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Research on the Coordinated Development of High-Speed Rail Transportation and Tourism Economy

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ABSTRACT

Taking the two tourist cities, Guangzhou and Guiyang, passed by the Guiyang-Guangzhou High-Speed Railway as examples, this paper constructs a comprehensive development evaluation index system for the tourism economy and high-speed rail transportation systems. The constructed coupling coordination model is then used to empirically analyze the coupling coordination status of the tourism economy and high-speed rail transportation of the Guiyang-Guangzhou High-Speed Railway from 2017 to 2021. The analysis results show that the degree of coordination has been steadily increasing from 2017 to 2019, but it dropped sharply in 2020, and then the coupling coordination degree increased again in 2021. To promote the excellent coordinated development of the high-speed rail transportation system and the tourism economy system, it is necessary to gradually improve the level of transportation development in tourist cities through better promotion of tourism by transportation.

KEYWORDS

Tourism Economy; High-Speed Rail Transportation; Coupling and Coordination.

1. INTRODUCTION

Railways are the lifeline of our country's economic development, and high-speed rail, as an emerging mode of transportation, is gradually changing people's lives and travel habits. At present, among the travel options chosen by people for tourism, high-speed rail has already occupied a very important position. The Guiyang-Guangzhou High-Speed Railway is the first high-speed rail in Guizhou Province. Since Guizhou is located in the southwest of China, with high mountains and some rugged terrain, and most areas lack plain support, the construction of the Guiyang-Guangzhou High-Speed Railway was extremely challenging. From a temporal perspective, it was precisely because Guizhou had this first high-speed rail that subsequent lines were built. Therefore, the Guiyang-Guangzhou High-Speed Railway plays a decisive role in the economic development of Guizhou and some other western regions. As Guangzhou is the capital of Guangdong Province and Guiyang is the capital of Guizhou Province, studying these two representative cities can also shed light on the coupling between tourism and high-speed rail in both provinces. Moreover, since Guangzhou is located in the Pearl River Delta region, the specific situation of the coupling between high-speed rail and tourism in this area can also be studied through Guangzhou. This paper aims to explore the coupling coordination between high-speed rail and tourism in the two specific cities of Guiyang and Guangzhou on the Guiyang-Guangzhou High-Speed Railway. We will construct a coupling model to quantitatively observe this coordination level, and through the coupling degree between high-speed rail transportation and tourism economy in these two cities, we can better judge how the Guiyang-Guangzhou High-Speed Railway and tourism can develop more effectively in the future.

