

Tourism Service Management for Nanchuan Shenlong Gorge Scenic Area: Insights from Web Text Analysis

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Abstract: Using the Shenlong Gorge Scenic Area in Nanchuan as a case study, this research adopts a network text analysis approach to examine the current state of tourism service management within the scenic area. Through Python software, online review data from tourists on the Dianping platform was collected and analyzed using ROST CM 6 software, focusing on dimensions such as high-frequency words, social semantic networks, and tourist sentiments. The findings illuminate the present state of tourism service management in the Shenlong Gorge Scenic Area, providing critical theoretical support and practical guidance for the scenic area's management authorities. Based on the analysis, an optimized pathway for tourism service management is proposed to facilitate the sustainable development of the Shenlong Gorge Scenic Area in Nanchuan, improve tourism service management, and enhance the quality of tourists' service experiences.

Keywords: Network text analysis; Tourism service management; Semantic Web; Tourist review emotions

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1. Introduction

With the advancement of information technology and the widespread use of the internet, online reviews by tourists have become a pivotal factor in the development of scenic areas. The Chinese government places significant emphasis on the sustainable development of the tourism industry, issuing numerous policies to enhance service quality and address people's growing aspirations for improved life experiences.

As a key tourist destination in Chongqing, the Nanchuan Shenlong Gorge Scenic Area, after being delisted, has undergone successful rectification and restoration. It now encounters new opportunities alongside emerging challenges. In this context, this study seeks to conduct an in-depth analysis of online tourist reviews of the Nanchuan Shenlong Gorge Scenic Area to understand tourists' perceptions, emotional attitudes, and suggestions for improving tourism service management.

This research provides decision-making support for the development of the scenic area. By utilizing ROST CM 6 software, the study performs word frequency analysis, social semantic network analysis, and sentiment analysis on the collected online reviews. These analyses enable an objective evaluation of tourists' opinions regarding the scenic area and provide targeted recommendations for management improvements. The insights gained aim to promote the sustainable development of the Shenlong Gorge Scenic Area while enhancing the overall quality of tourism service management.

2. Research design

2.1. Research object

The Shenlong Gorge Scenic Area in Nanchuan, located in Nanping Town, Nanchuan District, Chongqing, is approximately 79 kilometers from Chongqing's main urban area. It is renowned as the closest and most pristine ecological gorge to the urban center, attracting tourists with its distinctive gorge terrain and rich natural landscapes. Among its attractions, the drifting project is particularly popular with visitors. Despite its appeal, the scenic area has faced challenges during its development, including being delisted in 2016 before regaining its national AAAA-level tourist attraction status in 2022. While the Shenlong Gorge Scenic Area in Nanchuan holds a certain level of prominence in the tourism market, there remains a gap in research regarding its tourism service management strategies. This study aims to address this gap.

2.2. Research methods

ROST CM 6 software serves as the primary tool for data analysis. Known for its robust capabilities in text mining, word frequency analysis, social semantic network analysis, and sentiment analysis, it allows researchers to extract valuable insights from extensive text datasets ^[1].

Firstly, ROST CM 6 software is used for text segmentation and word frequency statistics on the collected online reviews, identifying high-frequency words. These high-frequency words provide an initial understanding of tourists' focal points and perceptions regarding tourism service management at the Shenlong Gorge Scenic Area in Nanchuan.

Subsequently, the "Social Network and Semantic Network Analysis Tool" within ROST CM 6 software constructs a network structure diagram of high-frequency words. This analysis uncovers internal relationships and core viewpoints within tourists' comments ^[2], offering a deeper understanding of their evaluations and perspectives on the scenic area's tourism service management.

Finally, the software's "Sentiment Analysis" function identifies the sentiment orientation of tourists' online reviews. By statistically analyzing sentiment proportions across various dimensions, the overall sentiment attitudes of tourists towards the Shenlong Gorge Scenic Area in Nanchuan are assessed. These insights provide actionable recommendations for scenic area managers to enhance tourism service management.

2.3. Data acquisition

The data for this study primarily derive from tourist comments on the Shenlong Gorge Scenic Area in Nanchuan, collected from the Dianping website between May 2019 and May 2024. Python software was utilized to extract online review text data, yielding a total of 1,253 online reviews as raw data. During the data collection process, duplicate comments from the same users and reviews unrelated to the study were filtered to ensure the accuracy and validity of the dataset.

