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Research Article

Efficiency Evaluation and Analysis of Low-Carbon Tourism and Ecological Construction Based on DEA Model

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The rapid development of tourism in China has also caused a lot of energy consumption and serious environmental problems. In the context of sustainable development, low-carbon tourism has become the consensus of management departments, relevant industries, and academia. In environmental-related fields, DEA is considered as an excellent efficiency analysis tool because of its powerful optimization ability. The final variable of DEA method is weight. In order to avoid the influence of human factors with predetermined weights in tourism analysis, this paper studies the evaluation of tourism ecological efficiency based on DEA model. China's overall tourism ecological efficiency showed a fluctuating upward trend, rising from 0.853 in 2018 to 0.906 in 2021. The national average efficiency over the past four years is 0.855, which is at a low level, indicating that the construction of tourism ecology is still in its infancy, and there is still much room for improvement in the future. As the tourism industry system involves many aspects, such as natural ecology, humanities, economy, and so on, it is an extremely complex system. The research on the ecological efficiency of tourism cannot simply rely on the knowledge system and thinking of a single discipline. Therefore, combined with the relevant theories and knowledge of tourism, management, industrial economics, regional economics, industrial ecology, and other disciplines, this paper makes a systematic study on the problems and countermeasures of Qiaozhai.

1. Introduction

With the progress of human civilization, low-carbon economy, as a new form of economic development, is promoting the progress of ecological civilization. Low-carbon economy is also affecting all walks of life in human development. Low-carbon economy is an economic development model proposed by human beings to cope with global warming at the end of the twentieth century. To mitigate global climate change and cope with the energy crisis, a new sustainable development model with the theme of "low-energy consumption, low pollution, low emission" and "high efficiency, high efficiency, and high efficiency." As a new tourism development model, low-carbon tourism, as a new thing, its connotation description is still being further improved. Different scholars focus on "low-carbon." The problem describes its concept and meaning from different aspects. Low-carbon tourism refers to the development of tourism as a strategic pillar industry under the background of advocating low carbon in the overall environment of tourism activities. The practitioners of tourism activities are guided by the theory of low-carbon economy, and the basic principles are low-energy consumption, low emissions, and low pollution. Under the condition of ensuring that the operation of tourism can meet people's tourism needs, tourism resources should be developed and utilized purposefully, planned and controlled to protect tourism environmental resources. Since the reform and opening up, tourism, as an emerging industry with great development potential, has played an important role in stimulating consumption, promoting employment, and promoting regional connectivity. In the context of sustainable development, low-carbon tourism has become the consensus of management departments, relevant industries, and academia [1, 2]. Tourism ecological efficiency combines economic activities with environmental impact, emphasizing the maximization of economic benefits and the minimization of ecological and environmental impact in tourism development [3]. The ecological efficiency of tourism originates from ecological efficiency, and its evaluation method is also similar to ecological efficiency [4, 5]. In recent years, model accounting method is more popular. Most of the research is based on data envelopment analysis or the enrichment and expansion on this basis. The main difference is the setting of environmental pollution indicators and the selection of input indicators.

DEA has always been regarded as an excellent efficiency analysis tool in environmental-related fields because of its powerful optimization ability. The variable finally solved by DEA method is the weight, which avoids the influence of human factors given the weight in advance for each decision-making unit. As long as the input and output data are objective and reasonable, the final result will be accurate, avoiding the artificial factors of giving the weight in advance in other methods. The evaluation is made from the angle that is most beneficial to the decision-making unit, and the evaluation result is true and credible [6, 7]. For each additional input or output item, the new input-output ratio will reduce the discrimination of DEA model [8, 9]. The traditional DEA directional distance function model is used to analyze the ecological efficiency of China's tourism considering carbon emissions. At this time, tourism has two production activities, namely economic activity and environmental impact [10, 11]. Calculating the value of tourism ecological efficiency with the ratio of tourism income to environmental impact is an index to evaluate the ability of tourism sustainable development [12]. Therefore, it is appropriate to use DEA method to express the evaluation of China's tourism informatization level from a macro-perspective [13]. Because the tourism industry system involves many aspects such as natural ecology, humanities, and economy, it is an extremely complex system. The research on the ecological efficiency of tourism industry cannot simply rely on the knowledge system and thinking of a single discipline. Therefore, combined with the relevant theories and knowledge in the fields of tourism, management, industrial economics, regional economics, industrial ecology, and other disciplines, this paper Qiaozai's problems and countermeasures are systematically studied [14, 15].

