Performance, Role Path and Countermeasures of Foggy Weather Affecting the Formation of Tourism Intention in Beijing Municipality

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Abstract: The widespread distribution of hazy weather is a global environmental problem. Previously, the hazy weather situation in Beijing was also once very serious. The research of this paper found that after years of efforts, the perception of national hazy weather image and the perception of urban hazy weather image are no longer minus points in the formation of Beijing inbound tourism intention, and have played a positive and active role in promoting it. Cognitive perception and emotional perception are both effective paths for the national haze weather image to play a role in the formation of Beijing's inbound tourism intention. Cognitive perception is the only effective path for the city's hazy weather image to contribute to the formation of Beijing's inbound tourism intention. Based on this, this paper puts forward the corresponding countermeasures, hoping to effectively use the role of national haze weather image and urban haze weather image in influencing the formation of Beijing's inbound tourism willingness, and to further enhance the effect of Beijing's inbound tourism marketing and promotion.

1. Introduction

Haze weather is prevalent globally, causing concern not only in developing countries but also in some developed countries and regions. China and India are the countries with the most severe hazy weather in the world. Cities in China and India are often affected by hazy weather, especially in winter, due to accelerated industrialisation and urbanisation, as well as high levels of vehicle emissions and household pollution. Some countries in the Southeast Asian region may face severe hazy weather problems during the fire season due to forest fires and crop burning. Some countries in the Middle East region, especially in the industrially developed and oil-producing intensive areas, suffer from frequent haze due to factors such as industrial emissions and sandstorms. Some large cities and industrial areas in the United States and Europe are also frequently affected by hazy weather; for example, the Los Angeles area is plagued by haze year-round because of its location and dense traffic, and cities such as London and Paris may face haze in winter.

Haze weather poses extensive and serious hazards to human health, the environment, the economy and society. Harmful substances such as particulate matter, ozone, sulphur dioxide, nitrogen oxides and other harmful substances in hazy weather have serious impacts on human health. Long-term exposure to haze can lead to respiratory diseases, cardiovascular diseases, immune system disorders and other health problems, and increase the risk of respiratory infections, asthma attacks and other illnesses, especially for children, the elderly and people with respiratory diseases. Haze weather leads to an increase in the concentration of atmospheric pollutants, causing serious pollution to the environment. Particulates and harmful gases in haze can cause damage to soil, water bodies and ecosystems, affecting plant growth and ecological balance and destroying the ecological environment. Haze weather increases the amount of particulate matter in the air, reduces air transparency and leads to reduced visibility, which affects the safety of transport, air navigation and ship navigation, and increases the risk of traffic accidents and incidents. The hazy weather affects production and the normal functioning of the labour force, leading to disruption of business production. The hazy weather has many impacts on social life. People's travelling is restricted and outdoor activities are

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hindered, affecting the quality of life and living habits, increasing social costs and management difficulties, and negatively affecting the stability of society and people's livelihoods.

There are also many impacts of hazy weather on the tourism industry. Haze weather leads to an increase in particulate matter in the air, which reduces the visibility of scenic spots and affects tourists' experience of viewing and photographing the attractions. Especially for tourist destinations where natural landscape is the main attraction, such as landscape scenery and forest parks, the reduced visibility will directly affect the tourists' experience. Harmful particles and gases in hazy weather have a direct impact on human health, and prolonged exposure to haze may cause respiratory diseases and other health problems. As a result, tourists may be concerned about their health and safety and reduce their outdoor activities and sightseeing trips under hazy weather. The restriction of these activities will affect tourists' travel plans and experience. Due to the impact of hazy weather on the travel experience, some tourists may choose to cancel or delay their travel plans, resulting in fewer tourists and lowering the popularity and income of tourist attractions[1]. More importantly, in the long run, tourists may have a negative impression of haze-affected destinations, affecting their trust and satisfaction with the area and lowering the image and reputation of the destination[2][3].

