

Recreational Experience of Sichuan Drama Culture Based on Digital Footprints: A Case Study of Shu Garden in Chengdu

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ABSTRACT

With the popularization and development of digital technology, digital footprints have gradually become an important data source in tourism research. Taking Shu Garden in Chengdu as a case study, this research analyzes recreational experience perception using three levels of qualitative indicators formed by open coding, axial coding, and selective coding. The core category identified for recreational experience in Shu Garden is the cultural and natural integration experience of the park. An attempt was made to construct a Shu Garden recreational perception elements table, consisting of 7 primary indicators and 35 secondary indicators. The study also discusses the relationship between digital footprints and recreational experiences, providing targeted strategic recommendations for the integration of Sichuan drama culture heritage with digital footprints. Proper utilization of digital footprints not only offers strong support for the optimization of scenic areas and injects new vitality into the inheritance and development of Sichuan drama culture, but also provides valuable references for similar attractions. It is hoped that this study can provide useful insights for researchers and practitioners in related fields.

KEYWORDS

digital footprint; recreational experience; Sichuan drama; Shu Garden in Chengdu

1 Research Background

1.1 Challenges and Development Trends of Sichuan Traditional Drama Culture

Sichuan drama, as an important part of Chinese theatrical art, is deeply rooted in the history, culture, and social life of Sichuan, representing the cultural heritage of the region. It preserves a rich array of folk tales, music, dance, and performing arts, among which the face-changing technique of Sichuan Opera is renowned both domestically and internationally, often referred to as a treasure of Chinese opera. However, with the advancement of society and the impact of modernization, Sichuan traditional drama culture faces unprecedented challenges. Firstly, the influence of digitalization and networking has led the younger generation to prefer new media and other modern entertainment forms, resulting in a gradual decline in their interest in and appreciation of traditional art forms. In addition, the reduction in opportunities for traditional drama performances and the risk of discontinuity in cultural heritage have pushed this unique art form towards marginalization. Secondly, the accelerated pace of modern social life has changed people's entertainment consumption habits and viewing preferences, creating substantial pressure for traditional drama in terms of attracting audiences, expanding its market, and increasing revenue.

With the increasing emphasis on cultural preservation and intangible cultural heritage, Sichuan traditional drama has received strong support from both national and local governments. The Sichuan Provincial Government and related cultural institutions have taken a series of measures, including establishing Sichuan Opera Academies, conducting Sichuan Opera training classes, and organizing touring performances. Against this backdrop, cultural tourism and drama recreation have become important means for the inheritance and promotion of Sichuan drama culture. As the first Sichuan Opera-themed park in the country, Shu Garden in Chengdu carries the function of providing recreational experiences centered around Sichuan Opera culture. How to better enhance the visitor experience and find new vitality in the process of inheritance and promotion is an important topic we face now and in the future.

1.2 Application Value of Digital Footprint in Cultural Recreation Experience

With the rapid evolution of digital technology, the Internet has become a large database that records user behavior and facilitates interaction, and the publicly available data in these "digital footprints" have become an indispensable source of information. The concept of "digital survival" by American scientist Nicholas Negroponte and Tim O'Reilly's notion of "data exhaust" provide an initial theoretical foundation for digital footprints. Today, with the booming development of the Internet of Things (IoT) and other smart technologies, the scope and concept of digital footprints have been further expanded, encompassing not only traditional online data but also a variety of data related to user behavior and individual choices, such as daily consumption and energy usage.

In the field of culture and tourism, the potential value of digital footprints is becoming increasingly evident. Compared with traditional visitor surveys or questionnaires, digital footprints provide a continuous, dynamic, and comprehensive way to obtain data. Particularly in the research of cultural recreation experience, digital footprints can more authentically and deeply explore visitors' behaviors and interaction patterns in cultural sites, thereby enabling the development of more precise management and service strategies for these sites. Taking Sichuan traditional drama culture as an example, this unique cultural heritage faces numerous challenges in terms of attracting visitors, preserving heritage, and fostering innovation. Through in-depth analysis of digital footprints, researchers can better understand the real experiences and needs of visitors, thereby providing targeted recommendations to further optimize the cultural recreation experience and ensure the continuous transmission and prosperity of Sichuan drama culture. Based on this, this study aims to conduct digital research on the recreational experience of Sichuan drama culture from the perspective of digital footprints.

2 Current State of Research at Home and Abroad

2.1 Definition of Digital Footprint and Its Application in the Field of Culture and Tourism

2.1.1 Definition of Digital Footprint

A digital footprint typically refers to the traces left by individuals in a digital environment, encompassing all user behaviors online, such as search history, social media interactions, and location data. In the fields of tourism and culture, digital footprints mainly manifest as data left by tourists or cultural participants online, such as reviews on travel platforms, shares on social media, and travel behavior trajectories.