2. Related Work

2.1. Research Status at Home and abroad. Mesk et al. put forward that with the rapid development of tourism, tourism efficiency research has become a new field of efficiency evaluation. Scholars at home and abroad mainly pay attention to the management and utilization efficiency of tourist hotels, scenic spots, destinations, etc., while ignoring the analysis of ecological efficiency including resource consumption and environmental pollution. Although the researches on tourist route products, tourist wastes, tourist transportation, etc., involve ecological efficiency, there is still a lack of systematic and comprehensive research on the ecological efficiency of tourist destinations [16]. Kaca and Jsb put forward that the research focus of tourism eco-efficiency lies in the following aspects: calculating CO2 emissions per unit economic output of tourism, comparing eco-efficiency differences between different destination and source countries, analyzing the characteristics of tourism eco-efficiency and other economic sectors, applying eco-efficiency to evaluate the impact of tourism on the environment and its sustainability, and sectoral differences of tourism eco-efficiency [17]. Tothmihaly et al. put forward that factors such as traffic conditions, disposable income of residents and national economic level also affect the development of China's tourism industry. For tourism industry, these factors are uncontrollable variables, that is, uncontrollable factors [18]. Figge et al. proposed to select corresponding indicators from two levels of input and output. By comprehensively considering the characteristics of the tourism industry and the availability of data, combined with relevant literature, the number of star-rated hotels, the total number of travel agencies, and the total number of tourist attractions are taken as capital input indicators, and the number of employees in the tourism industry is taken as labor input [19]. Hoberg and Baumgärtner put forward that the academic support for the study of tourism ecological efficiency is deep, and more and more attention has been paid to it [20]. Liu et al. suggested that tourism informatization of tourism ecological efficiency evaluation system based on DEA model itself is a complex activity with multiple inputs and outputs. The weight of each variable index of input and output is difficult to determine due to the difference of time, place, and specific object [21]. Yang L, et al. suggested the use of DEA method in the tourism ecological efficiency evaluation system completely avoids the difficulty of distinguishing the corresponding relationship and makes the evaluation work operable [22]. Tao et al. put forward the most commonly used method for ecological efficiency evaluation. The calculation process is simple and easy to understand. However, it is easy to ignore the positive or negative effects of other factors in the calculation process, which will make the ecological efficiency impossible to calculate [23]. Sander, et al. proposed that in tourism informatization, when tourism enterprises invest a sum of money in informatization infrastructure and the use of informatization talents, the output is economic benefits and customer satisfaction. It is very difficult to distinguish whether the final economic benefits are generated by the investment of informatization infrastructure costs or the use of informatization talents [24]. Shen et al. proposed that the output indicators should not only reflect the development level of tourism economy but also reflect the negative effects on the environment. Therefore, they are divided into two secondary indicators: expected output and unexpected output. Among them, the expected output is the total tourism revenue and the unexpected output is the discharge of wastewater, waste gas, and solid waste. As the unexpected output is a reverse indicator, we use its reciprocal to measure [25].

2.2. Research Status of Tourism Ecological Efficiency Based on DEA Model. In view of the limitations of DEA method itself, to reflect the preference of decision-makers for evaluation indicators, applying DEA method to the evaluation of China's tourism informatization level will make the evaluation results more realistic. This method is based on relative efficiency, takes mathematical programming as a tool, and relies on analyzing the input and output data of production decision-making units to evaluate their relative effectiveness. DEA is especially suitable for the evaluation of complex systems with multiple inputs and outputs. Its environmental impact and capital utilization intensity.

3. The Algorithm and Principle of DEA Model

DEA theory uses the principle of mathematical programming and obtains efficiency according to multiple groups of input-output data. Subsequently, Banker et al. informed that the former refers to the planning problem of minimizing the input under a certain output level. The latter refers to the planning problem of maximizing output under a certain input level. Lee believes that sustainable tourism destination consists of four concepts and tools, namely, integration and coordination, cleaner production, eco-label, and environmental management system. Among them, the concepts of environmental management system, eco-label, and cleaner production are closely related to tourism eco-efficiency, and improving the level of eco-efficiency is a necessary prerequisite for the sustainable development of tourism destination, as shown in Figure 1.

In essence, the two solve the same problem from different angles, and the final conclusion is the same. Because there is no need to assume the production function, relevant weights and parameters, DEA has become an important evaluation and analysis tool. According to the tourism ecological efficiency model, two kinds of variable values are needed to calculate the tourism ecological efficiency. These data are input into tourism energy consumption model and tourism ecological efficiency model, as shown in Figure 2.

Transportation is an important part of tourism activities. Tourists need the support of transportation system when they arrive at their destination, return to their permanent residence, operate, and move within the destination. According to the definition of tourism transportation energy consumption coefficient, the tourism transportation energy consumption model is as follows:

$$\mathrm{TEU}_t = \sum_n \left(\alpha_n \times \varepsilon_n \times V_n\right), \tag{1}$$

where TEU_t refers to the energy consumption of tourism transportation, and the unit is MJ; α_n is the energy intensity under n transportation modes, in MJ/PKM or MJ/vkm; ε_n refers to the average load coefficient of n modes of transportation, and the unit is person time. This index is used when MJ/vkm is used as the unit of α_n; V_n refers to the tourism traffic capacity of n modes of transportation, in PKM or vkm.

Based on the tourism energy consumption coefficient, the energy consumption model of tourism accommodation is as follows:

$$\mathrm{TEU}_h = \sum_j H_j \times N_j \times K_j \times P_j, \tag{2}$$

where TEU_h refers to the energy consumption of tourism accommodation, and the unit is MJ; H_j refers to the per capita energy consumption per night of j tourism accommodation, in MJ/P visitor night; N_j refers to the total number of tourists; K_j refers to the average stay days of tourists; P_j refers to the utilization rate of j tourism accommodation facilities, which is equal to the ratio of the number of tourists who choose this accommodation type to the total number of tourists.