Studying the influence of hazy weather on the formation of tourism willingness can expand the field of environmental impact research. Research on the impact of hazy weather on the formation of tourism intentions can enrich the content of environmental impact research, shift attention from the natural beauty of the natural environment to the impact of environmental quality, and help to more comprehensively understand the mechanism of environmental impact on the formation of tourism intentions. Studying the influence of hazy weather on the formation of tourism intention can deepen the study of tourism behaviour. By analyzing the impact of hazy weather on the formation of tourism intention, the decision-making process, behavioural choices and preference changes of tourists can be studied in depth, thus enriching the content of tourism behaviour research and enhancing the understanding of tourism market demand. Research on the impact of hazy weather on the formation of tourism willingness can strengthen the research on the sustainable development of tourism. The influence of hazy weather on the formation of tourism intention reflects the importance of environmental quality to the sustainable development of tourism. By studying the effect of hazy weather on the formation of tourism willingness, it can provide theoretical support and policy suggestions for promoting the sustainable development of tourism.

Studying the impact of hazy weather on the formation of tourism intention can optimise the management strategy of tourism destinations. By studying the impact of hazy weather on the formation of tourism willingness, it can provide a scientific and reasonable management strategy for tourism destinations, strengthen the environmental protection of scenic spots, improve air quality, and reduce the negative impact of hazy weather on the formation of tourism willingness[4]. Research on the impact of hazy weather on the formation of tourism intention can improve the quality of tourism services. In response to the health and safety problems of tourists that may be brought about by hazy weather, tourism practitioners can improve the quality of service, provide a safer and healthier tourism experience, and enhance the formation of tourists' tourism intention. The study of the impact of hazy weather on tourism willingness formation can help to develop emergency management measures. Haze weather is a sudden meteorological event, which may have an adverse impact on tourism. Therefore, it is necessary to formulate emergency management measures to respond to the impact of hazy weather on tourism willingness to form in a timely manner, so as to reduce losses and protect the rights and interests of tourists. The study of the impact of hazy weather on the formation of tourism willingness can enhance the competitiveness of the tourism industry. By scientifically and effectively responding to the impact of hazy weather on the formation of tourism willingness, the competitiveness of tourism destinations can be enhanced, their attractiveness and influence can be strengthened, more tourists can be attracted, and the development of tourism can be promoted.

2. The performance of hazy weather affecting the formation of inbound tourism willingness in Beijing

Beijing is the political, economic and cultural centre of China, with rich natural and humanistic

landscapes, and in the process of China's vigorous development of inbound tourism, Beijing is also actively developing its own inbound tourism as a front-runner. After 42 years, Beijing's inbound tourism has made great strides, and the market scale continues to leap to a new level. In 2019, Beijing received a total of 3,769,000 inbound tourists, with 3,207,000 foreigners, accounting for 85.1% of the total number of inbound tourists received; and 562,000 tourists from China, Hong Kong, Macao and Taiwan were received. In terms of major source countries, in 2019, Beijing received a cumulative total of 629,000 tourists from the United States, 247,000 from Japan, 242,000 from South Korea, 198,000 from Germany, and 153,000 from the United Kingdom. In terms of intercontinental source markets, in 2019, Beijing received a cumulative total of 1.125 million Asian tourists (including China's Hong Kong, Macao and Taiwan regions), 996,000 European tourists, 830,000 tourists from the Americas, 166,000 tourists from Oceania, and 74,000 tourists from Africa. Among the cost components of inbound tourists, long-distance transport accounted for the highest proportion, at 28.4 per cent; followed by shopping and accommodation, at 24.5 per cent and 19.0 per cent, respectively; catering, at 9.4 per cent; excursions to scenic spots, at 4.5 per cent; in-city transport and entertainment, at 4.0 per cent and 1.4 per cent, respectively; and postal and telecommunication, at 0.4 per cent, the lowest proportion.

From 1980 to 2012, the number of inbound tourists in Beijing increased year by year, except for some years due to fluctuations that led to a small decline in the number of inbound tourists in Beijing, overall the number of inbound tourists in Beijing as shown in Figure 1 has a clear upward trend.

