

A study on the bridging mechanism of senior tourism from the perspective of digital divide -- A case study of Red Boat Intelligent Scenic Spot on South Lake in Jiaxing

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ABSTRACT

In the context of the double superposition of population aging and digital transformation, the problem of "digital divide" for the elderly in smart scenic spots has emerged, which greatly affects the travel experience and happiness of the elderly. Therefore, this study takes the senior tourism scenic spot with both cultural inheritance and intergenerational interaction functions as the starting point, selects the South Lake scenic area of Jiaxing as a typical case, and collects 219 effective questionnaires through field investigation to analyze the dilemma of technology adaptation and travel experience constraints of the elderly in the smart scenic spot. In this study, SPSS 27.0 statistical analysis software was used to analyze the data, and the following conclusions were drawn: First, there is a contradiction between the development status of senior smart scenic spots and the tourism demand experience of the elderly. Second, the use of elderly smart devices is weak, and the dissemination efficiency of culture needs to be improved. Based on this, this paper puts forward relevant suggestions to provide a theoretical basis for bridging the digital divide and also offer references for the aging development of scenic spots.

KEYWORDS

Digital divide; elderly tourism; wisdom scenic spot

1 Introduction

China's digital society is thriving and flourishing. According to the 55th Statistical Report on the Development of Internet in China, the Internet penetration rate in China has reached 78.6% by December 2024. As digital devices continue to be popularized and updated, "smart scenic spots", as an important carrier for the digital transformation of the tourism industry, combine scenic spot information through wechat mini programs, apps and other technologies to make people's travel more convenient (Chen & Zhao, 2018). However, on the other side of the rapid development of smart scenic spots, a large number of elderly people are facing an insurmountable digital divide during travel. The cross-evolution of population aging and social digitalization has made the digital inclusion of the elderly a global issue. It is particularly noteworthy that with the growth of the "silver economy", the market demand for elderly tourism continues to grow (Gao & Han, 2024). This makes it of great theoretical and practical value to solve the problem of digital divide in elderly tourism.

At present, many scholars have conducted in-depth research on the digital divide. Existing studies on bridging the digital divide for the elderly mainly focus on the medical and health fields (Fang et al., 2024). In contrast, studies on tourism scenarios are obviously insufficient, especially on the avoidance behavior of smart tourism and fear of travel technology exhibited by the elderly in smart tourism scenarios (Chen et al., 2024).

Based on this, this study takes the South Lake scenic spot of Jiaxing as an example to deeply discuss the status quo, dilemma and promotion path of the elderly in the smart scenic spot, in order to provide a theoretical basis for bridging the digital divide and provide reference for the aging development of tourism scenic spots.

2 Literature Review

2.1 Digital divide

Since Qiu et al. (2016) put forward the framework of "accessibility and use of binary differences", the concept of digital divide has undergone iterative theoretical paradigms. Van Dijk (2006) pioneered the three-tiered theoretical system, deconstructing the digital divide into three interrelated levels of access, use and knowledge. In the field of digital divide research in the elderly group, At the technical dimension, the lack of age-appropriate technology and the exclusion of digital interface constitute the main obstacles (Shen & Du, 2022). In the content dimension, there is a phenomenon of "digital silence" caused by media narrative neglect (Liu, 2022). The individual dimension involves intergenerational cognitive difference and self-efficacy limitation. The superimposed effects of these factors lead to a "digital-social" double exclusion chain reaction, resulting in the elderly group facing a combination of risks such as social detachment, intergenerational alienation and self-identity crisis. To sum up, scholars at home and abroad have done some research in the two fields of influencing factors of digital divide and strategies to solve it. The research on the digital divide has been

deepened, but the research on the digital divide of the elderly needs to be enriched, especially in the tourism scenario.

2.2 Senior tourism

Foreign research on senior tourism, driven by earlier societal aging, originates from the silver economy's theoretical foundations. Cohen (1972) first defined its concept, scale, and market appeal in the 1970s. Charles (1985) later highlighted seniors' leisure time and purchasing power as indicators of market potential. Fleischer & Pizam (2002) identified health and nostalgia as distinct travel motivators for older adults. The research on the concept of senior tourism in the domestic academic circle originated from the reform and opening up. In the 1990s, earning for traditional culture, nostalgia, and homesickness for relatives and hometowns are important tourism motivations for the elderly (Wei & Cong, 2001).