Table 1 (Continued)

Rank	High-frequency word	Frequency	Rank	High-frequency word	Frequency	Rank	High-frequency word	Frequency
13	Scenery	161	33	Approximately	84	53	Clean	66
14	Cool	149	34	Pass By	82	54	Parking Lot	65
15	Suggestion	147	35	On Foot	82	55	Distance	63
16	Canyon	147	36	Children	81	56	Online	57
17	Kilometer	132	37	Self-Driving	80	57	Plank Road	56
18	Minute	123	38	Fun	79	58	Destination	55
19	Suitable	118	39	Sun	79	59	Dragon Cave	54
20	Time	116	40	Weekend	78	60	entrance	53

As shown in **Table 1**, “Drifting” appeared most frequently, with 1,225 mentions, highlighting it as the primary attraction of the Nanchuan Shenlong Gorge Scenic Area. High-frequency terms such as “Scenic Area,” “Exciting,” “Sightseeing,” “Waterfall,” and “Entrance Fee” underscore the appeal of the scenic features and services.

The term “Exciting” emphasizes the sensory experience of drifting, fulfilling tourists’ desires for adventure. Words like “Shenlong,” “Nanchuan,” and “Place” reflect geographic awareness among tourists. High-frequency words such as “Entrance Fee,” “In Advance,” and “Online” reflect tourists’ concerns about ticket pricing and purchasing methods. Tourists expressed sentiments like:

- (1) “The entrance fee is 90 yuan, and drifting costs an additional 150 yuan per person, making it 240 yuan in total. The cost-effectiveness is too low.”
- (2) “Discounted tickets are available online but must be purchased hours or days in advance, which is inconvenient.”
- (3) “There is insufficient time to explore scenic spots after entering for the last drifting session.”

These comments suggest that some tourists perceive ticket pricing and sales methods as unreasonable and cost-ineffective.

Words such as “Summer,” “Cool,” “Canyon,” “Water Quality,” and “Summer Resort” highlight the area’s appeal as a summer destination with a cool climate, canyon scenery, and high-quality water, attracting tourists seeking outdoor activities during hot weather.

Terms like “Hour,” “Chongqing,” “Kilometer,” “Main City,” “Transportation,” and “Self-Driving” suggest tourists value the scenic area’s proximity to Chongqing’s main city and its convenience for weekend self-driving tours.

Finally, words such as “Queue” and “Staff” indicate tourists’ attention to tourism service management. Comments such as “Queued for hours for drifting and suggest installing a shelter to protect from heat” and “The staff were friendly and efficient” highlight both areas for improvement and positive aspects of service.

In summary, the Nanchuan Shenlong Gorge Scenic Area attracts tourists primarily through its drifting project and natural scenery. However, there is room for improvement in ticket pricing, queue management, and overall tourism service quality to enhance visitor satisfaction.

Table 2. Analysis of tourist review emotions

		Number of entries	Percentage (%)
Emotion type	Positive emotions	639	80.28
	Neutral emotions	14	1.76
	Negative emotions	143	17.96
Segmented statistics of positive emotions	General (0 to 10)	174	21.86
	Moderate (10 to 20)	147	18.47
	High (above 20)	318	39.95
Segmented statistics of negative emotions	General (-10 to 0)	79	9.92
	Moderate (-20 to -10)	43	5.40
	High (below -20)	6	0.75

The data indicate that the majority of tourists (80.28%) express positive emotions about the scenic area, reflecting overall satisfaction. However, a relatively high proportion of negative emotions (17.96%) highlights areas requiring improvement to prevent potential negative impacts on future tourism development and tourists' likelihood of revisiting.