Figure 1 Inbound Tourism Reception in Beijing, 1980-2019

However, after reaching a peak of 5.009 million in 2012, the number of inbound tourists in Beijing started to decline year by year. There are many reasons for the decline in the number of inbound tourists to Beijing, one of which is the severe haze weather in the city, which was one of the major reasons[5][6]. 2008 Beijing Olympic Games, there were foreign athletes who gave up the opportunity to participate in the Olympic Games because they did not understand the situation of haze management in Beijing at that time, and were worried about the hazards of haze weather on their health. The number of inbound tourists in Beijing has still continued to decline in recent years, and the Beijing Municipal Bureau of Statistics and the National Bureau of Statistics Beijing Survey General Team released the "Beijing Municipal Statistical Bulletin on the National Economic and Social Development in 2019", which showed that in 2019, the city received 3,769,000 inbound tourists, a decline of 5.9 per cent. Among the inbound tourists, there were 3.207 million foreign tourists, down 5.6 per cent, and 562,000 tourists from Hong Kong, Macao and Taiwan, down 7.3 per cent. International tourism revenue amounted to US$ 5.19 billion, down 5.9 per cent.

In order to study the influence of haze weather on the formation of inbound tourism intention in Beijing, we carried out a questionnaire survey. The questionnaire and scale of this paper were

developed on the basis of following the existing research results, combining the destination image theory, segmented decision-making theory and the specific context of Beijing inbound tourism decision-making. This paper firstly conducted a relevant open-ended survey. Based on the data of the open-ended questionnaire, the first part of the scale was designed to investigate the basic information of the respondents so as to obtain the data of certain control variables in combination with the research purpose of this paper; the first part of the scale was designed to investigate the basic information of the respondents so as to obtain the data of certain control variables in combination with the data of Deng, Li, Ma, Xueying Huang et al., Daxin Dong et al., Goh, Gani, Clements, Becken, Jin, Zhang, and Gao designed the second part of the scale to investigate the influence of national hazy weather image and city hazy weather image on the formation of inbound tourism intention in Beijing; combining Gearing et al., Dwyer & Kim, Naude & Saayman, Ghaderi et al, Yang et al., Martin & Witt, Khadaroo & Seetanah, Habibi, Ramos & Rodrigues, Ghalia, Benur & Bramwell, etc. to design the third part of the scale to investigate the influence of Beijing's resource endowment on the formation of inbound tourism intention. The third part of the scale was designed to investigate the influence of Beijing's resource endowment on the formation of inbound tourism intention; the fourth part of the scale was designed to investigate the respondents' inbound tourism intention in Beijing by combining the research results of Huang et al., Gao et al. and Yang Kai et al. On this basis, this paper conducted a pre-test, and calculated the discriminative power of each item in the scale according to the results of the pre-test, deleted the items with weak discriminative power, and formed the official scale.

The questionnaire survey of this study was conducted by a combination of mail and internet distributed questionnaires and face-to-face interviews. English is the main language used by tourists in the process of travelling, so the questionnaire was distributed in English for this data collection. Since the target of this questionnaire survey is tourists who may have the intention of inbound tourism in Beijing, in order to ensure that the respondents can more accurately understand the questions in the questionnaire, and to ensure the quality of the questionnaire survey, we compiled a non-guidance questionnaire filling assistance outline for the key questions in the questionnaire. The questionnaires were sent to the United States, the United Kingdom, France and other major source countries of Beijing inbound tourists (due to language reasons, the questionnaires were not sent to the Asian region), taking into full consideration of the economic location and geographic location to ensure the representativeness of the sample. A total of 1,266 questionnaires were distributed in this paper, and 1,081 questionnaires were actually returned, with a return rate of 85.39%. Of the 1081 returned questionnaires, 1025 were valid, with a validity rate of 94.82 per cent.

By analysing the data from the questionnaire, it can be seen that the perception of hazy weather image significantly affects the formation of inbound tourism intention in Beijing. In the recent literature on destination image theory, scholars have put forward a new viewpoint that the destination image at the macro level and the destination image at the micro level will simultaneously act on variables such as the number of tourists and tourism income of a certain destination, and that the destination image at the macro level and the destination image at the micro level may also have an interactive effect[7]. This view has enriched the previous understanding of destination image and has led to the division of destination image theory research into macro-level destination image research (country destination image research) and micro-level destination image research (city destination image research) based on the dimension of destination scope. If the research is further subdivided, it can be found that if the image perception of hazy weather is subdivided into macro-level hazy weather image perception (China's national hazy weather image perception) and micro-level hazy weather image perception (Beijing's hazy weather image perception), both China's national hazy weather image perception and Beijing's hazy weather image perception will have a significant impact on the formation of Beijing's willingness to enter the country for tourism.