3 Research Design

3.1 Questionnaire design

The questionnaire is designed to comprehensively and systematically obtain the information of the elderly group in terms of elderly tourism, focusing on the status quo, problems and needs of elderly tourism under the perspective of digital divide, and the questionnaire topics are referred to Zhang Yandan (2023), Tian Tuangxiao (2022) and Chen Xi (2024), and combined with the actual situation of South Lake Scenic Spot.

The problem is divided into three parts. The first part is demographic analysis. The second part systematically evaluates the actual experiences of the elderly group in view of the current situation of aging development in Nanhu Scenic Area. The third part analyzes the predicament of the aging development of intelligent scenic area technology.

3.2 Case study place and object

The Red Boat Scenic Area in South Lake, Jiaxing, as a typical case for the study of the tourism behavior of the elderly, has research value reflected in two core dimensions: First, as a national 5A-level scenic area, it receives a significant proportion of elderly tourists each year, making it a good place to observe the generational differences in the digital age; Secondly, the scenic area is promoting the upgrade of digital services such as scanning codes for booking and online ticket purchasing. The target population of this study is the elderly aged 50 and above. The definition of the age standard for the elderly refers to the "Age Division Standard for Middle-aged and Elderly People" The focus is on discussing the application obstacles of digital technology faced by elderly tourists in tourism scenarios. By analyzing the differences in technological adaptation among the elderly of different age groups, it provides empirical evidence for bridging the digital divide and optimizing elderly-friendly tourism services.

3.3 Distribution and collection of questionnaires

This research conducted an offline questionnaire survey in the tourist distribution area and characteristic scenic spots (such as Lake Heart Island/Revolutionary Memorial Hall, etc.) of Nanhu Scenic Area in Jiaxing from March 2nd to 15th, 2025. Through on-site explanations provided by the investigators to assist in filling out the questionnaires (with a focus on analyzing issues related to digital technology), a total of 286 questionnaires were distributed. After screening out 67 invalid samples, 219 valid questionnaires were finally obtained, with an effective recovery rate of 76.57%.

4 Data Analysis

4.1 Demographic analysis

The research sample shows that tourists aged 50-55 account for the highest proportion (42.92%), and the proportion decreases with age, reflecting the age differences in health and travel intentions. Urban tourists accounted for 65.3%, significantly more than rural tourists, reflecting the gap in tourism participation between urban and rural areas. The educational attainment is relatively high, with nearly 70% having a high school diploma or above, which may affect the use of digital technology. Nearly 70% of the respondents are in good health and can travel freely, but still 30% need assistance to varying degrees, highlighting the demand for elderly-friendly renovations in scenic spots.

4.2 Analysis of the aging development status of Nanhu Scenic spot

According to the survey data, the participation of the elderly in tourism activities presents multiple characteristics. In

terms of tourism purposes, leisure and relaxation became the primary motivation at a proportion of 74.43%. Meanwhile, 61.19% of the elderly attach importance to the company of family and friends. In terms of information acquisition channels, traditional interpersonal communication still dominates, with 67.58% of the elderly relying on recommendations from family members and friends. The influence of digital channels cannot be ignored either, 61.64% of the elderly obtain travel information through smart phones.

However, 5.48% of the elderly have never used digital tools, highlighting the existence of the digital divide. In terms of the frequency of using smart devices, 38.36% of the elderly often use smart devices in scenic spots, 31.51% use them occasionally, and 10% rarely or never use them. This indicates that there is still room for improvement in the application of smart devices among elderly tourists. Regarding the demand for tourism services, 69.41% of the elderly attach importance to clear sign guidance, 55.71% pay attention to barrier-free facilities, and 50.68% still rely on the convenient offline ticket purchasing method. However, 62.1% of the respondents believe that scenic spots do not pay enough attention to the needs of the elderly. Overall, the senior tourism market has significant room for development in terms of digital application, service optimization, and elderly-friendly renovations.