The energy consumption model is constructed based on the existing tourism activity concept and actual consumption results:

$$\mathrm{TEU}_\alpha = \sum_i A_i \times F_i \times N_i \times P_i, \tag{3}$$

where TEU_α refers to the energy consumption of tourism activities, and the unit is MJ; A_i refers to the energy consumption coefficient of category i tourism activities, which indicate the energy consumption of each tourist participating in a tourism activity, and the unit is MJ/visitor frequency; F_i refers to the average participation frequency of tourists in class i tourism activities; N_i refers to the total number of tourists; P_i is the proportion of tourists participating in i activities, which is equal to the ratio of the number of tourists participating in this activity to the total number of tourists.

Suppose that the production system has $x \in R^m, y^g \in R^{S1}, y^b \in R^{s2}$ decision-making units, each unit contains three vectors of input, expected output, and unexpected output, expressed as X, Y^g, Y^b, and the definition matrix $[X] = [x_1, \ldots, x_n]^T \in R^{m\times n}$, $[Y^g] = [y_1^g, \ldots, y_n^g]^T \in R^{s1\times R^m}$ is as follows: DD.

Define production possibility set P as

$$P = \left\{\left(x, y^g, y^b\right) \middle| x \geq \lambda x, y^g \leq \lambda Y^g, y^b \geq \lambda Y^b, \lambda \geq 0 \right\}. \tag{4}$$

The SBM-DEA model based on variable return to scale is expressed by formula:

$$P^* = \min \frac{1 - 1/m \sum_{i=1}^m \bar{si}/x_{i0}}{1 + 1/s_1 + s_2 \left[\sum_{i=1}^{s1} s_r^g / y_{r0}^g + \sum_{i=1}^{s2} s_r^b / y_{r0}^b\right]}, \tag{5}$$

where s represents the relaxation of input and output, and λ is the weight vector. The objective function P^* is strictly decreasing with respect to s^-, s^g, s^b and $0 \leq P^* \leq 1$. For a specific decision-making unit, if and only if $P^* = 1$ and s^-, s^g, s^b are 0, the comprehensive efficiency is effective, and the technical efficiency and scale efficiency are effective.

In order to test the influencing factors, direction and degree of ecological efficiency, and identify the key factors and control measures affecting the ecological efficiency of tourism destination, the efficiency value obtained by DEA model can be used as dependent variable, and each influencing factor is independent variable. DEA regression model is used to test its influencing factors. The model expression is

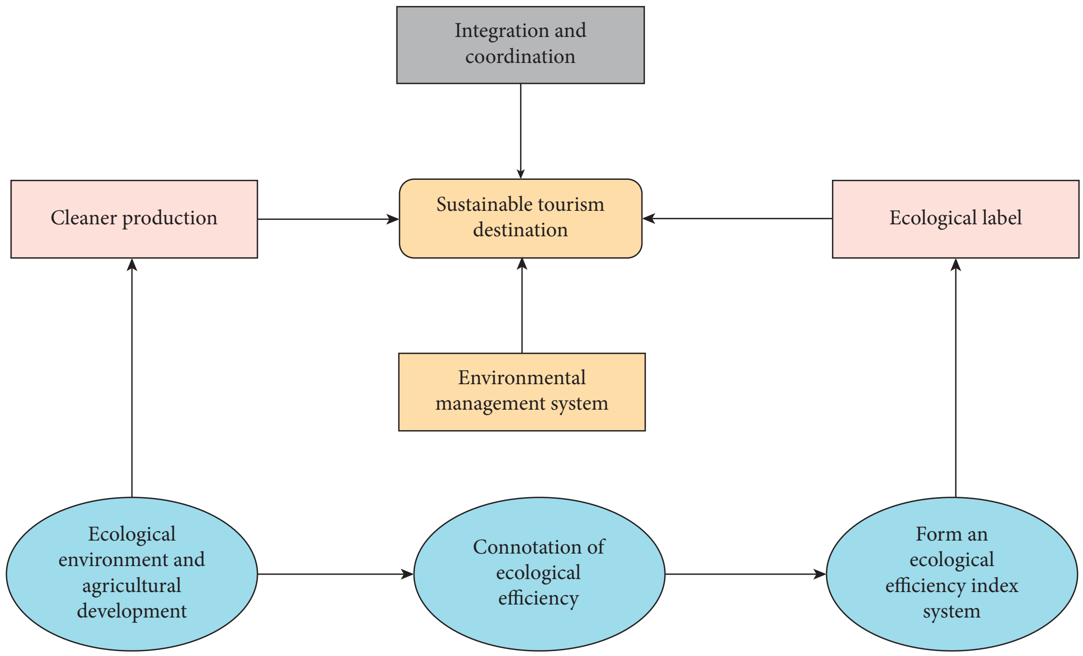

Figure 1: Sustainable tourism destination concepts and tools.