Changes in the perceived image of the country's hazy weather will lead to a significant increase in foreign tourists' willingness to travel inbound to Beijing, with other variables held constant. Foreign tourists' perception of China's national hazy weather image will significantly affect the formation of their inbound tourism intention in Beijing[8]. This is also in line with the academic view of scholars

such as Nikitina and Vorontsova that the image of the country's hazy weather has a significant role in the formation of inbound tourism intentions. However, the specific findings of this paper differ from most of the existing literature. Previously, China's economic development mainly relied on resource-intensive and labour-intensive industries, with high resource consumption and environmental pollution, which led to the hazy weather becoming a label of China. China's haze weather is criticised by the world, so most of the existing literature findings show that haze weather is one of the hindering factors for the development of inbound tourism in China[9][10]. The relevant departments of the Chinese government are aware of the harmfulness of haze weather, and in recent years, China has actively carried out industrial adjustment and layout, reduced resource consumption, strengthened environmental governance, and the haze weather situation has been greatly improved. Therefore, the empirical findings of this paper show that although the absolute value of the regression coefficient of the perceived image of the country's hazy weather is not large, it is already significantly greater than 0, which indicates that the image of the country's hazy weather is at least no longer a minus for the formation of Beijing's inbound tourism intention, which is an important difference from the results of most existing literature.

With other variables held constant, a change in the perception of the image of urban hazy weather at the sample mean will lead to a significant increase in foreign tourists' willingness to travel inbound to Beijing. Foreign tourists' perception of the image of hazy weather in the city of Beijing will significantly affect the formation of their willingness to travel inbound in Beijing. This is also in line with the academic view of scholars such as Nikitina and Vorontsova that the image of urban hazy weather has a significant effect on the formation of inbound tourism intention. Previously, due to Beijing's own industrial structure, energy structure, vehicle structure, geographic formations, and the influence of neighbouring provinces, Beijing's hazy weather conditions were once very serious, and the North China region, in which Beijing is located, used to be one of the most serious regions in China in terms of hazy weather. Since 2012, the number of inbound tourists to Beijing has continued to decline, and some scholars believe that the hazy weather is an important influencing factor. After years of effort, the concentration of major air pollutants in Beijing has shown an overall long-term declining trend. Compared with 2013, PM2.5 , PM10 , NO2 , and SO2 will decrease by 64.2%, 43.6%, 53.6%, and 88.7%, respectively, in 2023, achieving significant improvement in air quality. Similar to the national hazy weather image, the empirical findings of this paper show that the regression coefficient of the perceived urban hazy weather image is also significantly greater than 0. The current urban hazy weather image of Beijing contributes to the formation of inbound tourism intention, which is also different from the results of the majority of existing literature.

3. The role path of hazy weather affecting the formation of inbound tourism willingness in Beijing

Literature on destination image theory shows that no consensus has been reached on the measurement of destination image, and scholars have adopted different combinations of indicators to measure it, but no matter what combinations of indicators are adopted, cognitive perception of destination image and emotional perception of destination image are the basic indicators. Cognitive perception refers to the individual's perception and understanding of the external environment and information, involving the collection, processing, organisation and interpretation of information. In cognitive perception, an individual receives external stimuli through the sense organs, transforms these stimuli into recognisable information, and then processes and understands this information through the cognitive process, ultimately forming a perception and understanding of the external environment. Cognitive perception includes the perception of objective things, the understanding and interpretation of information, and the cognition and adaptation to the environment. It is an important foundation for human beings to know the world and interact with the outside world, and influences individual thinking, emotion and behaviour. Cognitive perception is now an important research direction in the field of psychology, and its research mainly focuses on the perceptual processing process, the interaction between perception and cognition, interdisciplinary research, research on perceptual-cognitive disorders, and practical applications, among other sub-divisions. In the study of