The survey of scenic service evaluation conducted for the elderly group shows that under the multidimensional 5-point scoring system, the average score is between 3.87-3.97, and the overall average score is above the average, but there is still room for improvement. In terms of digital technology, some of the elderly thought that it was unnecessary or increased the difficulty of participation. In terms of the importance of scenic service, sign guidance, manual explanation are more concerned. Specific scores, offline service satisfaction is higher, up to 3.94 points; Although the average score of smart device-related services is reasonable, but its optimization and guidance still need to be strengthened; The clarity of scenic navigation is 3.86 points, the scenic spots need to continuously improve the details of aging services.

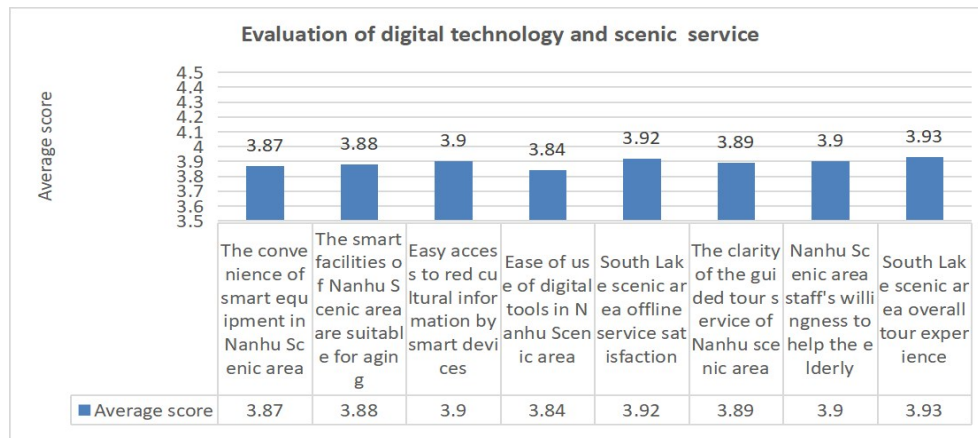


Table 3: Digital technology and scenic service evaluation table

4.3 Smart scenic spot technology is suitable for the dilemma of aging development

Surveys show that about 70% of the elderly encounter digital technology problems during their travels (31.96% encounter them frequently and 38.81% encounter them occasionally). In terms of the difficulty of specific technical operations, 33.33% of the elderly believe that the use of intelligent navigation devices in scenic spots is the most difficult, and online ticket booking and scanning codes to obtain information also constitute the main obstacles. These problems led to 84.01% of the elderly giving up some tourism programs as a result (60.27% giving up occasionally and 23.74% giving up frequently). In terms of the willingness to learn through smart devices, 97% of the elderly are willing to learn (56% hope for guidance and 41% lack channels), while only 3% prefer traditional services. In terms of social support, 5.94% indicated that they did not receive support, and 5.48% indicated that they did not need assistance. There are obvious deficiencies in the elderly-friendly services in scenic spots: 65.75% believe that there is a lack of manual service Windows, 63.47% point out that the operation of intelligent devices is complex, and 53.42% reflect that the tour guide information is not clear, indicating that the traditional service demands have been ignored in the process of digitalization.

5 Conclusion and Suggestion

5.1 Conclusion

(1) There is a contradiction between the development status of smart scenic spots and the experience of elderly tourism needs

The research shows that there are shortcomings in the aging transformation of intelligent equipment in the scenic

spot of South Lake in Jiaying. This makes it difficult for the elderly to complete the operation independently, and the complexity of the operation causes them emotional stress. Many elderly people suffer inconvenience because scenic spots "only support online operation", and most elderly people believe that scenic spots do not pay enough attention to the needs of elderly groups, which reflects the dislocation between the unidirectional technology enabling of scenic spots and the operation habits of elderly groups. There is a deviation in service substitution, and the scenic spot cuts artificial Windows in order to improve efficiency, resulting in the elderly having no door to seek help when they need help. The essence of this kind of contradiction is the lack of humanistic care in the development of modern digital technology.