2. LITERATURE REVIEW

Currently, the research on the coordinated development of high-speed rail transportation and tourism economy has become a hot topic in academic circles both domestically and internationally, achieving some important research results. At present, the main research methods used are index system construction, correlation coefficient method, comprehensive index method, etc. Then, through the relevant data of high-speed rail transportation and tourism economy, analysis and evaluation are conducted. Further, the potential impacts on high-speed rail and tourism are analyzed, studying the key influencing factors of the coordinated development of high-speed rail transportation and tourism economy, such as: high-speed rail line layout, tourism resource allocation, tourism industry structure, etc. After analyzing the influencing factors, policy suggestions are made to promote the coordinated development of high-speed rail transportation and tourism economy, such as: strengthening the planning and construction of high-speed rail lines, optimizing the allocation of tourism resources, promoting the upgrading of the tourism industry, etc. Finally, empirical research is conducted. Through empirical research, the impact of high-speed rail transportation on the tourism industry is analyzed, and the degree of coupling and coordination between high-speed rail transportation and tourism economy is explored, providing theoretical support for policy formulation and practice. Gao Xukuo proposed the index system construction method and the implementation of this specific method, as well as how to judge the degree of coupling based on the final numbers obtained from the required data [1]. Yu Feifei proposed the construction of an evaluation index system for tourism economy and transportation system [2]. Wu Lei et al. (2019) constructed a comprehensive evaluation index system for transportation and tourism economy, and then applied the coupling coordination model to discuss the spatiotemporal characteristics of the coupled development of tourism economy and transportation in the Wan'nan Tourism Demonstration Area from two perspectives: space and time [3]. Wang Yongming and Ma Yaofeng (2011) used the coupling coordination model to conduct an empirical analysis of the coupling degree between Xi'an's tourism economy and transportation system, finding that their synergy is gradually increasing, but there are still weak links in transportation construction, which urgently need to be addressed by accelerating the development of aviation, railways, and other fields to enhance the synergy of the two systems [4]. Yang Chengque, Ming Qingzhong et al. (2020) conducted a study to evaluate the accessibility of transportation networks and the level of tourism economic development in 9 prefectures and cities in Guizhou Province [5]. To achieve this goal, they adopted the entropy method and coupling coordination model to calculate the coupling coordination degree of the two systems and classify the types of coupling coordination. Based on regional high-quality development, Wang Zhaofeng and Sun Luyun (2021) took Changzhutan urban agglomeration as the research object to study the coordinated development and evolutionary trends among transportation, regional tourism economy, and ecological environment [6]. Liu Anle and Wang Cheng et al. (2018) selected Lijiang City as the empirical research object, elaborated on the characteristics of the evolution of tourism cities in border mountainous areas in terms of transportation and tourism, and summarized the bidirectional feedback mechanism of transportation and tourism in border mountainous areas [7].Zhu Yinjian (2019) took the Panyang Lake area as a case study, which is the region with the most concentrated tourism resources in Jiangxi Province. The research subjects of this area include transportation and tourism. Using a coupling model, he deeply explored the relationship between the accessibility of the transportation network and the tourism economy, providing certain reference significance for the tourism development of this region [8].

3. RESEARCH METHODS

3.1. Definition of Coupling

Coupling, as officially defined, refers to the interaction between two or more systems or two or more related or associated forms of motion, where various influences are exerted on each other to produce specific effects. These effects aim to better coordinate and accomplish a common specific task for these two systems or motions [2]. The degree of coordination refers to the impact produced by several subsystems coordinating and allocating their respective tasks towards a final goal. Therefore, the coupling coordination degree specifically reflects the mutual coordination relationship between the system and its related influencing factors, as well as the quality of this mutual coordination. The following research content utilizes the model of coupling coordination degree to collect relevant data on tourism economy and high-speed rail transportation [9], calculating the specific mutual coordination degree between high-speed rail transportation and tourism economy in specific years. This is done to propose specific policies to adjust the coupling coordination degree between high-speed rail transportation and tourism economy, ensuring the full utilization of tourism resources while promoting the sustainable development nature of the tourism economy [10].

3.2. Research Ideas

First, I will construct a system, which is an indicator system for evaluating high-speed rail transportation and tourism economic systems. Specifically, the frequency statistical method [11] and theoretical analysis method [12] are used to construct the indicators, and then the indicator systems for evaluating the tourism economic system and high-speed rail transportation system are constructed respectively [2]. After constructing the two indicator systems, another model is constructed, which is a comprehensive evaluation model of high-speed rail transportation and tourism economy. Through this evaluation model, the coupling development model of high-speed rail transportation and tourism economy is finally constructed. After constructing the coupling model of high-speed rail transportation and tourism economy, the next step is to collect specific data from the Internet, such as the data needed for high-speed rail transportation: the mileage of high-speed rail, passenger volume, etc. The data needed for constructing the evaluation system of high-speed rail transportation and tourism economy is obtained from authoritative websites. After the data collection is completed, the coupling degree of high-speed rail transportation and tourism economy is displayed through the final calculated data, and then the results are analyzed.

3.3. Data Collection

The specific data required for this paper includes: the railway mileage of the Guiyang-Guangzhou High-Speed Railway, the railway passenger volume of Guangzhou and Guiyang from 2017 to 2021, the railway freight volume of Guangzhou and Guiyang from 2017 to 2021, the total tourism revenue of Guangzhou and Guizhou from 2017 to 2021, the number of domestic tourists in Guangzhou and Guiyang from 2017 to 2021, and the domestic tourism revenue of Guangzhou and Guiyang from 2017 to 2021.

