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The Impact of High-speed Railway on Shaoxing Residents' Travel Demand and Behavior

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Abstract. The contribution of China's tourism development and transportation revolution is inseparable. The convenient transportations and the advanced transportation infrastructures have become the prerequisites and the basics of promoting the development of tourism industry. When choosing a tourist destination, the tourists firstly are going to consider the factors of time-space distance, transportation cost and convenience, transportation mode and comfortability, service level and so on. Therefore, transportation factors directly determine the choice of tourists' consumption demand and behaviour. According to the travel mode and the demand of tourism destination and consumption behaviour of Shaoxing residents, this paper intends to analyse the expected impacts of travel demands and behaviours of Hangzhou-Ningbo high-speed railway. And then some effective improvement measures are put forward to make the contributions to the development of high-speed railway in Shaoxing.

1. Introduction

The convenient transportations and the developed transportation infrastructures have become the prerequisite and the dependent basis for the development of tourism industry. High-speed railway improves the convenience, safety and comfort of traveling for the residents with the advantages of high speed, high efficiency, low price and less danger[1]. It has greatly promoted the vigorous development of China's tourism industry. And it produces the unlimited opportunities and challenges for tourism industry. High-speed railway will evoke more development opportunities of the tourism to Shaoxing. Simultaneously, it will also bring the great changes for travelling to the residence of Shaoxing. Therefore, how the demand and behaviour of the residents affecting the development mode of tourism in Shaoxing will become one of the important research topics for the tourism development in Zhejiang province. It will have the extremely important theoretical significance and practical value to stimulate consumption, to enhance its core competitiveness, and to promote the transformation and upgrading of Shaoxing's tourism industry as well.

2. The impact of high-speed railway on Shaoxing's tourism demand

With the opening of high-speed railway of Shanghai-Nanjing, Shanghai-Hangzhou and Beijing-Shanghai, etc. high-speed railway between Hangzhou and Ningbo was officially put into operation in July 2013 due to the help of the national key construction project. This line has 150 kilometers length and it passes Shaoxing, which runs from Hangzhou East railway station to Ningbo railway station, and the fastest driving takes only 50 minutes. It can directly reach the cities from the south of Shaoxing, such as Fuzhou, Taizhou, Wenzhou and Xiamen by using high-speed railway of Fuzhou-Xiamen and Wenzhou-Fuzhou, etc. For the north of Shaoxing, it connects high-speed railway of Shanghai-



Hangzhou and Ningbo-Hangzhou, the cities such as Nanjing, Shanghai as well as other cities along the way, can be directly arrived through three special lines called Hefei-Nanjing, Shanghai-Nanjing and Beijing-Shanghai. It significantly reduces the travel time for the residents. High-speed railway takes only half an hour from Shaoxing to Hangzhou, Ningbo and other cities. It forms an hour metropolitan area with the surrounding regions as well as a 1-2 hours railway traffic circle.

In order to more clearly understand the impact of high-speed railway on Shaoxing's tourism demand, the relevant research has been organized. The main object of this survey is Shaoxing residents who take high-speed railway. 300 questionnaires were distributed in Shaoxing high-speed railway station and on high-speed railway between Hangzhou and Ningbo, 278 valid questionnaires were collected. In addition, more than 100 residents were visited and interviewed. The content of this survey is relatively comprehensive and the proportion of the sample is more balanced. The ratio for men and women were 56% and 44% respectively. The main age group, who take high-speed railway, are people aged 24-50, that accounts for a 79% of the total. Among the respondents, there is 29% had a high school degree or below, 52% had a college degree and 19% had a master degree or above. In terms of monthly income, 46% of respondents have a monthly income between 2000 and 4000 yuan, 4001-7000 yuan accounts for 32%; Those above 7,000 yuan accounts for 22%. The survey and interview results can be sorted out as following:

