

Research on the Tourism Image Perception of Harbin Ice and Snow World: An Analysis based on Online Texts

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Abstract

Ice and snow tourism is a key city branding element for Harbin, with Harbin Ice and Snow World being a world-class ice and snow cultural theme park. It has become the preferred winter tourist destination for both domestic and international visitors. This study adopts a combined quantitative and qualitative content analysis approach, utilizing ROST CM 6 software to mine and analyze visitor review texts, exploring the tourism image perception of Harbin Ice and Snow World and its emotional tendencies. The results show that tourists' perceptions are multidimensional, mainly reflected in four aspects: ice and snow landscape, entertainment experience, cultural connotation, and overall impression. This study proposes several recommendations for improvement, including optimizing service facilities, enriching interactive projects, formulating precise marketing strategies, and enhancing the display of cultural connotations, aiming to improve the visitor experience, strengthen emotional identity, and promote the sustainable development of Harbin Ice and Snow World in a highly competitive market.

Keywords

Harbin Ice and Snow World; Tourism Image Perception; Ice and Snow Tourism; Emotional Tendencies.

1. Introduction

Due to its unique seasonality and regional characteristics, ice and snow tourism has become an essential direction for the development of China's tourism industry in recent years. Since its establishment in 1999, Harbin Ice and Snow World has been renowned for its large-scale and artistically significant ice sculptures, attracting millions of tourists worldwide. However, with the increasing number of visitors, the park faces new challenges in image management, service quality, and overall visitor experience. Meanwhile, online texts serve as a crucial channel for tourists to express their perceptions and experiences, providing a substantial and diversified data foundation for studying destination image perception. By extracting meaningful information from textual data, researchers can gain a comprehensive understanding of visitor demands and preferences, thus optimizing park management and marketing strategies.

2. Theoretical Background

Since the 1970s, scholars have conducted extensive research on tourism image perception. Early studies primarily focused on defining the concept and constituent elements of tourism image. Crompton (1979) defined tourism image as the sum of an individual's beliefs, thoughts, and impressions of a destination^[1]. With the progression of research, scholars began exploring the formation process of tourism image perception, influencing factors, and its impact on tourist behavior^[2,3]. Recently, tourism image perception research has evolved towards multidimensional and interdisciplinary perspectives. Theoretically, tourism image perception refers to tourists' overall impression and evaluation of a destination before and after their visit^[4]. The "Cognitive-Affective" three-dimensional model proposed by Baloglu and McCleary

(1999) is widely recognized and applied, suggesting that tourism image perception consists of cognitive image, affective image, and overall image^[5]. In terms of research methodology, with the advancement of big data and artificial intelligence technologies, online text analysis and sentiment analysis have been increasingly utilized in tourism image perception research, providing comprehensive and authentic tourist perception data^[6-8].

Although tourism image perception research is relatively mature, specific studies on ice and snow tourism image perception remain limited. Existing studies primarily focus on macro-level resource development and market analysis^[9,10], with insufficient attention to tourists' micro-level perception experiences. This study applies tourism image perception theories to the field of ice and snow tourism, analyzing a large volume of visitor reviews to uncover perception characteristics and emotional tendencies, thereby providing scientific guidance for optimizing park services and enhancing visitor experiences, contributing to the sustainable development of ice and snow tourism.

3. Research Data and Methods

3.1. Research Area and Data Sources

As one of the world's largest ice and snow theme parks, Harbin Ice and Snow World is located in Songbei District, Harbin, in northeast China. The park is open every winter and attracts global visitors with its large-scale ice sculptures, vibrant lighting effects, and festive events. Featuring multiple themed exhibition halls, ice sculpture performance areas, and interactive entertainment projects, it is an ideal case study for ice and snow tourism image perception research.

The research data were collected from public visitor reviews on online platforms such as Ctrip, Mafengwo, and Weibo. Through web crawling tools, 2,204 valid visitor reviews (totaling 37,200 words) posted between December 2023 and December 2024 were gathered. These texts cover various aspects of visitor perception, including environmental impressions, facility evaluations, service quality, and cultural ambiance, ensuring the comprehensiveness and diversity of the research data.