2.1.2 Application of Digital Footprint in the Field of Culture and Tourism

With the increasing prevalence of digital technology, digital footprints have gradually emerged

as a novel direction of research in the fields of culture and tourism. The wealth of digital information provides researchers with a unique perspective to capture and analyze tourists' real behaviors, preferences, and motivations in a more objective and real-time manner. The existing literature shows that the application of digital footprints in culture and tourism mainly focuses on five aspects:

1)Tourist Behavior Analysis: Research on different regions such as Chongqing, Qiandongnan Prefecture, Guangzhou, Guilin, and Shanghai has revealed behavioral characteristics like tourists' spatiotemporal patterns, attraction choices, and travel methods.

2)Tourism Flow Network Research: Studies on nighttime tourism flow in Chongqing and rural tourism flow in Huzhou reveal the distribution, core-periphery structure, and key characteristics such as structural holes in tourism flow.

3)Tourist Destination Image Research: Studies on Ningbo Botanical Garden, the historic urban area of Nanjing, and Suzhou Gardens explore tourists' perceptions of destination images.

4)Tourism Strategy and Policy Recommendations: Detailed analysis of digital footprints can not only provide forward-looking strategic suggestions for the tourism industry, such as the tourism development in Guilin and the regional driving effect of Shanghai Disneyland, but also offer valuable reference information for government policy-making in tourism.

5)Tourism Consumption Behavior Research: Existing research, using digital footprints, has conducted in-depth analysis of tourists in Shanghai and Wuyuan County of Jiangxi Province, revealing tourists' consumption preferences and consumption patterns.

2.2 Current State of Research on Recreational Experience

In recent years, with societal development and people's pursuit of a high-quality leisure life, recreational experience has gradually become a focus of academic research. Recreational experience can be seen as the overall feeling formed by tourists or participants during recreational activities. In-depth research on recreational experience not only helps to improve tourist satisfaction and loyalty but also provides scientific decision-making basis for relevant management departments. Current research on recreational experience mainly focuses on the following four aspects: 1)Exploration of Recreational Experience Dimensions: Studies on Baqiao Wetland Park in Xi'an and Dongzhaigang Mangrove Tourist Area in Hainan both used factor analysis to establish evaluation indicator systems encompassing multiple dimensions. These dimensions generally include natural environment, cultural content, service quality, and activity participation. 2) Correlation between Recreational Experience and Other Variables: Numerous studies have shown a significant correlation between recreational experience and other variables. For example, a study on Wulingyuan Scenic Area found an association between recreational experience and tourists' environmental attitudes, while a study on Dongzhaigang Mangrove Tourist Area further confirmed the causal relationship between recreational experience, tourist satisfaction, and behavioral intentions. 3)Evaluation and Measurement of Recreational Experience: A study on Nansha Wetland Park in Guangzhou conducted an in-depth analysis of recreational impacts using a structural equation model from the perspective of tourists, emphasizing the relationship between recreational impact and recreational quality. A study on the Panda Pavilion at Shenyang Forest Zoo focused on the integration of the environment and recreational experience, exploring how environmental design can optimize visitors' experiences. 4)Strategic Recommendations for Recreational Experience: For example, a study on the forest recreation market in Harbin employed the IPA method to propose strategic suggestions for improving operational performance for forest recreation operators.

Recreational experience, as an important field of research, has been extensively explored in past studies. With the continuous development of the tourism industry, future research needs to further deepen the understanding of recreational experience to meet the ever-changing needs of tourists.

With advancements in digital technology, research on recreational experience based on digital footprints will provide more support for improving tourism quality and meeting visitor demands.

3 Recreational Experience Research: A Case Study of Shu Garden in Chengdu

3.1 Research Object and Research Objective

Recreational experience research focuses on individuals' experiences, perceptions, emotional responses, and satisfaction during leisure activities and within the environment, providing valuable insights for leisure activity providers, park managers, and government departments to better understand and meet public needs, thereby enhancing the quality of leisure activities and spaces. Shu Garden in Chengdu is the first Sichuan Opera-themed park in China, combining Sichuan Opera cultural elements to interpret a typical Western Sichuan garden-style architectural design. The park incorporates cultural and leisure experiences by applying architectural spaces for Sichuan Opera performances, Sichuan Opera art salons, and a Sichuan Opera micro-museum. As a result, Shu Garden has become a typical park showcasing traditional culture and recreational experience. This research aims to use Shu Garden as a case study for recreational experience. The objective is to explore the application of digital footprint technology in drama culture heritage and recreation by analyzing the recreational digital footprints of Shu Garden visitors, providing valuable theoretical and practical references for enhancing cultural heritage and visitor experiences.