2.1 Reasons for choosing high-speed railway to travel

According to the survey results in figure 1, there is a 42% of the residents who choose high-speed railway to travel because it is fast. And there is a 35% because it is relatively cheaper, 12% for comfortable and convenient. Another 7% of the residents choose high-speed railway because of the low carbon of it. First of all, compared with other transportations, high-speed railway has the characteristics of low price, short time and strong safety. Compared with long-distance buses, high-speed railway costs almost the same price for the same journey, but time can be saved in half. Compared with trains, high-speed railway can also save a lot of time, meanwhile, it is much more comfortable than trains. Compared with the planes, the ticket price is almost one third of the planes' price[2]. Although the planes fly faster than high-speed railway, there is not any airport in Shaoxing. The only airport nearby is Hangzhou Xia Shan Airport in Xiaoshan district of Hangzhou. For this reason, it has to spend more time and money on transportation when the residents are on their way to the airport. In addition, the airport security check, boarding check and frequent airport control, etc. caused the planes usually take much more time than high-speed railway. Besides, high-speed railway will not be delayed or cancelled due to the weather problems. And there is no any restriction on the use of electronic products during running. Secondly, according to the interviews, the residents think that high-speed railway is more comfortable and convenient. It runs smoothly and quietly. The passengers can enjoy the scenery at any time without the feeling of dazzled during the whole journey. What's more, the seat of high-speed railway is capacious, comfortable and adjustable. There are power outlets everywhere to meet the tourists' demands. Furthermore, there are also special luggage storage areas and lounge bars, which can reduce tourists' fatigue and enrich their travel experience. Beyond that, the specially designed bus channel for children, the elderly, pregnant women and the disabled are also provided. Thirdly, high-speed railway uses the new technologies with high speed and low carbon. It has a speed of 300 kilometers per hour. In addition, it has the characteristics of low emission, low pollution and low energy consumption in the course of running. It becomes the most significant symbol for the development of the traffic economy. It has attracted a large number of environmentalists and become the latest must-haves in the burgeoning transportation industry.

2.2 Changes in travel time

In the past, the time for residents to travel was mainly concentrated in the May Day and the National Day. In that time, the traffic was crowded and the main scenic spots were crowded. Therefore, the tourists need to bear all kinds of inconvenience and cannot enjoy the happiness with their families. However, after high-speed railways were built, 53% of the residents' travel time

increases randomly. Only 23% of residents choose to travel on holidays, 15% on weekends and 7% on weekdays. The last 2% residents even choose to travel after their work (see figure 2). This phenomenon diverts the residents' travel time, dilute the traditional sense of the boundaries between off-season and peak-season. It alleviates the problem of the unstable supply and demand for the tourist scenic spots in the peak period. And the travel time is more flexible for the residents to choose. They can visit nearby cities or visit their relatives and friends on weekends and even on weekdays after their works. The fastest time is less than 1 hour from Shaoxing to Hangzhou, Shanghai and Ningbo, etc. Shaoxing residents can choose day return absolutely. In this way, they can not only avoid the holiday crowd, but also can enjoy the quiet, smooth and cheerful journeys. High-speed railway brings the rich travel experience to spend the monotonous and boring leisure time for Shaoxing residents. According to the survey, there is a small increase in the number of family travelling in Shaoxing.