3.2. Research Methods

This study adopts a combined quantitative and qualitative content analysis approach, utilizing ROST CM 6 software for text mining. First, visitor reviews were preprocessed by removing stop words and redundant information to ensure data accuracy. Then, high-frequency word statistics were used to identify key themes such as park facilities and visitor experiences. These high-frequency words were categorized into different dimensions of tourism image perception, extracting key perception characteristics. Finally, sentiment analysis was conducted using a sentiment dictionary and machine learning methods to classify visitor emotions, revealing the distribution of emotional attitudes toward Harbin Ice and Snow World.

4. Analysis of Tourism Image Perception of Harbin Ice and Snow World

4.1. High-Frequency Word Analysis

Through high-frequency word analysis (Table 1), the tourism perception image of Harbin Ice and Snow World presents distinct characteristics, primarily focusing on ice and snow-themed landscapes and activities, tourists' emotional experiences, the needs of family visitors, and the service facilities within the scenic area. Visitors show strong interest in ice and snow-related attractions such as ice sculptures and ice lanterns, particularly enjoying the unique experiences offered by the night-time lighting effects and visual impact. Additionally, thrilling and interactive activities like skiing and ice slides are also highly popular among tourists. The needs

of family tourists are notably prominent, especially regarding parent-child activities and child-friendly facilities. Visitors' attention to the scenic area's services is concentrated on aspects such as queuing, entry convenience, and warmth-providing facilities, while the visual appeal and photography opportunities highlight the importance of landscape design in the scenic area. Overall, Harbin Ice and Snow World has successfully attracted diverse tourist groups, particularly family visitors, and has established its core competitiveness through its unique ice and snow landscapes and excellent visitor experiences.

Table 1. High-Frequency Feature Words of Perceived Image

Rank	Feature Word	Frequency	Part of Speech	Rank	Feature Word	Frequency	Part of Speech	Rank	Feature Word	Frequency	Part of Speech
1	Ice and Snow	2184	Noun	11	Beautiful	565	Adjective	21	Convenient	402	Adjective
2	Grand World	1622	Noun	12	Suggestion	560	Verb/Noun	22	Ticket	397	Noun
3	Slide	1533	Noun	13	Time	542	Noun	23	Fun	376	Adjective
4	Queueing	1189	Verb	14	Ice Lantern	491	Noun	24	Night View	352	Adjective
5	Harbin	1152	Noun	15	Afternoon	437	Noun	25	Lighting	323	Noun
6	Ice Sculpture	1124	Noun	16	Enter	435	Verb	26	Various	322	Adjective
7	Night	924	Noun	17	Place	433	Noun	27	Experience	318	Noun
8	Project	838	Noun	18	Performance	424	Noun	28	Happy	314	Adjective
9	Hour	688	Noun	19	Worthwhile	423	Adjective	29	Good-looking	310	Verb/Noun
10	Child	625	Noun	20	Daytime	406	Noun	30	Warmth	310	Adjective

4.2. Dimensions of Tourism Image Perception

Based on semantic network clustering analysis, the tourism perception image dimensions of Harbin Ice and Snow World can be categorized into four aspects: ice and snow landscapes, entertainment experiences, cultural connotations, and overall impressions.

Words such as "ice and snow," "ice sculptures," and "ice lanterns" occupy a central position, indicating that ice and snow landscapes are one of the most prominent aspects of visitors' attention. Tourists generally express strong appreciation for ice sculptures and ice lanterns, considering them the core attractions of the park. Ice and snow landscapes are not only a physical presence in Harbin Ice and Snow World but also the core factor in visitor perception, with subjective experiences and emotional reactions closely tied to these landscapes.

The entertainment experience is reflected in the frequent occurrence of words such as "slide," "thrilling," and "fun" in the semantic network, emphasizing the importance of recreational activities in shaping visitors' experiences. Tourists primarily perceive these attractions based on the fun, excitement, and entertainment they offer. The high frequency of the word "slide" suggests that it is one of the most popular attractions, with its "thrilling" and "fun" characteristics being key discussion points among visitors.