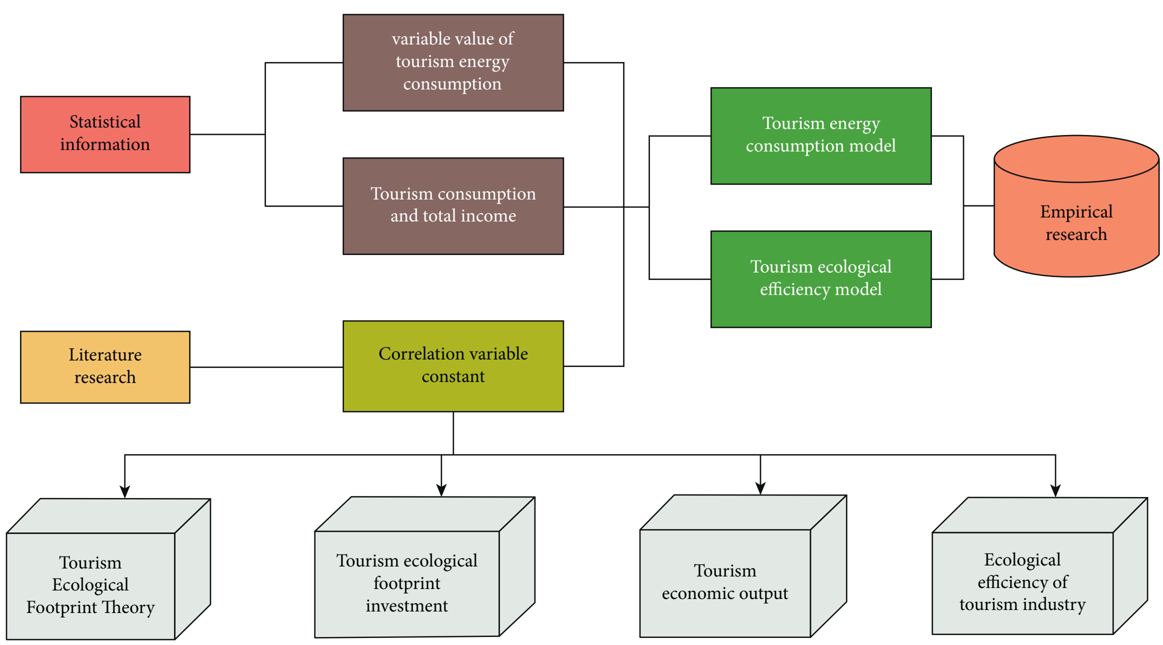

Figure 2: Tourism ecological efficiency model.

$$Y = \begin{cases} Y^* = \alpha + \beta X + \varepsilon, & Y^* > 0, \\ 0, & Y^* \leq 0, \end{cases} \quad (6)$$

where Y is the truncated dependent variable vector; X is the independent variable vector; α is the intercept term vector; β is the regression parameter vector.

Tourism economic benefits represent the service value of tourism products. In order to avoid repeated calculation and simplify the calculation process, indirect economic benefits are not included here. Similarly, the tourism eco-efficiency model based on energy consumption is

$$\text{TEE} = \frac{\text{TEI}}{TR}, \quad (7)$$

where TEE is the ecological efficiency of tourism, and the unit is MJ/￥; TR is tourism income, and the unit is RMB

Table 1: Statistical Characteristics of data set.

Index		Company	Maximum	Minimum value	Mean value	Standard deviation
Investment	Fixed assets	RMB 100 million	8678.72	407.85	3923.68	2778.55
	Energy consumption	10000 tons of standard coal	50002	9986	2512.24	1328.86
Expected output	Total tourism revenue	RMB 100 million	15682.14	351.74	5661.63	4368.07
Unexpected output	CO_2	10000 tons	8092.08	1384.52	4168.28	2175.93
Uncontrollable input	Highway mileage	Ten thousand kilometers	400.09	104.15	205.16	111.85

Table 2: Ecological efficiency, economic efficiency and environmental efficiency of China's tourism industry from 2018 to 2021.

Particular year	Literature [6]		Literature [12]		Literature [14]		
	Eco - ET	Eco - EE	Eco - E	Envi - E	Eco - END	Eco - END	Eco - END
2018	0.2317	0.1312	0.5236	0.2458	1.0214	1.0315	1.0158
2019	1.0000	0.3256	0.6259	0.3599	1.3659	1.0000	1.2459
2020	1.0000	0.6452	0.9846	0.5269	0.9584	1.0000	1.4569
2021	0.8569	0.7489	1.0315	0.8569	1.4569	1.2698	1.6744

(￥); TEI is tourism environmental impact, specifically refers to tourism energy consumption, and its unit is MJ. The smaller the eco-efficiency value in this model, the better the eco-efficiency level and the stronger the sustainability of regional tourism.

During the tour, the use of transportation is less, and the ecological footprint of fossil energy used in energy consumption is very small, which is neglected in this study. The calculation formula of tourism ecological footprint is

$$\mathrm{TEF}_{\mathrm{Visiting}} = \sum P_i + \sum H_i + \sum V_i. \quad (8)$$

The required data are the built-up area P_i of sightseeing trails and the built-up area of highways in each scenic spot. H_i and the built-up area V_i of the viewing space.