The railway mileage of Guiyang-Guangzhou High-speed Railway can be obtained directly from the official data of Guiyang-Guangzhou High-speed Railway Co., Ltd.

The total tourism revenue, the number of domestic tourists and the income from domestic tourism in Guiyang City from 2017 to 2021 can be obtained from Guizhou Statistical Yearbook published annually by Guizhou Province and Guangjuntong official website.

The total tourism revenue, domestic tourist arrivals and domestic tourism income in Guangzhou from 2017 to 2021 can be obtained from the annual "Guangzhou Statistical Yearbook" published by Guangzhou and the official website of Guangjuntong.

The railway passenger volume and railway freight volume in Guangzhou from 2017 to 2021 can be obtained from the monthly published Transportation Monthly Report of Guangzhou.

The railway passenger volume and railway freight volume in Guiyang City from 2017 to 2021 can be obtained from the Guiyang Provincial Statistical Yearbook.

3.4. Model Construction

(1) Constructing an index evaluation system for the tourism economic system and high-speed rail transportation system.

Firstly, the high-speed rail transportation system is evaluated. Five indicators are selected to assess the high-speed rail transportation system: the railway mileage of the Guiyang-Guangzhou High-Speed Railway, the passenger volume of Guangzhou Railway from 2017 to 2021, the passenger volume of Guiyang Railway from 2017 to 2021, the freight volume of Guangzhou Railway from 2017 to 2021, and the freight volume of Guiyang Railway from 2017 to 2021. Subsequently, the tourism economy system is assessed using six indicators: the total tourism revenue of Guangzhou from 2017 to 2021, the total tourism revenue of Guiyang from 2017 to 2021, the number of domestic tourists in Guangzhou from 2017 to 2021, the number of domestic tourists in Guiyang from 2017 to 2021, the domestic tourism income of Guangzhou from 2017 to 2021, and the domestic tourism income of Guiyang from 2017 to 2021. The data on tourism economy is sourced from the "Guangzhou Statistical Yearbook" and the "Guiyang Statistical Yearbook", as well as statistics from the official website of Guangjun Tong. The data on high-speed rail transportation is obtained from the Guangzhou Railway Bureau website, the official website of Guangjun Tong, and the "Guiyang Statistical Yearbook". Due to inherent uncertainties in the data, there might be variations in dimensions and magnitudes, which could lead to biases in the final analysis. To mitigate this potential bias, it's necessary to standardize the original data by eliminating differences in dimensions and magnitudes. We processed each indicator using a positive function.

$$A'_{ij} = \frac{A_{ij} - A_{jmin}}{A_{jmax} - A_{jmin}} \tag{1}$$

In the formula, and respectively represent the original value of the data and the value after standardization; and respectively represent the maximum and minimum values in the j-th indicator data.$A_{ij} A'_{ij} A_{jmax} A_{jmin}$

(2) Integrated evaluation model of tourism economy and transportation system

Assuming that b1, b2, ..., bn represent the indicators of the tourism subsystem, and c1, c2, ……, cm represent the indicators of the transportation system, then,

$$T(x) = \sum_{t=1}^{n} W_{jt} b'_t \tag{2}$$

$$R(y) = \sum_{r=1}^{m} W_{jr} c'_r \tag{3}$$

In the formula, T(x) and R(y) represent the comprehensive evaluation values of the tourism economic system and the high-speed rail transportation system, b'_t and c'_r are the standardized values of b_t and c_r, respectively, which can be calculated using formula (1); W_{jt} and W_{jr} are the weights of the indicators. The determination of the indicator weight W_j uses the entropy weighting method [13].

By inputting into the formula of the entropy weighting method, the weight data of each evaluation index in the tourism economic system and the high-speed rail transportation system is calculated, and the results are shown in Table 1.

