and snow conditions in the ice and snow environment. After long-term inheritance and development, this way of production and life has gradually evolved into an ice and snow sports with strong folk characteristics. Traditional Manchu ice and snow projects in northeast China are everywhere and in various forms, forming a traditional ice and snow sports system with unique regional characteristics in northeast China. However, due to the influence of various subjective and objective factors in the process of social development and changing times, many Manchu traditional ice and snow sports and folk attractions with unique ethnic characteristics are in the predicament of extinction or extinction.

To sum up, with the help of the great opportunity of the 2022 Beijing Winter Olympics, we will make good use of the media publicity power to publicize the northeast Olympic athletes, drive the development of ice and snow economy in northeast China, and enhance the image and influence of ice and snow in northeast China. At the same time, it is necessary to explore and publicize, inherit and develop the traditional ice and snow projects in northeast China, so that the culture of northeast cities with the advantages of regional ice and snow resources will become a major driving force for the development of northeast China. We will further explore the ice and snow culture with northeast urban characteristics and establish the ice and snow tourism belt with northeast urban characteristics.

2.2. Gold and silver mountains: the image transformation of the Winter Olympic Games and the ice and snow economy in northeast China

In order to realize the economic image transformation, the northeast cities should seize the heat brought by the Beijing Winter Olympics, build the regional advantages of ice and snow sports, transform from the old industrial base to the ice and snow sports and cultural tourism city, and make up for the regional disadvantages in the comprehensive development. As a productive resource with huge potential, snow and ice resource is a strategic resource to meet the needs of productive enterprises for research and development, production and testing. General Secretary Xi Jinping has put forward the proposal to "vigorously develop the ice and snow economy in cold areas", which reflects the great value of ice and snow resources and finds that China wants to lead the world's industry and create natural resources to rely on. We will rationally develop the ecological dividends generated by resource-saving industries such as ice and snow tourism, ice and snow sports, and ice and snow culture, promote the harmony between people and the environment, and strengthen the sustainable development of ice and snow resources in northeast China. By excavating the regional culture of northeast China, exploring the spiritual connotation of northeast cities, finding new ideas, new directions and new strategies for the advantages of ice and snow resources in northeast China, transforming the "cold resources" into "hot economy", which is conducive to realizing the image transformation of the ice and snow economy in northeast cities.

3. Thinking change: from the ice and snow economy to the urban influence

3.1. Ice and snow economy: cultural and tourism industry thinking led by GDP

Developing the cultural and tourism industry is an important measure to enhance the influence of the city. Before the Industrial Revolution, northeast China, as an old industrial base, played a very important role in the development of national economy. However, after the reform and opening up, with the gradual transformation of the national economy and the development of coastal cities, the northeast China began to lose its economic status and decline. The 2022 Winter Olympics has brought the most direct and favorable impact to Beijing and Zhangjiakou. Judging from the potential 300 million ice and snow lovers and staff, the radiation effect of the Winter Olympics is also considerable. Ice and snow sports belong to seasonal sports, and in order to make the sustainable and profitable benefits of snow and ice economy investment, it is also necessary to implement the concept of diversified management, so as to realize the "economy" and "humanity" and develop the flexible cultural tourism industry.

3.2. Olympic inspiration: the overall influence in the vision of city image communication

To promote the overall economic improvement of northeast China, it is necessary to seize the opportunity of The Times to fully develop the ice and snow economy in northeast China, and to drive the development of other related industries with the ice and snow resources in northeast China. Make full use of the innate endowment of northeast cities, explore the core humanistic elements, establish the ice and snow city, and shape the overall city image view with humanistic image as the core, so as to form long-term communication, and enhance the overall influence in the vision of urban image communication. Subvert the image of old northeast cities such as "Northeast Old Industrial Base", rebuild the image of new northeast cities such as "Ice and ice Capital" and "Ice and ice Sports World", provide basic guarantee for driving the ice and ice economic industry in northeast China, and accumulate the acceleration before the overall development of northeast cities.

In addition, the northeast region should also learn from other cities that have hosted the Winter Olympics, such as Vancouver, Canada, Salt Lake City, the United States, Sochi, Russia, Pyeongchang, South Korea and other alpine regions, and learn from the publicity and communication methods of these cities before hosting the Olympic Games. Taking advantage of the opportunity of the Winter Olympics, using the inspiration brought by the Olympic Games, combining the characteristics of snow and ice resources, establishing effective connection, and shaping the cultural image of snow and ice cities in northeast China.