perceptual processing, researchers focus on the neural mechanism and cognitive process of perceptual processing, exploring the transmission and processing of perceptual information in the brain through neuroimaging techniques (e.g., electroencephalography, functional magnetic resonance imaging, etc.) and behavioural experiments, to reveal the neurological basis and cognitive mechanism of cognitive processing. In the study of the interaction between perception and cognition, the interaction of cognitive perception is investigated to explore the influence of cognitive factors on perceptual processing as well as the influence of perceptual information on cognitive processes. For example, how cognitive factors such as attention, memory, and language affect perceptual processing and comprehension, and how perceptual information affects cognitive activity and decision-making behaviour. In interdisciplinary research, the study of cognitive perception has gradually involved interdisciplinary fields, such as computer vision, artificial intelligence, cognitive neuroscience, etc. By integrating the theories and methods of different disciplines, the nature and mechanisms of cognitive perception are deeply explored, and the development of interdisciplinary research is promoted. In perception-cognitive disorders research, we study the application of cognitive perception in the nervous system and mental health, and explore the manifestations and mechanisms of cognitive perception in cognitive disorders (e.g., Alzheimer's disease, autism spectrum disorders, etc.) and psychiatric disorders (e.g., anxiety disorders, depression, etc.), so as to provide theoretical foundations and clinical guidance for the early diagnosis and treatment of related diseases. In practical applications, research on cognitive perception also has a wide range of applications in the fields of human-computer interaction, virtual reality, and intelligent systems. Researchers use cognitive perception theory and technology to design intelligent human-computer interfaces and interaction systems to improve user experience and work efficiency.

Emotional perception is the ability of an individual to perceive, understand and process emotional information in the surrounding environment and social situations. This ability enables individuals to perceive the emotional states, emotional expressions, and emotional experiences of others, and to engage in emotional communication and emotional interactions on this basis. Emotion perception involves the recognition and understanding of emotions, feelings, and emotional semantics, including recognising others' emotional expressions and emotional experiences, understanding the meaning of emotional expressions and the emotional motivations behind them, and responding and reacting appropriately to others' emotional states. Emotion perception is not only the basis for interpersonal and social interactions, but also an important component of an individual's emotional management and mental health.

Emotion perception has also now become a much-anticipated research direction in the fields of psychology and neuroscience, with research focusing on emotion recognition and expression, neural mechanisms of emotion processing, emotion perception and individual differences, emotion perception and mental health, and practical applications, among other subfields. In the study of emotion recognition and expression, researchers are committed to understanding individuals' ability to perceive and recognise emotional information, as well as the ways and characteristics of emotional expression. Through experiments and observations, we explore how people perceive and understand emotional information from a variety of channels, including voice, facial expression, and body language. In the study of the neural mechanisms of emotion processing, using brain imaging techniques such as functional magnetic resonance imaging (fMRI) and electroencephalography (EEG), researchers explore the neural mechanisms of emotion processing in the brain. These studies have revealed the processing pathways, activation regions, and temporal dynamics of emotional information in the brain, explaining the mechanisms of emotion perception at the neural level. In the study of emotion perception and individual differences, researchers focus on the differences in emotion perception between individuals and explore the effects of factors such as gender, age, and cultural background on the ability to perceive emotion. These studies contribute to an in-depth understanding of the developmental process and influencing factors of emotion perception. In the research on emotion perception and mental health, some studies focus on the relationship between emotion perception and mental health. For example, it explores the manifestations and mechanisms of emotion perception disorders in mental illnesses (e.g., depression, anxiety disorders, etc.), and

provides a basis for the early diagnosis and treatment of related illnesses. In the applied research of emotion perception, the research of emotion perception also has a wide range of applications in the fields of human-computer interaction, intelligent systems, and virtual reality. For example, emotion recognition technology can be applied to intelligent customer service, emotional computing, mental health assessment, etc. to provide more intelligent and personalised services for people's life and work.