3.2 Research Method: Recreational Experience Analysis Based on Axial Coding Technique

Shu Garden in Chengdu opened on April 30, 2022. This study selected publicly available text information from Douyin, Weibo, Dianping, and Ctrip from May 2022 to September 2024 as the source for digital footprint content analysis. The main reason for selecting these platforms for data collection is that, as a newly opened park with a relatively short period of operation, there is limited sharing of recreational experiences. Through preliminary screening, 246 travel notes were obtained from Douyin, 89 from Weibo, 63 from Dianping, and 47 from Ctrip. Given the presence of a large amount of noise data in the original travel notes, this study used the qualitative analysis tool Nvivo12 for analysis.

First, open coding was employed to extract high-frequency words from travel notes posted on each platform as primary nodes. Given that the original travel note samples contained a significant amount of duplicate data and noise, the textual database was filtered, and redundant content as well as non-analytical words such as numerals, prepositions, and auxiliary determiners were removed, resulting in effective terms consisting of more than two characters. In the second step, during axial coding, the content, attributes, and dimensions of the original travel notes were sorted to identify potential associations, causal relationships, or themes, and these codes were organized around a core theme or axis. In the third step, selective coding was conducted as the final stage of analysis, aiming to identify a core category and organize other categories around it, thereby providing a reliable logical framework for subsequent conclusions.

3.3 Research Conclusions

Based on the content of digital footprints and using qualitative analysis tools, the core category identified in the recreational experience research of Shu Garden in Chengdu is the integration of culture and nature in the park. Visitors' focus on Shu Garden is mainly concentrated in seven

aspects: natural and ecological landscapes, cultural and historical atmosphere, architectural and garden landscapes, activities and experiences, perception and emotion, facilities and convenience, and distinctive cuisine. Accordingly, this study attempts to construct a table of recreational perception elements for Shu Garden, consisting of 7 primary indicators and 35 secondary indicators (Table 1). The co-occurrence graph (Figure 1) provide a more intuitive view, showing that at the current stage, visitors have the strongest perception of the cultural and historical atmosphere, while their perception of distinctive cuisine is the weakest. Visitor comments in digital footprints indicate insufficient dining options in Shu Garden, with recommendations for bringing food and beverages. This suggests that analyzing digital footprints can effectively reflect the behaviors, perceptions, and experiences of visitors. Moreover, based on the digital footprints, it can also be observed that Shu Garden in Chengdu lacks facilities or experiences such as handicrafts, cultural and creative projects, and tour vehicles or boats. Combining this information, targeted recommendations can be made for Shu Garden to enhance visitor satisfaction and recreational experience.

Table 1 Recreational Perception Elements of Shu Garden in Chengdu

Category	Primary Elements
Natural and Ecological Scenery	Lake/Water Views, Plants, Natural Landscape, Animals, Ecology, Weather
Cultural and Historical Atmosphere	Folk Festivals, Sichuan Opera Performances, Sichuan Opera Theme, Jiangnan-Style Architecture, Sense of Time Travel, Cultural Sentiment, Cultural Experience
Architectural and Garden Landscapes	Classical Architecture, Gardens, Architectural Features, Walking and Touring Spots
Activities and Experiences	Photography, Costume Weddings, Leisure Activities, Group Activities, Activity Recommendations, Festival Recommendations
Perception and Emotion	Visual Aesthetics, Enjoyment, Immersive Experience, Positive Reviews of the Park, Scenic Impression
Facilities and Convenience	Area, Rest Facilities, Transportation Convenience, Parking, Newly Opened, Free Admission
Distinctive Cuisine	Tea House

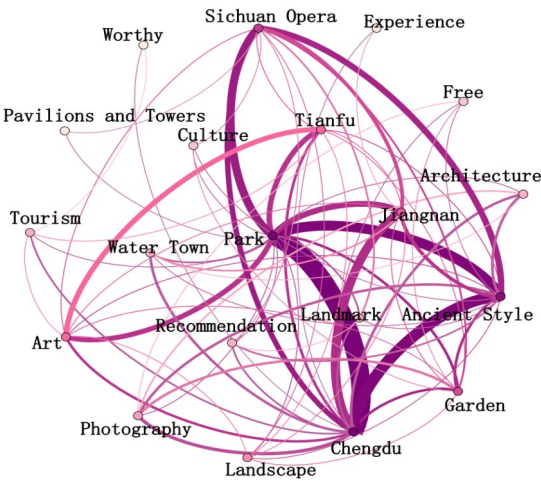


Figure 1 Co-occurrence relationship in the network of visual landscape perception elements

N0te: Tianfu: Often refers to Chengdu or Sichuan, known as "the land of abundance".