Table 1. Tourism Economy - Transportation System Evaluation Indicators and Weights

Subsystem	Evaluation index	Unit	Weight
Tourism Economic System	Total tourism revenue of Guangzhou	Billion yuan	0.165
	Number of domestic tourists in Guangzhou	Ten thousand people	0.165
	Revenue from domestic tourism in Guangzhou	Billion yuan	0.166
	Total tourism revenue of Guiyang	Billion yuan	0.168
	Number of domestic tourists in Guiyang	Ten thousand people	0.17
	Guiyang's domestic tourism income	Billion yuan	0.168
High-speed rail transportation system	Length of Guiyang-Guangzhou high-speed rail Railway	Kilometer	0.194
	Passenger traffic volume of Guangzhou railway	Ten thousand people	0.198
	Freight volume of Guangzhou railway	Ten thousand tons	0.205
	Passenger traffic volume of Guiyang railway	Ten thousand people	0.198
	Guiyang railway freight volume	Ten thousand tons	0.204

(3) Coupling evaluation model of tourism economy and high-speed rail transportation

Drawing on the definition of coupling and the coupled coefficient model formed by it, a coupling degree model between the tourism economic system and the high-speed rail transportation system is established [14]:

$$D = \sqrt{C \times M} \tag{4}$$

$$C = \{[T(x) \times R(y)] \div [T(x) + R(y)]^2\}^{\frac{1}{2}} \tag{5}$$

$$E = \mu T(x) + \varphi R(y) \tag{6}$$

In the formula, D represents the degree of coupling coordination; C is the coupling degree between the tourism economic system and the high-speed rail transportation system; E is the comprehensive coordination index of the tourism economy and transportation system; $T(x)$ and $R(y)$ are the comprehensive evaluation indices of the tourism economic system and the high-speed rail transportation system respectively; μ and φ are undetermined coefficients. Since both systems are equally important, μ and φ each take a value of 0.5. Referring to the research by Gao Nan and other scholars, the coupling coordination levels and evaluation standards for the tourism economy and high-speed rail transportation have been divided [15], as shown in Table 2.

Table 2. Standards for the Coordination Assessment of Tourism Economy and Transportation Coupling

Interval	Coupling coordination degree	Level	Type	Rating
Coordinated development (Acceptable interval)	0.8<D≤1	Excellent and coordinated development	T(x)>R(y)	Good Coordination Development of Traffic Hysteresis
			T(x)=R(y)	Tourism and transportation synchronously achieve excellent coordinated development.
			T(x)<R(y)	Optimal Coordination Development of Tourism Hysteresis
	0.7<D≤0.8	Intermediate coordinated development	T(x)>R(y)	Moderate Coordination Development of Transportation Hysteresis
			T(x)=R(y)	Moderate Coordination Development in Tourism and Transportation
			T(x)<R(y)	Moderate Coordination Development of Tourism Hysteresis
	0.6<D≤0.7	Primary coordinated development	T(x)>R(y)	Primary coordinated development of traffic lag.
			T(x)=R(y)	Tourism and Transportation Synchronous Primary Coordinated Development
			T(x)<R(y)	Primary coordinated development of tourism lagging
Transformation and development (Transition interval)	0.5<D≤0.6	Barely coordinated development	T(x)>R(y)	Reluctant Coordinated Development of Transportation Hysteresis
			T(x)=R(y)	Tourism and transportation are barely developing in

				a coordinated manner.
			T(x)<R(y)	Reluctant Coordination Development of Tourism Hysteresis
	0.4<D≤0.5	On the verge of maladjusted development	T(x)>R(y)	Impending Imbalanced Development of Transportation Hysteresis
			T(x)=R(y)	Tourism and transportation are synchronously on the verge of imbalanced development.
			T(x)<R(y)	The Impending Imbalanced Development of Tourism Hysteresis
Unbalanced development (Unacceptable interval)	0.2<D≤0.4	Moderately dysregulated development	T(x)>R(y)	Moderately Maladjusted Development of Transportation Hysteresis
			T(x)=R(y)	Tourism and transportation are moderately imbalanced in their synchronous development.
			T(x)<R(y)	Moderately Maladjusted Development of Tourism Hysteresis
	0<D≤0.2	Extremely dysregulated development	T(x)>R(y)	The extremely unbalanced development of transportation lag
			T(x)=R(y)	The development of tourism and transportation is extremely imbalanced
			T(x)<R(y)	Extremely Unbalanced Development of Tourism Hysteresis