Negative emotions, as reflected in tourist reviews, point to specific shortcomings:

- (1) Rafting experience: Comments such as "It felt average, not very exciting. It's much worse than the rafting I did elsewhere, and the equipment is just okay" indicate dissatisfaction with the quality and excitement of the rafting activity.
- (2) Transportation and facilities: Complaints like "The only dissatisfaction is that the sightseeing bus is really far from the entrance. It's really exhausting to walk in the heat and sun" and "You also have to pay for the bus ride" suggest inefficiencies in transportation services and a lack of shaded areas.
- (3) Ticketing process: Comments such as "Can't the process be simplified?" highlight the need for a more user-friendly and streamlined ticketing procedure.
- (4) Value for money: Statements like "The ticket price is not worth it" suggest that the pricing strategy does not meet tourist expectations, contributing to dissatisfaction.
- (5) Water release and temperature: Issues such as "The water is released from the gate at specific times, and it's really cold" underscore challenges in managing water-related activities to enhance the visitor experience.

Addressing these issues is crucial for improving the overall quality of the tourist experience and maintaining the reputation of the Nanchuan Shenlong Gorge Scenic Area. Efforts should focus on enhancing the rafting experience, optimizing transportation services, simplifying ticketing procedures, and ensuring value for money to reduce negative perceptions.

4. Issues and solutions in tourism service management at Nanchuan Shenlong Gorge Scenic Area

4.1. Issues in tourism service management at Nanchuan Shenlong Gorge Scenic Area

- (1) Unreasonable ticket pricing and purchase methods: Ticket pricing has been identified as a significant

issue, with many visitors considering the cost high, particularly when rafting fees are charged separately, reducing the overall cost-effectiveness. Furthermore, the ticket purchase process is inconvenient, requiring online bookings well in advance. This process has been described as cumbersome, with multiple tickets needed for different attractions, which negatively impacts the overall visitor experience.

- (2) Insufficient rafting experience: The rafting activity has been criticized for lacking the excitement and quality found in comparable experiences elsewhere. Visitors have reported discomfort due to the absence of shading facilities during rafting, leaving them exposed to the hot sun. Additionally, the rafting duration is short, limiting the enjoyment of the activity and failing to meet visitors' expectations.
- (3) Need for upgrading facilities and equipment: Outdated or inadequate rafting equipment detracts from the overall experience and raises safety concerns. The transportation layout within the scenic area is suboptimal, with sightseeing buses being too far apart and lacking sufficient comfort. Visitors have also noted a scarcity of shading facilities and rest areas, which diminishes the level of comfort available to tourists.
- (4) Deficiencies in service management: Ineffective queue management has resulted in prolonged waiting times, which negatively affects visitors' satisfaction. While some visitors have praised the service quality of the staff, others have expressed dissatisfaction, indicating inconsistencies in service delivery.
- (5) Inadequate fulfillment of visitor needs: The scenic area does not fully meet the expectations of visitors, particularly regarding the rafting project. Visitors have suggested extending the rafting duration, increasing the level of excitement, and addressing specific concerns such as low water temperatures that make the experience uncomfortable. Moreover, the lack of prioritization in addressing visitors' needs for facilities and services within the scenic area has been highlighted as a significant area requiring improvement.

4.2. Optimization paths for tourism service management at Nanchuan Shenlong Gorge Scenic Area

4.2.1. Adjust ticket pricing and purchase methods

- (1) Reduce ticket prices and improve cost-effectiveness: Ticket pricing should be adjusted to reflect the value of services provided, especially for the rafting project. This adjustment should aim to enhance the overall cost-effectiveness of visitors' consumption. Additionally, themed rafting packages tailored to specific visitor groups (e.g., families, couples, or friends) could be introduced.
- (2) Simplify ticket purchase processes and improve efficiency: The ticket purchase process should be streamlined by offering diverse options, such as self-service ticket machines and mobile app purchases. These measures would reduce waiting times and the number of separate transactions required. Furthermore, on-site staff training should be intensified to enhance service efficiency.

4.2.2. Enhance rafting experience

- (1) Increase excitement in rafting projects: Upgrading the rafting project is essential to provide a more thrilling and enjoyable experience. This could include adding rapids, bends, and other features to increase excitement. Water entertainment facilities, such as waterslides and trampolines, could also be introduced to enhance pre- and post-rafting experiences.

- (2) Extend rafting time to fully enjoy the experience: To meet visitors' expectations, the rafting duration should be extended appropriately, allowing visitors to thoroughly enjoy the activity. Effective scheduling and management of rafting sessions would help maximize the visitor experience within the available time.
- (3) Adjust water temperature for rafting: Monitoring and regulating water temperature in rafting sections is necessary to improve comfort. This could involve using heating equipment or integrating hot spring water during colder seasons. Hot shower facilities should also be provided for visitors to warm up after rafting.