The calculation formula of tourism ecological footprint is

$$\mathrm{TEF}_{\mathrm{Entertainment}} = \sum S_i. \quad (9)$$

Because the fossil energy geochemical accumulation consumed by the production and sale of tourist commodities accounts for a small proportion of the ecological footprint of shopping, and has little impact on the juice calculation results, this paper will not consider it. The calculation of tourism ecological footprint is just as follows:

$$\mathrm{TEF}_{\mathrm{Shopping}} \sum S_i + \sum \left[\left(\frac{R_j}{p_j} \right) \div g_j \right]. \quad (10)$$

The data to be obtained include the built-up area S_i of the production and sales places of various tourism commodities, the expenditure R_i of tourists to buy various tourism commodities, the average sales price pi of various tourism commodities, and the average annual productivity gi of biological productive land of various tourism commodities.

4. Implementation of Tourism Ecological Efficiency Evaluation System

4.1. Design of Tourism Ecological Efficiency Evaluation System Based on DEA Model. The efficiency derived from DEA model is based on the concept of relative efficiency. Therefore, it is meaningless to compare the efficiency values of two different models. On the other hand, the ranking of efficiency is based on the ranking of relative efficiency. Therefore, if the efficiency ranking of the two models is completely inconsistent, it can be inferred that the two models have different evaluation results. DEA method is an efficiency evaluation method based on the concept of engineering efficiency. However, the research on the meaning of DEA effectiveness based on engineering efficiency has been very limited. The tourism informatization of tourism ecological efficiency evaluation system based on DEA model itself is a complex activity with multiple inputs and outputs. The weight of each variable index of input and output is difficult to determine due to the difference of time, place, and specific object. The use of DEA can just avoid the difficulty of determining the index weight in advance and create conditions for objective evaluation. In the tourism ecological efficiency evaluation system in the process of tourism informatization, it is difficult to clearly determine the corresponding relationship between each input and output. The informatization results of tourism enterprises in a certain period, such as customer satisfaction, are not caused by one activity, but may be obtained by the joint participation of multiple activities, and it is difficult for tourism enterprises to distinguish which activity is involved. Therefore, the use of DEA method in the tourism ecological efficiency evaluation system completely avoids the difficulty of distinguishing the corresponding relationship and makes the evaluation work operable.

Table 3: Evaluation results of tourism ecological efficiency of China's provinces from 2018 to 2021.

Region	2018	2019	2020	2021	Mean value	Ranking
Beijing	0.68	0.668	0.662	0.626	0.659	4
Shanghai	1	1	1	1	1.000	1
Guangdong	1	0.997	1	1	0.998	2
Chongqing	0.735	0.707	0.62	1	0.664	3
Average	0.853	0.843	0.820	0.906	0.830	—

Table 4: Convergence test of ecological efficiency in China from 2018 to 2021.

	2018	2019	2020	2021
Eastern region	3.3502	4.5445	4.6941	4.7978
West	0.2158	0.1977	0.0961	0.1012
Northeast	0.0895	0.0867	0.1028	0.0885
Whole country	2.0997	2.7992	2.28834	2.29321

Table 5: Average value of ecological efficiency in western China.

		2019			2020			2021	
Inner Mongolia	0.648	0.659	0.983	0.652	0.675	0.965	0.674	0.683	0.991
Sichuan	0.461	0.521	0.882	0.465	0.532	0.882	0.548	0.634	0.863
Shaanxi	0.506	0.517	0.974	0.518	0.519	0.974	0.637	0.642	0.994
Ningxia	0.417	1	0.417	0.383	1	0.383	0.477	1	0.477

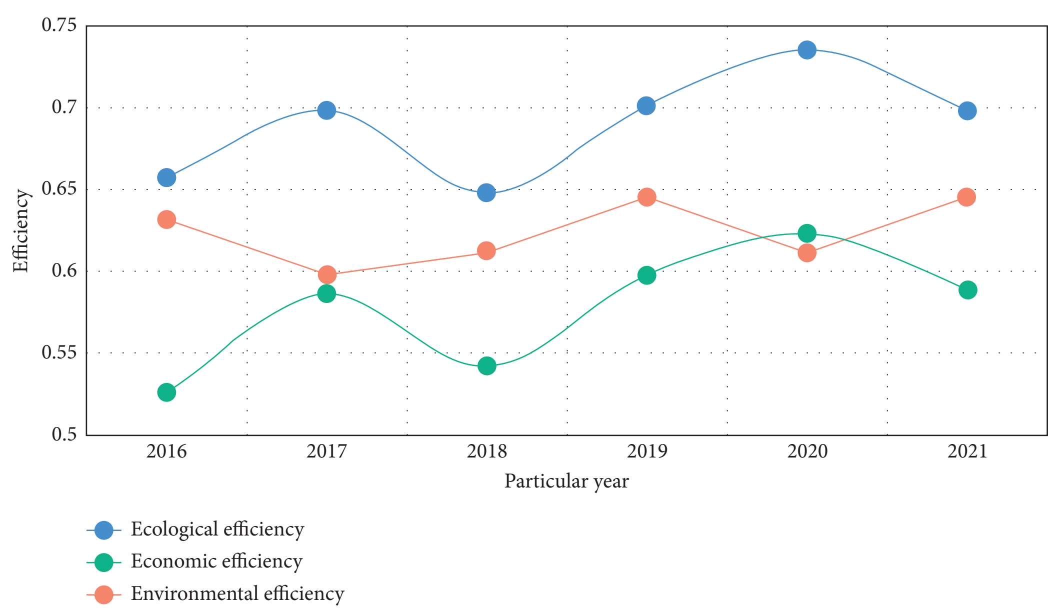

Figure 3: Changes in ecological efficiency, economic efficiency, and environmental efficiency of China's tourism industry from 2016 to 2021.