4. DATA ANALYSIS

After obtaining the total tourism revenue of Guangzhou City from 2017 to 2021 (the data source is mentioned in the data collection section of this paper), each data point is subtracted by the minimum value of this group of data, and then the result after subtraction is divided by the value obtained by subtracting the maximum value of this group of data from the minimum value. That is, the data is substituted into formula (1) for calculation, and the final result is the standardized result of each year's data in this group. This process of standardizing data is applied to each set of data. The standardized results are shown in Tables 3 and 4.

Table 3. Results of data standardization for the tourism economic system

Tourism Economic System Data	2017	2018	2019	2020	2021
Total tourism revenue of Guangzhou	0.72268	0.85269	1	0.41409	0
Number of people in Guangzhou	0.73772	0.87281	1	0	0.92301
Revenue from domestic tourism in Guangzhou	0.73461	0.86197	1	0	0.14754
Total tourism revenue of Guiyang	0.17049	0.56576	1	0	0.1363
Number of people in Guiyang	0	0.49484	1	0.06019	0.0455
Guiyang's domestic tourism income	0.16599	0.56456	1	0	0.13929

Table 4. Results of data standardization for HSR system

High-speed rail traffic system data	2017	2018	2019	2020	2021
Length of Guiyang-Guangzhou high-speed rail Railway	1	1	1	1	1
Passenger traffic volume of Guangzhou railway	1	0.67132	0.84026	0	0.07031
Passenger traffic volume of Guangzhou railway	1	0.05889	0.09375	0	0.14994
Passenger traffic volume of Guiyang railway	0.1949	0.35276	0.50455	0	1
Passenger traffic volume of Guiyang railway	1	0.16876	0.05131	0.17731	0

The above process is the standardization of data, which is to reduce the impact of differences in data on the coupling results. After standardizing the data, it is necessary to calculate the weights of various indicators in the tourism economic system and the high-speed rail transportation system. The weight results are shown in Table 1.

After calculating the weights, the evaluation index weights of each item in the tourism economic system-high-speed rail transportation system and the standardized data of each item in the tourism subsystem and high-speed rail subsystem are brought into formulas (2) and (3). Then, the calculated comprehensive evaluation indices of the tourism economic system and high-speed rail transportation system are brought into formula (6), which can be used to calculate the comprehensive evaluation indices E of the tourism economic system and high-speed rail transportation system from 2017 to 2021. According to formulas (4) and (5), the coupling coordination degree values D of the tourism economic system-high-speed rail transportation system of Guiyang-Guangzhou High-Speed Rail from 2017 to 2021 are calculated, with the results shown in Table 5. Combining the data in Tables 2 and 3, a diagram of the coupling and coordinated development degree of tourism economy and high-speed rail transportation in Guiyang-Guangzhou High-Speed Rail from 2017 to 2021 is created (Figure 1).

Table 5. Classification of Tourism Economy and Comprehensive Transportation Development Level and Coupling Coordination Degree

Year	T(x)	R(y)	E	D	Degree of coordination	Contrast relationship
2017	0.419	0.84	0.6295	0.545	Barely coordinated	T(x)<R(y)
2018	0.702	0.443	0.5725	0.528	Barely coordinated	T(x)>R(y)
2019	1.002	0.49	0.746	0.592	Barely coordinated	T(x)>R(y)
2020	0.079	0.23	0.1545	0.26	Moderate disorder	T(x)<R(y)
2021	0.231	0.437	0.334	0.399	Moderate disorder	T(x)<R(y)