4.2.3. Upgrade facilities and equipment

- (1) Update rafting equipment to ensure safety: Regular updates and maintenance of rafting equipment should be conducted to meet safety standards. This would ensure that all equipment is in optimal condition during use.
- (2) Optimize transportation layout and provide comfortable transportation options: Addressing concerns about transportation within the scenic area requires optimizing the layout and adding comfortable options such as sightseeing buses and cable cars. Regular maintenance and servicing of transportation tools are essential to ensure their reliability.
- (3) Increase shading facilities and rest areas: Enhancing visitor comfort can be achieved by installing shading structures like sheds and gazebos at gathering areas, viewpoints, and other key locations. Additionally, multiple rest areas should be established throughout the scenic area to provide spaces for visitors to relax and dine.

4.2.4. Strengthen service management

- (1) Enhance queue management to reduce waiting times: To minimize waiting times, queue management should be improved by creating additional queuing channels and ensuring effective on-site guidance. Maintaining order in queues would further enhance the visitor experience.
- (2) Improve staff service quality: Staff training and management should be strengthened through regular programs aimed at improving service awareness and skills. Incentive and performance assessment mechanisms can be implemented to ensure high-quality service delivery.
- (3) Strengthen safety management in the scenic area: Comprehensive safety management measures should be adopted, including increased patrols, improved monitoring systems, and proactive identification of potential safety risks. Emergency response plans and rescue mechanisms should also be developed and regularly tested.

4.2.5. Fulfill visitor needs

- (1) Provide warmth measures: Visitors participating in rafting activities should be provided with warm life jackets or waterproof coats. Warming rooms or hot drink stations at the rafting endpoint would further enhance their comfort.
- (2) Offer diversified products and services: The scenic area should diversify its offerings by including activities such as rock climbing, hiking, and camping. Services like photography and souvenir sales before and after rafting could also be introduced. Collaborating with other tourism enterprises would

help provide visitors with comprehensive tourism packages.

- (3) Enhance communication and interaction with visitors: Strengthening engagement with visitors through interactive activities, such as games and photography contests, could increase their sense of participation and connection to the scenic area. Active management of social media platforms to share information about promotions and events would also attract more visitors.

5. Conclusion

This study examines the Nanchuan Shenlong Gorge Scenic Area as a case study, employing network text analysis to thoroughly investigate the current state of tourism service management in the area. Utilizing visitors' online comments as a primary data source, this research identifies key issues and proposes targeted optimization strategies. Through word frequency analysis, social semantic network analysis, and sentiment analysis conducted with ROST CM 6 software, the following conclusions have been drawn:

Firstly, the Nanchuan Shenlong Gorge Scenic Area faces several challenges in tourism service management. These include unreasonable ticket pricing and purchase methods, an underwhelming rafting experience, outdated facilities and equipment requiring upgrades, deficiencies in service management, and inadequate fulfillment of visitor needs. These challenges negatively impact visitor satisfaction and loyalty, while also hindering the scenic area's sustainable development.

Secondly, to address these challenges, this study proposes optimization paths for improving tourism service management. The recommendations include adjusting ticket pricing and streamlining purchase processes to enhance accessibility and cost-effectiveness. Improvements to the rafting experience should focus on extending rafting time, increasing excitement, and addressing water temperature concerns to meet visitor expectations. Facilities and equipment should be upgraded to ensure both comfort and safety. Additionally, service management improvements should aim to enhance staff efficiency and service quality. Conducting comprehensive market research and visitor surveys is crucial for understanding visitor needs and delivering personalized tourism services.

Finally, the findings of this study provide significant theoretical insights and practical recommendations for the management of the Nanchuan Shenlong Gorge Scenic Area. They also serve as a valuable reference for other tourist attractions seeking to optimize their tourism service management. By implementing the proposed strategies, scenic areas can improve visitor satisfaction and loyalty, enhance market competitiveness, and achieve sustainable development. Moreover, it is imperative for management teams to foster continuous innovation and adapt to the evolving demands of the tourism market and visitor expectations.

Disclosure statement

The authors declare no conflict of interest.

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