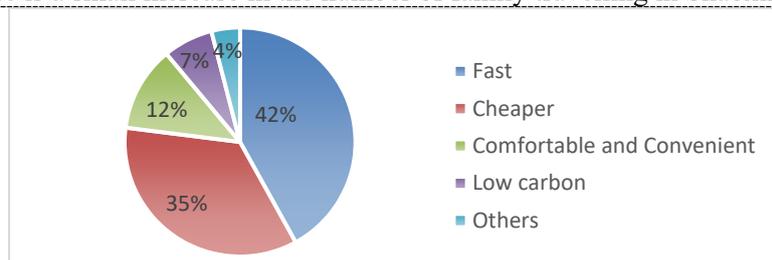


Figure 1. Reasons for choosing high-speed railway to travel

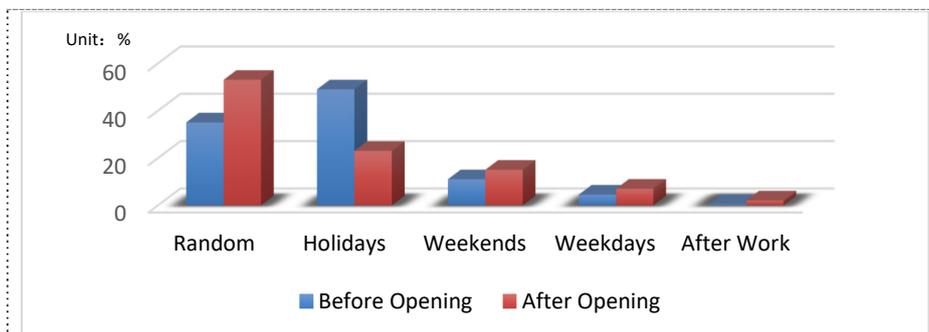


Figure 2. Time distribution map before and after the opening of high-speed railway

2.3 Changes in travel modes

Shaoxing residents could only choose train, long-distance bus and self-driving for the short-term travel before Hangzhou-Ningbo high-speed railway opened. But now you can see it clearly from figure 3, there is a 62% of residents choose self-guided tour by high-speed railway. It indicates that the opening of high-speed railway makes Shaoxing residents more and more inclined to travel. Because residents considered that most travel agencies offer the travel modes like bus tours or airplane + bus tours. Thus, during the journeys, tourists are usually in hurry, skim the surface and a lot of money was spent on the transportations and the tour guides. Most of the time spent is wasted on the road, and result in that, the local folk, history and culture are completely missed. However, Residents' personalized demands can be definitely satisfied by high-speed railway tour. Due to the frequent time table of high-speed railway, the residents can choose the time and destination to travel freely and flexibly. They can control and arrange their itineraries and destinations according to their own preferences. The travel mode of self-service by high-speed railway is increasingly popular in Shaoxing. But there are still 23% and 12% of residents prefer package tour and self-driving tour respectively.

2.4 Changes in demand of the service products of high-speed railway

The convenience of high-speed railway has expanded the travel radius of the residents in Shaoxing. This change has increased the demand for services and facilities of high-speed railway. The survey results show that (see figure 4), on the way of taking high-speed railway, the respondents want to get some information about the scenic spots and the traffic conditions, etc. of the destination (46%), to read newspapers, magazines or electronic information to improve their understanding of the history, culture and snacks, etc. of the destination (38%), and a further 14% of respondents would prefer to have a meal on high-speed railway in order to kill the boring time and save the time on finding restaurants after arriving at the destination.