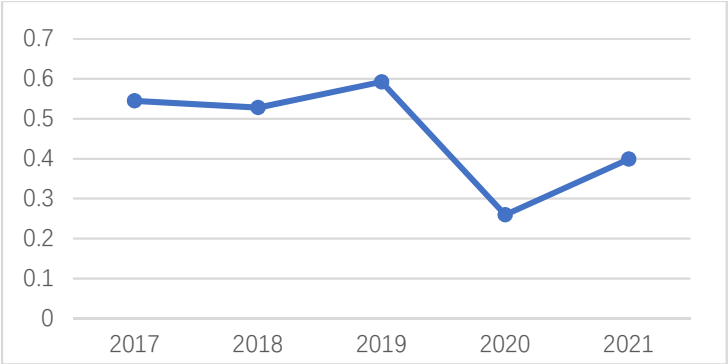

Figure 1. Degree of Coupling and Coordination Development (D) between the Guiyang-Guangzhou High-Speed Railway Tourism Economy and High-Speed Rail Transport System from 2017 to 2021

5. RESEARCH CONCLUSIONS AND DEVELOPMENT STRATEGIES

5.1. Analysis of the Coupling and Coordination Evaluation Results of the Tourism Economic System and High-Speed Rail Transportation System: A Case Study of the Guiyang-Guangzhou High-Speed Railway

(1) Comprehensive development evaluation analysis

The comprehensive evaluation value of the tourism economy of the Guiyang-Guangzhou High-speed Railway from 2017 to 2019 has grown very rapidly, indicating that under normal circumstances, the development trend of the tourism economy is relatively good.

From the perspective of tourism economic development, the comprehensive evaluation value of the tourism economic system increased from 0.419 in 2017 to 1.002 in 2019, indicating that during these three years, the tourism economy of the Guiyang-Guangzhou High-Speed Railway developed very rapidly, and the growth value was also very large, which benefited from the strong support of local government policies for tourism economy. As can be seen from Figure 1, from 2019 to 2020, the comprehensive evaluation value of the tourism economic system dropped directly from 1.002 to 0.079, the reason is self-evident. From the booming year of 2019 to 2020 with almost no tourism economic income. Looking at the comprehensive evaluation value of the tourism economic system from 2020 to 2021, it is still evident that there has been a significant improvement, although 2021 is still in the COVID-19 pandemic, but it is still evident that the tourism economy is continuously recovering.

From the perspective of high-speed rail transportation development, the comprehensive evaluation value of the high-speed rail transportation system dropped significantly from 0.840 in 2017 to 0.443 in 2018. This indicates that with the diversification of transportation options, especially the

emergence of choices like private cars and carpooling services, people's preference for high-speed rail has significantly decreased. Additionally, since the ticket prices for high-speed rail are comparable to those of airplanes, and most high-speed rail tickets are much more expensive than train tickets, many tourists no longer blindly choose high-speed rail for their travels. Although high-speed rail offers a high level of convenience and is a great option for tourists, the rapid development of private cars, the maturation of ride-hailing apps like Didi and Huaxiaozhu in the market, and the relatively high ticket prices of high-speed rail have led to a reduced preference among tourists. The comprehensive evaluation value of the high-speed rail transportation system rose slightly from 0.443 in 2018 to 0.490 in 2019, suggesting that high-speed rail usage had stabilized at a certain level. This also implies that tourists had developed a habit of using high-speed rail, and their choice to use it remained stable. In the year 2020, which was affected by the pandemic, the comprehensive evaluation value dropped from 0.490 in 2019 to 0.230 in 2020. However, it quickly rebounded from 2020's 0.230 to the pre-pandemic stable level of 0.437 in 2021.

(2) Coupling Coordination Degree Analysis

The coupling coordination degree decreased from 0.545 in 2017 to 0.528 in 2018 and then increased to 0.592 in 2019, indicating that the coupling coordination between tourism economy and high-speed rail transportation has stabilized at a certain level, both at a barely coordinated coupling coordination degree. This suggests that there is still significant room for improvement and development trends in the coupling coordination between tourism economy and high-speed rail transportation. In the future, with the introduction of relevant policies, the degree of coupling coordination needs to continue to be enhanced. With the outbreak of the COVID-19 pandemic in 2020, the huge impact of the pandemic on the tourism economy and high-speed rail transportation caused the coupling coordination degree to drop directly from 0.592 in 2019 to 0.260 in 2020. After a year of recovery, the coupling coordination degree between tourism economy and high-speed rail transportation warmed up from the low point of 0.260 in 2020 to 0.399 in 2021, and this coupling coordination gradually improved with the economic recovery.