The cultural connotation is evident in the strong interest, especially from southern visitors, in Harbin's ice and snow culture and regional characteristics. As China's ice and snow culture hub, Harbin's unique regional features attract tourists not only to visit the park itself but also to experience the city's historical culture and winter heritage.

The overall perception image encompasses the park's multidimensional characteristics. Elements such as ice and snow landscapes, entertainment activities, and emotional responses collectively shape the tourism image of Harbin Ice and Snow World. The park's overall image is

constructed through multiple dimensions, including its unique ice and snow scenery, diverse recreational projects, rich cultural significance, and visitors' positive emotional experiences.

4.3. Sentiment Analysis of Tourism Image Perception

When conducting a sentiment tendency analysis on tourists' perception of Harbin Ice and Snow World, the results indicate a clear positive emotional inclination (Table 2). Overall, 85.84% of visitors exhibited positive emotions, 4.45% held neutral sentiments, and 9.71% displayed negative emotions.

The distribution of positive emotions is significantly skewed towards highly positive sentiment, which accounts for 51.09%, suggesting that most visitors have an extremely favorable impression and strong positive emotional reactions during their experience. Moderate and general positive sentiments account for 19.24% and 15.52%, respectively, further reinforcing the predominantly positive emotional feedback. In contrast, the proportion of negative emotions is relatively low, and their distribution tends to be mild. Among negative sentiments, general negative sentiment holds the largest proportion at 6.49%, followed by moderate negativity at 2.13%, while highly negative sentiment is only 1.08%, indicating that extreme dissatisfaction is rare.

Table 2. Sentiment Analysis of Tourist Reviews

Sentiment Type	Proportion (%)	Intensity	Proportion (%)
Positive Sentiment	85.84	General	15.52
		Moderate	19.24
		Highly Positive	51.09
Neutral Sentiment	4.45	-	4.45
Negative Sentiment	9.71	General	6.49
		Moderate	2.13
		Highly Negative	1.08
Total	100		100

The results indicate that Harbin Ice and Snow World has left a strongly positive impression on the majority of visitors. Tourists generally express high satisfaction with various aspects of their experience, particularly in terms of visual aesthetics and the overall atmosphere. However, a minority of visitors expressed dissatisfaction, mainly related to crowded conditions and inadequate services in extremely cold weather. Despite these concerns, the overall tourism image of Harbin Ice and Snow World leans significantly towards a positive sentiment.

5. Conclusion and Recommendations

This study conducted a multidimensional analysis of the tourism perception of Harbin Ice and Snow World, revealing visitors' key impressions in terms of ice and snow landscapes, entertainment experiences, cultural connotations, and overall impressions. The findings indicate that tourists highly appreciate the visual effects of the park, particularly ice sculptures and lighting displays, which play a crucial role in enhancing the park's attractiveness and sensory appeal. Additionally, cultural activities and the presentation of Northeast folk traditions strengthen visitors' sense of cultural identity, further enriching their overall travel experience.

Sentiment analysis results show that 85.84% of visitors exhibit positive emotions, with feedback primarily focusing on the park's aesthetic appeal and immersive atmosphere. However, despite the overwhelmingly positive sentiment, some dissatisfaction remains

regarding facilities and services, particularly in aspects such as heating facilities and queue management. High visitor volume and extreme cold conditions occasionally affect tourist comfort and service experiences.

Based on the above research conclusions, this paper suggests that Harbin Ice and Snow World should take multiple measures to optimize the visitor experience. First, enhance service facilities, particularly by adding more heating facilities in cold environments and optimizing queue management to improve visitor comfort and service satisfaction. Second, enrich interactive activities, especially by developing more engaging and participatory entertainment projects tailored to the needs of family visitors and young tourists, further meeting the diverse demands of visitors. Additionally, the park should implement precise marketing strategies, offering differentiated services and products for different visitor groups (such as families and young tourists) to enhance engagement and loyalty. Finally, by strengthening cultural connotations, the park can deepen visitors' recognition and emotional connection with Northeast folk culture, thereby enhancing its cultural appeal and emotional engagement. This will help Harbin Ice and Snow World solidify its brand advantage in the highly competitive market and promote its long-term sustainable development.

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