Jiangnan: Refers to the region south of the Yangtze River, often associated with gardens and traditional culture.

4 Discussion

4.1 Relationship Between Digital Footprint and Recreational Experience

For the fields of cultural tourism and recreation, digital footprints provide unprecedented opportunities to offer personalized, high-quality experiences. The relationship between digital footprints and recreational experience is mainly reflected in the following aspects:

4.1.1 Digital Footprints Provide Deep Insights for Recreational Experience

As a representative attraction of Sichuan drama culture, the digital footprints of visitors to Shu Garden, such as comments on social media, can provide managers with deep insights into visitors' preferences, needs, and behavior patterns. These insights help Shu Garden to achieve more precise market positioning, formulate more effective promotional strategies, and optimize the management and services of the attraction.

4.1.2 Digital Footprints Facilitate the Construction of Personalized Recreational Experience

Through the analysis of digital footprints, Shu Garden can provide each visitor with a more personalized experience. For example, based on visitors' search history and social interactions, the park can recommend Sichuan drama performances that match their interests, provide relevant background knowledge, and offer interactive activities, thereby enhancing visitor satisfaction and loyalty.

4.1.3 Real-Time Interaction Between Digital Footprints and Recreational Experience

Digital footprints not only provide Shu Garden with insights into past visitor behaviors but also capture and respond to visitor feedback in real-time. For instance, by analyzing real-time comments on social media, Shu Garden can quickly understand visitor satisfaction with a specific performance or service and make timely adjustments accordingly.

4.2 Integration of Sichuan Drama Culture Heritage with Digital Footprint

Digital footprints show that most visitors to Shu Garden are mainly interested in photography and leisure activities, while their attention to Sichuan Opera performances is relatively low. This indicates that in promoting Sichuan drama culture, we need to pay more attention to the needs and interests of these visitors and design more attractive promotional strategies. To cater to visitors' preferences for photography and leisure, we could, for example, organize Sichuan Opera-themed photography competitions or exhibitions, allowing visitors to appreciate and learn about Sichuan Opera culture while enjoying the beauty of the park. In addition, themed leisure activities such as Sichuan Opera mask painting or performance experiences could be offered within Shu Garden, enabling visitors to engage with and learn about Sichuan drama culture during their leisure time.

Furthermore, social media can be effectively used for promotion by posting highlights of Sichuan Opera performances or sharing behind-the-scenes stories on social platforms, sparking visitors' interest and curiosity. Interactive activities on social media, such as inviting visitors to share their Sichuan Opera experiences in Shu Garden or hosting online quizzes about Sichuan Opera, can also enhance visitors' attention to Sichuan Opera. Digital footprints can be used not only for cultural promotion but also to deepen visitors' understanding of the culture. By combining personalized experiences, interaction and participation, and value co-creation, visitors can become not only recipients of Sichuan drama culture but also its creators through digital footprints. For example, they

could share their Sichuan drama experiences, upload related creative content, and participate with other audiences in the heritage and innovation of the culture.

In summary, digital footprints provide new opportunities and challenges for Sichuan drama culture. Proper use of digital footprints can allow Sichuan drama culture to achieve broader dissemination, while also better meeting the needs of modern audiences, thereby achieving the perfect combination of culture and technology.

5 Conclusion

With the development of digital technology, digital footprints have become an important component of modern society, providing unprecedented opportunities and challenges for various fields. Based on an in-depth analysis of digital footprints, this study provides Shu Garden with strategic recommendations for improving recreational experiences, but it also has the following limitations. The first limitation is related to data sources; online digital footprint data may not fully reflect the needs and feedback of all visitors. Secondly, cultural background influences the study; visitors to Shu Garden may come from different cultural backgrounds, and their understanding and acceptance of Sichuan drama culture may vary, which this study did not explore in depth.

To address these limitations, future research could be expanded in the following aspects. One is to broaden data sources: in addition to digital footprint data, other data sources such as field surveys and in-depth interviews can be combined to obtain more comprehensive information. Another is to conduct cross-cultural studies, delving into the perceptions and acceptance of Sichuan drama culture by visitors from different cultural backgrounds, to provide more targeted strategic recommendations for Shu Garden.

In conclusion, digital footprints provide a new perspective and approach for researching the recreational experience of Sichuan drama culture, helping us better understand visitors' real behaviors and feelings. Proper utilization of digital footprints can not only provide strong support for optimizing scenic areas and inject new vitality into the heritage and development of Sichuan drama culture, but also serve as a valuable reference for other similar attractions. It is hoped that this study can provide useful insights for researchers and practitioners in related fields.

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