From 2017, the comprehensive evaluation value of the high-speed rail transportation system was higher than that of the tourism economic system. However, in 2018 and 2019, the comprehensive evaluation value of the high-speed rail transportation system was lower than that of the tourism economic system. The changes from 2017 to 2019 show that as people have more diversified choices for travel methods, leading to a decrease in choosing high-speed rail as a mode of transportation, the tourists' willingness to travel is also rapidly increasing. The rapid development of the tourism economy and the significant reduction followed by stabilization of the high-speed rail transportation can be reflected in the above data comparisons. Looking at 2020 and 2021, the comprehensive evaluation values of the high-speed rail transportation system were higher than those of the tourism economic system, i.e., $T(x) < R(y)$, indicating moderate imbalanced development with lagging tourism. This reveals the instability of tourism development, and the development of the tourism economy is influenced by many factors.

5.2. Strategies for the Coupled Development of Guiyang-Guangzhou High-Speed Rail Tourism Economy and High-Speed Rail Transportation

(1) Establishing safety standards and promoting tourist attractions

The recovery of the tourism industry after the COVID-19 pandemic in the Guiyang-Guangzhou High-Speed Railway can start by establishing safety standards for tourism. Strict safety standards and hygiene measures should be formulated and implemented to ensure the cleanliness of tourist attractions, hotels, transportation vehicles, and other places, enhancing the sense of safety among tourists. At the same time, standards for handling emergencies should be established, contingency plans should be developed, and procedures and coordination mechanisms for dealing with emergencies should be stipulated to ensure the safety of both tourists and employees.

The introduction of relevant preferential policies has promoted tourist attractions, prompting the rapid recovery and development of the tourism industry. The government can introduce various preferential policies, such as reducing or waiving admission fees, offering accommodation discounts, etc., to encourage tourists to choose destinations along the Guiyang-Guangzhou High-Speed Railway for their travels. For instance, implementing ticket discounts by collaborating with tourist attractions along the Guiyang-Guangzhou High-Speed Railway to offer discounted or bundled tickets to attract visitors. Accommodation discounts can also be implemented by partnering with hotels along the railway to provide benefits like discounts or complimentary breakfasts, enticing tourists to stay locally. Additionally, there could be promotional offers on travel packages that include a range of services such as attraction tickets, transportation, accommodation, dining, etc., providing tourists with a one-stop service experience.

With the explosive popularity of online sales, there is also the potential to develop online tourism products to promote tourist attractions. By launching online tourism products and live-streamed travel experiences, tourists who cannot visit in person can also experience the scenery and culture along the Guiyang-Guangzhou High-Speed Railway. Learning from the well-known domestic travel app Ctrip, by utilizing modern popular methods such as online sales and short video releases, the tourism economy can quickly recover.

(2) Strengthen the cooperation between tourism and transportation sectors.

Strengthen the cooperation between the tourism and transportation sectors of the Guiyang-Guangzhou High-Speed Railway. Establish a cooperative mechanism between the tourism and transportation departments of the Guiyang-Guangzhou High-Speed Railway, clarify their respective responsibilities and methods of cooperation, and ensure information sharing. This can greatly enhance the coupling and coordination degree of the tourism economy and high-speed rail transportation of the Guiyang-Guangzhou High-Speed Railway, and both the tourism and transportation sectors can achieve a certain degree of positive development. They can also jointly organize tourism promotion activities, release cooperative promotional materials, etc., which can increase the visibility and attractiveness of tourism along the Guiyang-Guangzhou High-Speed Railway. Jointly formulate policies for tourism and transportation along the Guiyang-Guangzhou High-Speed Railway, including specific details such as transportation preferential policies, tourism route planning, safety management standards, etc., to promote the coordinated development of tourism and transportation, and enhance the coupling and coordination degree of the tourism economy and high-speed rail transportation.

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