4.2. Experimental Results and Analysis. In the calculation of ecological carrying capacity, not only the ecological production capacity of cultivated land, grassland, forestland, construction land, and ocean (water area) per unit area varies greatly. Moreover, the ecological productivity of the same type of biological production area per unit area is also very different. Therefore, the actual area of the same type of biological production area in different regions cannot be directly compared, and it is necessary to standardize the area of different types. In this paper, the fixed assets, total tourism revenue, and tourism CO_2 emissions of a tourism enterprise are selected as the expected and unexpected outputs of the tourism industry, and the statistical characteristics of input–output data sets are shown in Table 1.

According to literature [6], literature [12] and literature [14], the ecological efficiency, economic efficiency and

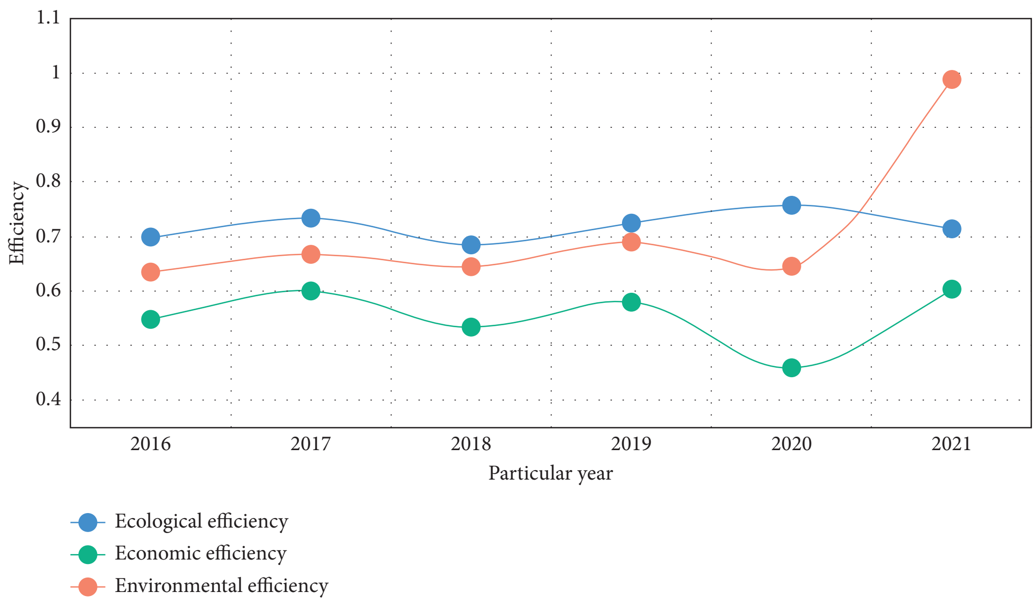

Figure 4: Changes in ecological efficiency, economic efficiency, and environmental efficiency of China's tourism industry from 2016 to 2021.

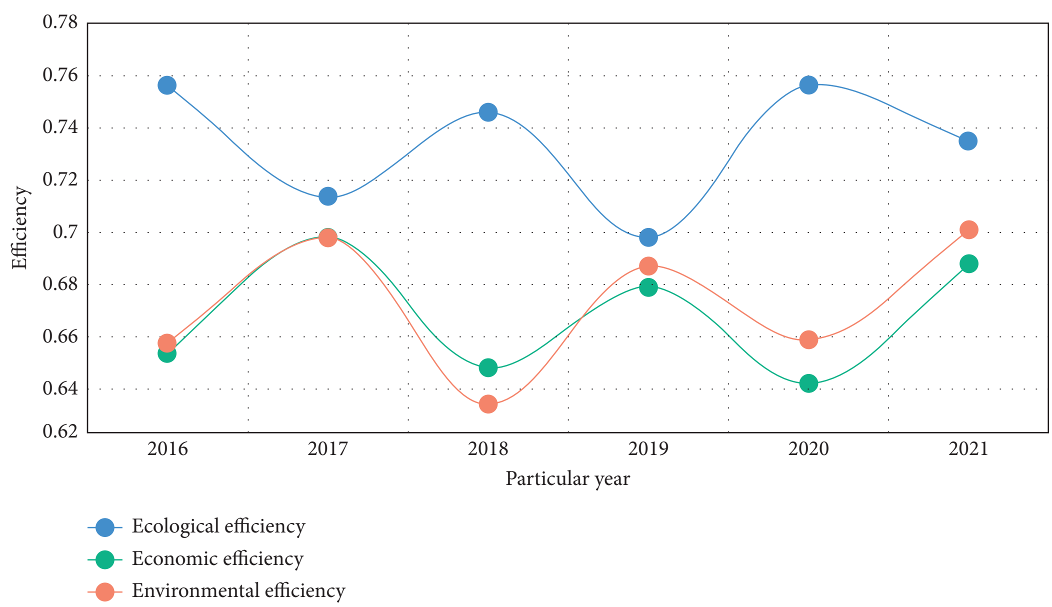

Figure 5: Changes in ecological efficiency, economic efficiency, and environmental efficiency of China's tourism industry from 2016 to 2021.