(2) Support for the Elderly in the Digital Divide Weaknesses across Generations

When the elderly use scenic smart equipment in senior tourism, they show a significant "traditional service dependence" feature. But the "paperless" and "intelligent" measures vigorously promoted by scenic spots at this stage are contrary to the needs of elderly tourism. At the family level, the elderly only occasionally get help from family members, and some elderly people lack support in digital technology learning, which indicates that intergenerational digital feeding is random and non-systematic. At the community level, only a few elderly people obtain tourism information through community activities, and there is a lack of normal intelligent technology training mechanism. Many elderly people express their willingness to learn but there is no appropriate channel. When intergenerational support is insufficient and service supply fails to establish a "technology-humanities" buffer, the elderly's tourism needs cannot be met with the help of digital devices, and their experience in tourism is ultimately reduced.

(3) The construction of scenic spots needs to improve the effectiveness of the digital divide affecting culture

Research has shown that while older adults recognize that digital technology helps access cultural information, operational barriers limit their actual depth of perception of culture. The specific manifestations are as follows: The intelligent tour has information overload and interaction barriers, which weakens the sense of cultural immersion, and the elderly are less interested in touring because of the unclear tour information. Technical barriers lead to cultural participation barriers. Some elderly people voluntarily give up tourism digital cultural experience projects due to operational difficulties. This phenomenon confirms the conclusion of Mathieson (1984) in historical tourism research -- when technological tools cannot adapt to users' cognitive mode, cultural communication will become one-way information indoctrination. Especially in the tourism scene, the existence of digital divide causes digital equipment to affect the elderly's access to deep-seated culture in the process of cultural transmission.

5.2 Suggestion

(1) To promote the improvement and development of intelligent equipment in tourist attractions suitable for aging

Scenic spots should start from the diversified needs of tourists and systematically promote stratified service design to meet the needs of elderly tourists who are accustomed to traditional ticket purchase methods. In terms of online equipment usability optimization, a comprehensive and detailed optimization work has been carried out for the "ship is coming" mini program of the scenic spot and the digital pavilion program of the Nanhu Revolutionary Memorial Hall. First, create a large elderly version of the small program, with a clear and eye-catching icon, convenient for elderly users to identify and operate; Second, add voice broadcast function to make up for some elderly people's reading inconvenience; Third, strictly control the frequency of advertising to reduce interference. In terms of the overall design concept, it has always been easy to operate as the core, simplify unnecessary complex operations and redundant plates, replace the difficult sliding operation with simple click operation, so that elderly users can easily get started and enjoy the unique fun of tourism.

(2) Strengthen social intergenerational services to meet the needs of the elderly to break through the dilemma of smart scenic spots

Scenic spots need to change the social identity of the elderly group as passive "listeners" in the tourism scene. First of all, the scenic spot should set up a special service of "1 for 1 intelligent help", its core responsibility is to help the elderly proficiently use all kinds of digital equipment, so that the elderly tourists no longer feel helpless in the application of digital technology. Secondly, the establishment of the elderly travel organization is an important part of enhancing the travel experience of the elderly group, local elderly people should be encouraged to join the travelling groups. With their rich life experience and familiarity with local scenic spots, they can better serve other elderly tourists, it also provides a platform for the elderly in the organization to exert their self-worth after retirement, helping them to expand their positive social circle, so as to comprehensively improve the sense of integration and gain of the elderly in the digital tourism environment.

(3) Innovative culture communication methods

The scenic spot should create a tourism experience that meets the needs of the elderly group, and enhances the appeal and attraction of culture transmission through innovative means. On the one hand, with the help of AI tools, the faces and sound images of heroes during the Nanhu Red Boat Revolution were reconstructed in a panoramic manner, and

the historical scenes were vividly presented in a highly restorative way. Crucially, such projects reduce the number of complex steps, avoid the technical barriers too high to confuse elderly visitors. On the other hand, the scenic spot adopts the mode of combining oral narration with physical presentation, and live character NPCs are arranged to shuttle through the scenic area, build a vivid and interesting interactive scene. In this way, help the elderly to understand the sightseeing information of the scenic spot comprehensively and deeply. This fusion mode effectively making up for the lack of simple digital technology in emotional and temperature transmission.

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