Cognitive perception and emotional perception have also been applied in tourism-related fields. The research and application of cognitive perception in the field of tourism mainly focuses on the analysis of tourist behaviour, the shaping of destination image, the dissemination of tourism information, the design of tourism products, and the management of tourism experience[11]. In the study of tourist behaviour analysis, cognitive perception theory is applied to analyse the behaviour and decision-making process of tourists. Through questionnaires, field observations and experimental studies, researchers explore the cognitive and perceptual processes of tourists' perceptions of destinations, attractions and services, as well as the impact of these cognitive perceptions on tourism behaviour and tourism experience. In destination image shaping research, cognitive perception theory is applied to study and shape the image of tourist destinations. By investigating and analysing tourists' cognitive perceptions, destination managers can understand tourists' perceptions and evaluations of the destination, improve the image and service quality of the destination in a targeted manner, and enhance the attractiveness and competitiveness of the destination. In tourism information dissemination research, cognitive perception theory has been applied to study the dissemination and influence of tourism information. By analysing the communication channels of tourism information and the cognitive-perceptual characteristics of the audience, researchers design and optimise tourism information communication strategies to improve the communication effect and influence of tourism information. In tourism product design research, cognitive perception theory is applied to design and optimise tourism products and services. By understanding the cognitive preferences and perceptual needs of tourists, researchers can design tourism products and services that meet the cognitive and perceptual characteristics of tourists, and improve the satisfaction and competitiveness of the products. In tourism experience management research, cognitive perception theory is applied to tourism experience management and service quality improvement. By understanding the cognitive-perceptual process of tourists, destination managers and tourism practitioners design and provide personalised tourism experiences and services to meet the cognitive-perceptual needs of tourists and enhance the quality and value of tourism experiences.

The research and application of affective perception in tourism, on the other hand, mainly involves destination image shaping, tourism experience design, service quality improvement, affective experience management, destination marketing and branding[12]. In destination image shaping research, researchers shape the image of a destination by understanding the emotional perception of tourists. Understanding tourists' affective attitudes, affective preferences and affective experiences towards the destination helps destination managers to design relevant marketing strategies to enhance the attractiveness of the destination. In tourism experience design research, affective perception research provides an important basis for the design of tourism experience. Understanding tourists' emotional needs and emotional experience paths can help tourism practitioners design tourism products and services that better meet tourists' expectations and enhance tourists' satisfaction and loyalty. In service quality improvement research, the study of emotional perception helps to identify the emotional defects and deficiencies in tourism services, so as to improve service quality in a targeted manner. By understanding the emotional feedback and emotional experience of tourists, the service links can be adjusted and improved in time to enhance the emotional quality of the service. In the study of emotional experience management, emotional perception is used to manage and guide tourists' emotional experience in the management of tourist destinations. Through emotion perception technology, managers can monitor the emotional state of tourists in real time, make timely emotional intervention and management, and create a pleasant emotional experience environment for tourists. In destination marketing and branding research, the study of emotion perception helps destinations to carry out emotion marketing and branding[13]. Understanding tourists' emotional perception and emotional evaluation of the destination can provide a differentiated emotional experience for the

destination and establish a unique emotional brand image to enhance the destination's market competitiveness.

Based on the theoretical deduction and questionnaire survey data analysis, it can be seen that under the condition of other variables remaining unchanged, the change of cognitive perception of the country's hazy weather image will lead to the increase of foreign tourists' willingness to travel inbound to Beijing. Changes in the emotional perception of the country's hazy weather image will also lead to an increase in foreign tourists' willingness to travel to Beijing under the condition that other variables remain unchanged. Therefore, considering the formation of Beijing inbound tourism intention as a single-stage decision-making process, both cognitive perception and affective perception are effective paths through which the national hazy weather image acts on the formation of Beijing inbound tourism intention. Tourists form the perception of China's national haze weather image both through objective and detailed data and information, and also through subjective feelings, which is an all-round perception.

However, in the specific scenario of hazy weather affecting the formation of inbound tourism intention in Beijing, the path of the city's hazy weather image perception is different from the country's hazy weather image perception. Under the condition that other variables remain unchanged, a change in the perceived perception of the city's hazy weather image will lead to an increase in foreign tourists' willingness to travel inbound to Beijing. Therefore, treating the formation of Beijing inbound tourism intention as a single-stage decision-making process, cognitive perception is the only effective pathway through which the image of urban hazy weather acts on the formation of Beijing inbound tourism intention. This suggests that tourists can usually only form an image perception of urban haze weather in Beijing through data and information, while tourists can hardly touch the haze weather conditions in Beijing in their daily life and work environment, and are unable to form an image perception of urban haze weather in Beijing through their subjective feelings.