environmental efficiency of China's tourism industry from 2018 to 2021 are obtained. The corresponding efficiency evaluation results are shown in Table 2.

It can be seen from Tables 1 and 2 that the ecological efficiency, economic efficiency, and environmental efficiency of China's tourism industry in 2018–2021 are shown in Table 2. In document [6] and document [14], the calculation results of other years are completely different except that the efficiency values in 2019 and 2020 are 1. The interaction between input and output indicators is objective and multidirectional. The internal complex relationship of its interaction is difficult to be accurately expressed from the micropoint of view, that is, it is difficult to express the relationship between input, output, and input with a certain functional analytical formula.

Based on the cross-sectional data of 31 provinces in China from 2018 to 2021, using dear2. The software package calculates the tourism ecological efficiency. The results are shown in Table 3.

It can be seen from Table 3 that the overall tourism ecological efficiency level in China shows a fluctuating upward trend, rising from 0.853 in 2018 to 0.906 in 2021. The national average efficiency in four years is 0.855, which is at a low level, indicating that the construction of tourism ecology is still in its infancy, and there is still much room for improvement in the future. In the past four years, the

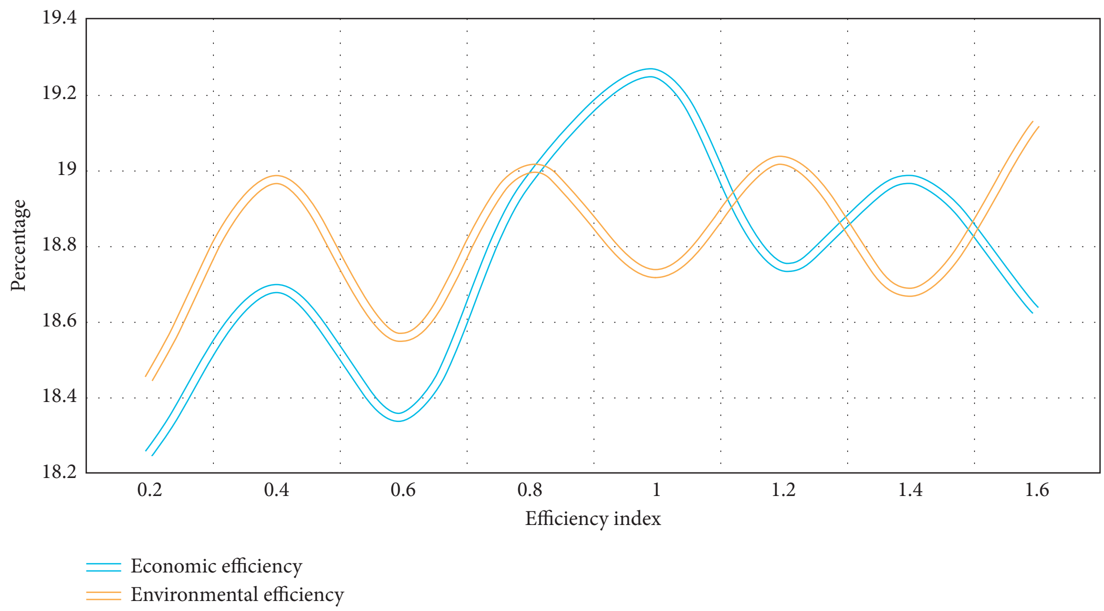

Figure 6: Distribution of economic efficiency and environmental efficiency.