4. Ice and snow image: committed to the overall image dissemination of the city

4.1. Improve communication power: change media thinking

From traditional media to the era when everyone is media, we should pay attention to traditional media and pay more attention to new media. With the rapid development of the Internet, new media have become an increasingly important means of communication. When the respondents answered the question "what channels do you know about northeast China", in addition to the personal experience of life in northeast China, "new media platforms such as TikTok and Kuaishou (60.19%)" accounted for the highest proportion, followed by "traditional media such as TV and radio (40.28%)". Therefore, in spreading the city image, we should attach importance to the traditional media, pay more attention to the new media, build an all-media matrix, change the media thinking, fully apply the new media to reasonably plan and guide the communication content, and formulate scientific and comprehensive communication strategies to spread the new image of the northeast city.

Attach importance to economic activities, pay more attention to cultural communication, and committed to the improvement of communication capacity. In recent years, the humanistic image has gradually become the main point of the development of each city. If the building is the bone and flesh

of a city image, the citizens are the blood of the city, and the economy is the lifeblood of the city, then the humanistic spirit of the city is the soul and core of the city. However, in many places, the phenomenon of "one thousands of cities" attaches importance to economy rather than humanity, ignores the integration of humanistic spirit in the construction of urban space, and pursues urban assimilation rather than individuation. So, the northeast city in the process of construction, to borrow good Beijing Olympics dongfeng, make good use of the northeast ice resources, history and culture and local minority characteristics build alone belongs to the northeast ice humanities image, with "soft culture" improve "hard power", "hard" power "feedback" soft culture ", in order to promote the northeast city transmission ability.

4.2. Focus on influence: pay attention to user needs

In the past, the government was the main body of city image communication. From design and planning to brand communication, the government plays a leading role. At the same time, the traditional media, as the mouthpiece of the Party, spread the government's planning "step by step", and the audience will selectively receive the city image information issued by the government according to their own initiative, and the communication efficiency and effect are relatively low. The local government should regard the audience as users, constantly pay attention to user needs, and "customize communication" through agenda setting for users in different groups, so as to not only make the target users readily accept the city image of northeast China, but also realize efficient and virtuous cycle of communication.

4.3. Form a centripetal force: build a core image and form a long-term communication

Although the Winter Olympics has set off a wave of ice and snow sports and tourism, which has driven the ice and snow industry in northeast China with rich ice and snow resources, the audience only takes the ice and snow industry in northeast China as a way to publicize the Beijing Winter Olympic Games, and even can be said to be an extension of Beijing ice and snow sports venues. Although the ice and snow industry in various cities in northeast China started earlier, the overall ice and snow cultural atmosphere has not yet been formed. In the process of research, the respondents for the winter Olympics mascot "ice pier" love reached 4.39 (5), it can be seen that a good IP image helps people to activities associated or the memory of the city, in the winter is fully shows the ice pier pier and Beijing Olympics, fully shows the "mascot" symbol building role, carry sense of perception and positive propaganda value, this is in the city or large activities of clear cognition and clear positioning to create the IP image.

We can, with the help of the symbolic IP image of Bingdun Dun and Xuerong, shape the overall communication view of the city image in the new communication environment, remove the core, build IP, close to users and long-term communication. Create and give full play to the characteristics of the city, so as to form the characteristics of the outside audience to establish the iconic image of the city. Should break with GDP as the core of snow and ice economy, snow and snow industry under the concept of northeast city image construction and spread, through the analysis of other cities IP symbol building role, mining northeast cities localization characteristics, organization to carry out ice and snow sports and all kinds of sports events, ice and snow sports spirit, build ice and snow sports brand, improve the public awareness and ice and snow sports and social penetration. Strengthen the cultural interaction and exchange between cities in northeast China, and then build the ice and snow sports brand in northeast cities and drive the development of ice and snow industry in northeast China with the core cultural elements of northeast cities.

5. Summary

The Beijing Winter Olympics has brought opportunities for the spread of city image in northeast China. Northeast China is a region rich in snow and ice resources. Building the city image of northeast China is of great significance for the development of northeast China. The shaping of northeast cities

can be carried out from the following aspects: to build the image of snow and ice sports in northeast cities, to enhance the cultural influence of snow and ice in northeast cities, and to transform the image of snow and ice economy in northeast cities. Afterwards, changing my thinking, further enhanced the influence of Northeast cities from the development of ice and snow economy, and devoted myself to the overall image of Northeast cities based on the image of ice and snow by means of various media. Apply the "good image" created by "good media" to drive the "good economy", and then use the "good economy" to feed back the "good image", so as to realize the closed loop of healthy urban development.

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