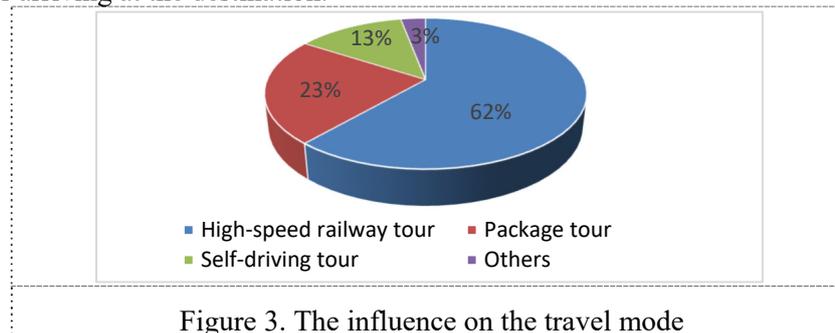


Figure 3. The influence on the travel mode

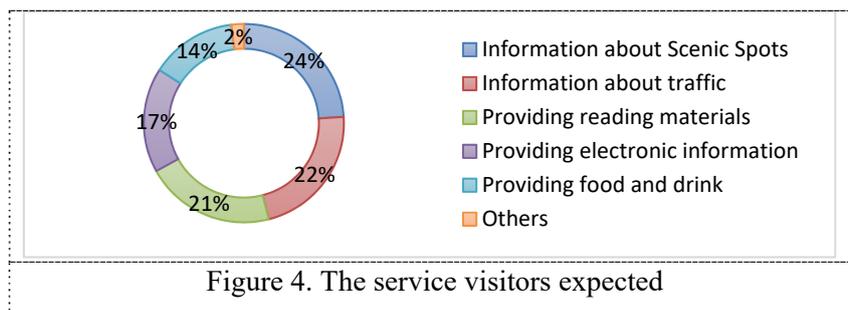


Figure 4. The service visitors expected

From figure 5, it revealed the equipment requirements of the station hall of high-speed railway. After the tourists get off the bus, they have a great demand about the information systems, such as the guide signs and road signs (32%), electronic information screen and guide map (23%), the brochures on destinations (21%), interactive online consultation (12%), and the information desk (11%). Although the stations of Hangzhou-Ningbo high-speed railway have already provided all kinds of information signs, there is a large gap between the existing information and the residents' expectations. Moreover, the speed of high-speed railway makes the residents like to choose more destinations to visit at one time. And after arriving at the destination, the tourists tend to choose more inaccessible scenic spots for sightseeing. But 72% of visitors thought that high-speed railway was poorly connected with the scenic spots. One of the respondents expresses that after arriving at the destination by high-speed railway, tourists cannot transfer to other vehicles to reach the scenic spots there. Especially some remote areas, there is no direct bus or shuttle bus to the scenic spots, which brings many inconveniences to the travelers.

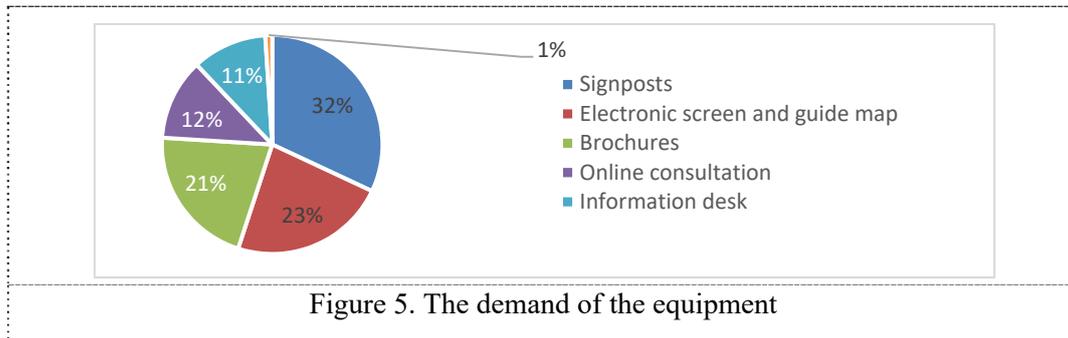


Figure 5. The demand of the equipment

2.5 Changes in tourist consumption behaviour

High-speed railway has changed the consumption behavior of Shaoxing residents. The frequency and the cost of traveling have been increased. Thus, the content of consumption will present diversification and comprehensiveness[3]. The habit of consumption will become more experiential and personalized. High-speed railway makes the residents feel that their travel time and space have been compressed. According to the principle of maximum benefit, the decrease of the minimum travel time ratio will further stimulate people's travel motivation and change their decision-making behaviour[4]. Travel time and cost savings allow residents using limited time and money to visit more scenic spots, to travel to the further places, to experience some new tourism products, and the consumption is closer to fashion -orientation. According to figure 6, the travel frequency by high-speed railway, demonstrates that nowadays, the frequency of the residents traveling has been observably increased. And it is expected that the total consumption of Shaoxing residents will be raised each year indirectly.