4. The role of haze weather in the formation of Beijing's inbound tourism willingness to countermeasures

4.1. Shift from static to dynamic marketing

At present, the marketing and promotion of Beijing's inbound tourism adopts a static approach. Static marketing and promotion assumes that the image of the destination in the minds of tourists is fixed and that tourists' willingness to travel inbound is not formed in multiple stages. Static marketing and promotion has a certain effect when it is directed to specific tourists. However, the latest research results show that the image of tourist destinations in the minds of tourists changes with time and internal and external influences, and is not static. Our study also draws similar research conclusions. In the process of forming tourists' willingness to travel to Beijing, the paths of the national haze weather image and the city haze weather image change, and the emotional perception path and the cognitive perception path play different roles in different stages, which leads to changes in tourists' image of China's haze weather and Beijing's haze weather image, and then influences tourists' willingness to travel to Beijing to produce corresponding changes. and thus affects the corresponding changes in tourists' willingness to travel to Beijing.

Therefore, based on the research in this paper, we suggest that Beijing's inbound tourism marketing and promotion should gradually change from a static to a dynamic approach. Adopting big data technology, based on the types of information searched by tourists from different countries and regions, we can identify the current stage of tourists, and then target the information related to the improvement of haze weather in China and the improvement of haze weather in Beijing, which works through the path of emotional perception and the path of cognitive perception, respectively. At the same time, it is also necessary to pay attention to the changes in the types of information searched by tourists in the time dimension, and judge the changes in the decision-making stage of tourists, so as to ensure the dynamics of marketing and publicity, and to make effective use of the image of the national hazy weather and the image of the urban hazy weather on the formation of Beijing's inbound tourism will, and further enhance the effect of marketing and publicity of Beijing's inbound tourism.

4.2. Gradual shift to segmented marketing and promotion

At the present stage, Beijing's inbound tourism marketing and promotion assumes that the tourist group is a group with similar characteristics and no obvious differences. Therefore, the same marketing and promotion methods are applied to all tourists. In recent literature, more and more scholars have found that there may be significant differences between segmented groups of tourists when they are segmented based on different dimensions[14][15][16]. The findings of this project are also consistent with this view. The results of our empirical study show that there are significant differences between groups of tourists of different age groups, and groups of tourists with different concerns (concerns about natural tourist landscapes, tourist accommodations, communication networks, prices, tourist visas, climate, openness, etc.) with regard to the formation of willingness to travel to Beijing inbound. Further, these factors may also affect the formation of tourists' willingness to travel inbound to Beijing by influencing the image of the country's hazy weather and the image of the city's hazy weather in tourists' minds.

Based on the research in this paper, we suggest that segmented marketing and promotion should be gradually adopted to promote Beijing's inbound tourism. Our findings show that different dimensions of factors such as age, natural tourist landscape, tourist accommodation, communication network, price level, tourist visa system, climate, openness, etc. can be used as criteria for segmentation of tourists, and that some of these factors can also play a role in the image of the national haze weather and the image of the city's haze weather, which in turn affects the formation of tourists' willingness to travel to Beijing. In the segmented marketing and promotion of Beijing's inbound tourism, the selection of segmentation criteria for tourist groups is a key issue. It is important to ensure the accuracy of segmentation so that relevant information can be effectively delivered to improve the image of hazy weather in the country and the city, while taking into account the cost-effectiveness and operability of the segmentation of tourist groups. Therefore, in practice, the accuracy, cost-effectiveness and operability of the segmentation of tourist groups should be considered comprehensively, and the effect of Beijing's inbound tourism marketing and publicity should be further enhanced through the targeted placement of information related to the improvement of Beijing's hazy weather for different segments of tourists, making effective use of the image of the country's hazy weather and the image of the city's hazy weather in the formation of the inbound tourism willingness in Beijing.

4.3. Integration of multiple marketing and publicity channels

At present, Beijing's inbound tourism marketing and publicity mainly relies on traditional marketing and publicity channels, such as travel agencies' promotion and TV commercials, etc. These traditional marketing and publicity channels have significant effects on specific groups of tourists and actively promote the development of Beijing's inbound tourism business. These traditional marketing and publicity channels have significant effects on specific groups of tourists, actively promote the development of Beijing's inbound tourism business, and play an irreplaceable role in the all-round inbound tourism marketing and publicity system. However, recently, more and more scholars have found that tourists no longer rely solely on traditional marketing and publicity channels for information acquisition and even for the establishment of the image of tourist destinations, but rather acquire relevant information through multiple channels and in an all-round way. Compared with traditional marketing and promotion channels, tourists tend to rely on non-traditional marketing and promotion channels such as daily communication with friends and family and sharing of real travel experiences to obtain information. The results of our study also support this view.