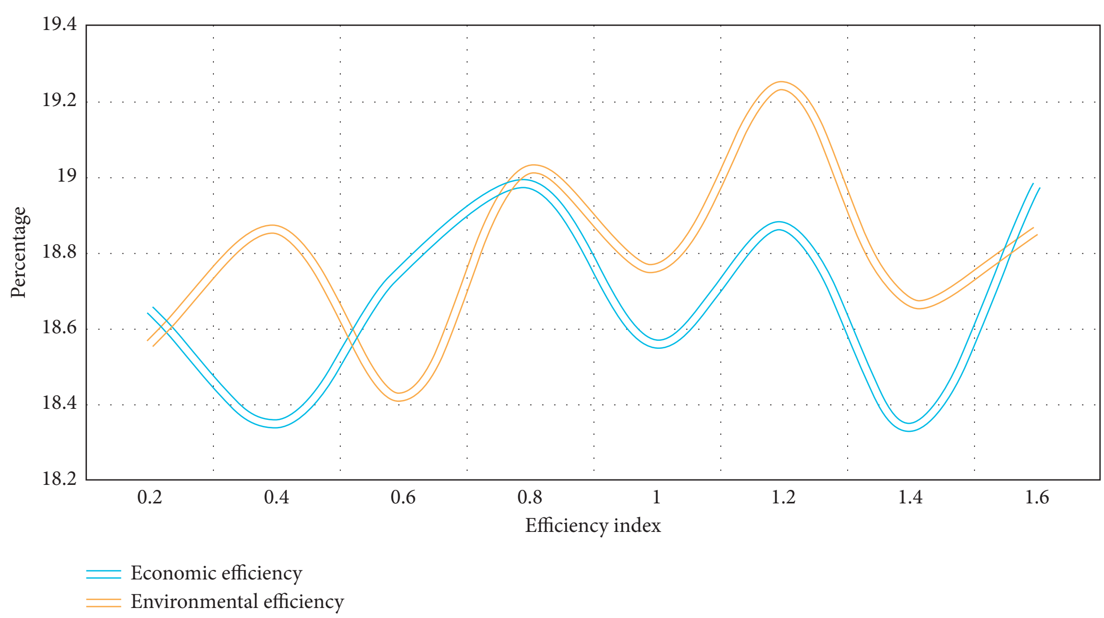

Figure 7: Distribution of economic efficiency and environmental efficiency.

overall tourism efficiency has shown an upward trend, but there are ups and downs, showing a "rise and fall" trend, which shows a slight increase from 0.820 in 2020 to 0.906 in 2021, a slight decrease from 0.853 in 2018 to 0.843 in 2019, and an obvious upward trend in the future, indicating that the construction of tourism ecological efficiency has developed in recent years, and the tourism industry is transforming toward a healthy and sustainable direction.

In order to explore the characteristics and evolution rules of these differences, whereas there is no convergence and the gap is gradually widening. The convergence is shown in Table 4.

It can be seen from Table 4 that from 2018 to 2021, the ecological efficiency of the whole country has changed greatly, and the gap between regions is different. Among them, there is a type of development trend from 2018 to 2021, that is, the gap between the whole country and regions is widening after 2020.

Due to the influence of history and geography, the western region lags behind the development, production, and lifestyle. However, it is optimistic that from the results of this paper, this gap shows a trend of becoming smaller and smaller. This experiment aims at the average value of ecological efficiency in Western China from 2019 to 2021, as shown in Table 5.

It can be seen from Table 5 that the average ecological efficiency values of 10 provinces in western China from 2019 to 2021 are sorted out. From Table 5, the better performing provinces are Inner Mongolia and Chongqing, with scores between 0.6 and 0.8, which is mainly due to the good economic transformation of these two places in recent years. Inner Mongolia has vigorously developed the equipment manufacturing industry in recent years, and Chongqing is also the transportation, communication, and electronic machinery manufacturing base in southwest China.

This experiment investigated the changes of ecological tourism industry from 2016 to 2021 through conducted three experiments for comparison. The experimental results are shown in Figures 3–5.

It can be seen from Figures 3–5 that the ecological efficiency of China's tourism industry showed a wavy upward trend from 2016 to 2021, The improvement of environmental conditions and environmental efficiency are conducive to the healthy development of China's tourism industry.

In this experiment, the distribution of economic efficiency and environmental efficiency of China's tourism industry from 2016 to 2021 was investigated and analyzed aiming and two experiments were conducted, respectively. The experimental results are shown in Figures 6 and 7.

From Figures 6 and 7, environmental efficiency have similar distribution except for some low-efficiency ranges. Maintain the investment of existing tourism elements, vigorously develop science and technology and improve its effective utilization. In the above calculation and analysis, the four input indicators selected in this paper are redundant in nonefficiency years, but the economic output is insufficient. Moreover, in the previous calculation of the decomposition efficiency of ecological comprehensive efficiency.

5. Conclusions

First, the DEA directional distance function model is used to analyze the ecological efficiency of China's tourism industry considering carbon emissions. The research scope and perspective of tourism eco-efficiency with eco-efficiency as its source are wide. Combining various environmental impact indicators with economic benefit variables, different eco-efficiency research models and index systems are constructed. For tourism planners and policy makers, the suggestions on improving the eco-efficiency of tourist destinations are of high-guiding significance. Strengthen the supervision of tourism management departments, and establish corresponding reward and punishment system to encourage the low-carbon development of tourist attractions and tourism enterprises. First of all, the government should speed up the awareness of scenic spots and enterprises on the importance of low-carbon development; Advocate low-carbon tourism, spread low-carbon ideas, and change tourists' consumption concept. The overall level of tourism ecological efficiency in China is fluctuating, rising from 0.853 in 2018 to 0.906 in 2021, and the national average efficiency in four years is 0.855, which is at a low level, there is still much room for improvement in the future. The abovementioned study analyzes the reasons for the ecologically inefficient years of tourism, while the ecologically efficient years are not deeply analyzed. At the same time, the Chinese government should strive to bring the tourism industry into the national policy support framework for energy conservation and emission reduction, and make good use of fiscal and taxation policies so that the tourism industry can be supported by the national strategic resources.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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