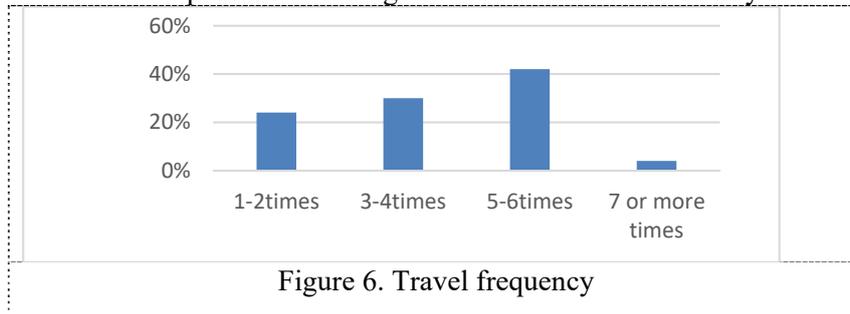


Figure 6. Travel frequency

3. Relevant suggestions

3.1 Accelerating the industrialization of innovation achievements

The survey found that in Shaoxing high-speed railway station, it still has a certain gap in terms of tourism promotion and publicity, which needs to be improved. It should improve the supply channels of tourism-related information and increase the efforts on publicity and marketing according to the needs of the passengers. Firstly, it is better to use coach space to enrich all travel information for tourists during commuting time. This can not only improve the popularity of the destination, but also kill the boring time for tourists on the way of journey. Secondly, the station hall of high-speed railway should strengthen the supply of various service facilities. A completed guide map should be established in each site. And a large LED screen should be set up in the waiting room to play the tourism promotional video. A series of related posters should be designed and posted. What's more, the information desk should be offered and in where the tourist brochures and souvenirs can be distributed or purchased. The direction board and sign should be set up clearly at each exit to facilitate tourists to obtain tourism information at any time and in anywhere. Finally, by taking advantage of the electronic plot of the modern consumers, the development of micro-tourism market should be strengthened though the network platform. Nowadays, 95% of residents travel with smartphones or laptops. According to the survey found that on high-speed railway, 74% of passengers owned iPads

and laptops, 69% owned smartphones and 64% owned high-end electronic devices such as digital and video cameras[5]. Therefore, Shaoxing tourism industry should pay high attention to the potential consumption brought by the new media to the tourism market of high-speed railway. They also should set the two-dimensional code of the local tourism public platform on the light box advertisements, seat backs, posters and travel guide in the lobby, which could provide information of travel consultations, ticket sales, ticket service, restaurants and hotel reservations. Furthermore, they should establish Twitter and WeChat to advertise the history, culture and food offered by Shaoxing high-speed railway tourism. And then to encourage the tourists to participate in the interaction, so as to create a comprehensive travel experience for the tourists, and to broaden their marketing channels, as well as to promote the transformation and upgrading of the tourism marketing mode.

3.2 Accelerating urban linkage and create "zero transfer" mode of transportation

The survey found that although Hangzhou-Ningbo high-speed railway brings a huge passenger flow to Shaoxing and its surroundings cities, the traffic is not very convenient, because Shaoxing station is located in the middle between Shaoxing and Keqiao district. Therefore, in order to adapt to the demand of tourism market of high-speed railway, the government should make use of its power to realize the seamless connection between high-speed railway and other transportation[6]. On the one hand, the buses and tourist buses from high-speed railway stations to the major scenic spots, restaurants and hotels especially remote scenic areas should be opened. On the other hand, taxi service and car rental service should be fully developed. They can encourage tourists to reasonably use some relevant APPs such as Uber. Besides that, they can invite the reliable car rental companies such as Hertz to stay in the lobby of the high-speed railway station. Let tourists directly get to the destination by taxi or self-driving when they walk out of the station. It is a feasible way to achieve the "zero transfer" mode of transportation, and truly to attain the seamless connection from the high-speed railway station to the tourist destination.

4. Conclusion

The opening of high-speed railway between Hangzhou and Ningbo has a significant impact on the tourism consumption demand and behavior of residents in Shaoxing. They are mainly reflected in that the travel time has been separated, the self-service tours of high-speed railway for one or two days are favoured by Shaoxing residents, and each trip will be chosen multiple destinations for visiting. The radius of journey has expanded correspondingly and the frequency of traveling is constantly increasing which leads to the boost of tourism consumption year by year. These changes have made the facilities and services supplied by Hangzhou-Ningbo high-speed railway and its stations become more important. Consequently, the traffic connectivity and tourism information of the cities along the Hangzhou-Ningbo high-speed railway will be improved and innovated. Therefore, Shaoxing should cooperate with the government to make the further improvement measures.

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