Therefore, based on the research in this paper, we suggest that Beijing inbound tourism marketing and publicity should gradually establish a system that integrates multiple marketing and publicity channels. On the one hand, make good use of traditional marketing and publicity channels to convey objective information about Beijing's haze weather management and improvement to specific groups of tourists through travel agencies' promotion and TV station's placement of promotional films, so as to improve the image of China's haze weather and the image of Beijing's haze weather. On the other hand, actively open up non-traditional marketing and promotion channels. Through travel experience

sharing platforms, APPs and other channels, Beijing haze weather related indexes and other real information are delivered to tourists in a timely and accurate manner. By integrating multiple marketing and publicity channels, we aim to establish a comprehensive Beijing inbound tourism marketing and publicity system. This system will harness the synergistic effects of both emotional and cognitive perception pathways to effectively utilize the national and city haze weather images. Such an approach will influence the development of inbound tourism in Beijing and further enhance the effectiveness of its marketing and publicity efforts.

4.4. Combination of universal and focused marketing and publicity

At present, Beijing's inbound tourism marketing and promotion is mainly popular, which assumes that tourists play the same role as individuals in their respective groups. Recently, more and more scholars in the fields of psychology, behaviour and tourism management have found that different individuals have different positions and roles in groups. Some individuals are in a dominant position, while others are in a subordinate position, and based on the cohort effect, there is a convergence of perceptions and perspectives on certain things within the group. The related research of the members of this project team also found that there is a significant cohort effect in the process of travel insurance purchase intention formation in China's elderly population. Based on the theoretical basis and real-life observation, we believe that similar cohort effects should exist in the formation of inbound travel intentions in Beijing affected by haze weather.

Therefore, based on the research in this paper, we suggest that Beijing inbound tourism marketing and publicity should gradually implement a combination of universal marketing and publicity and focused marketing and publicity. On the one hand, popular marketing and publicity should be done for all tourists to establish a basic and objective emotional perception of haze weather conditions. On the other hand, focus marketing and publicity should be carried out for the dominant tourists in each tourist group, so as to promote these tourists to form timely and accurate cognitive perception of hazy weather conditions, and based on the cohort effect, gradually realise the convergence of cognition and viewpoints of the hazy weather conditions in each tourist group, so as to realise the multiplier effect of marketing and publicity. Through the combination of universal marketing and publicity and focused marketing and publicity, and based on the synergy between the emotional perception path and the cognitive perception path, the national haze weather image and the city haze weather image are effectively utilised to influence the formation of Beijing's inbound tourism will, and to further enhance the effect of Beijing's inbound tourism marketing and publicity.

5. Conclusion

The widespread distribution of hazy weather is a global environmental problem. The serious impact of hazy weather not only affects human health and the environment, but also adversely affects the tourism industry. Previously, due to Beijing's own industrial structure, energy structure, vehicle structure, geographic pattern and the influence of neighbouring provinces, the haze weather situation in Beijing was once very serious, and the North China region, in which Beijing is located, used to be one of the most serious regions in China in terms of haze weather. Since 2012, the number of inbound tourists to Beijing has continued to decline, and some scholars believe that haze weather is an important influencing factor. However, this paper finds that after years of effort, Beijing has seen a long-term overall decline in the concentration of major air pollutants and a significant improvement in air quality. Along with this, in the process of forming inbound tourism intention in Beijing, the image perception of hazy weather in the country and the image perception of hazy weather in the city is no longer a minus, but has played a positive and positive role in promoting. Both cognitive perception and emotional perception are effective paths through which the image of national hazy weather plays a role in the formation of Beijing's inbound tourism intention. Cognitive perception is the only effective path for the city's hazy weather image to play a role in the formation of Beijing's inbound tourism intention. Based on this, this paper puts forward countermeasures such as changing from static marketing to dynamic marketing, gradually changing to segmented marketing and publicity, the integration of multiple marketing and publicity channels, and the combination of

popular marketing and publicity with focused marketing and publicity, in the hope of effectively utilising the role of the national haze weather image and the image of urban haze weather in influencing the formation of the willingness of inbound tourism in Beijing, and further enhancing the effectiveness of the marketing and publicity of Beijing's inbound tourism.

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