Sustainable-development-based Development of Natural Scenic Spots

Jin Lu
Jinhua Polytechnic, Jinghua 321000, China

Abstract
The development of natural tourist attraction is the most fundamental tourism resource among the many tourism products in the tourism industry. The natural scenery of China’s vast natural landscape is beautiful, and the tourist landscapes all over the country are distinctive. How to use these natural sceneries to develop complementary tourism products is an important foundation for the sustainable development of the tourism industry. Especially in the development of tourism resources, the natural scenic spot itself can be exploited to a lesser extent. How to form the advantage of phased development and how to support the sustainable development with the final presentation are the focus and core of the current development of natural tourist attractions. Therefore, based on the DEA objective function tourism development and positioning as well as the Malmquist efficiency model, association model and verification method is designed for the development of natural tourist attractions, which aims to provide theoretical reference for the rational planning and sustainable development of tourist attractions.

Keywords: Sustainable Development, Tourist Attractions, Natural Elements, Development System.

1. RESEARCH BACKGROUND
1.1 Literature Review
The usage and the replenishment of natural resources should be based on a balanced development, so as to ensure that the development of tourist attractions can provide the basis for balancing ecological resources (Luo and Jia, 2010). In this respect, the overall planning of relevant systems should be further improved and the locked development indexes should be completed on the basis of macroeconomic regulation and control. Once the controllable scope of natural resources is exceeded, the development speed and process should be slowed down (Wang et al., 2015). In order to ensure sustainable development does not over-exploit natural resource, it is necessary to truly strike a balance in resource utilization, which will achieve the expected target of sustainable development.

1.2 Research Purposes
Resource advantages must be maintained for the development of natural tourist attractions in support for the strategies for sustainable development (Mao et al., 2015). However, in the process of development, the priorities and development strategies are the core contents of current tourism development. Therefore, the current tourism development models should be further studied and the supportiveness of utilization of development resources should be evaluated, as the core issues of the current development of tourist attractions (Fu et al., 2013). In tackling the issues of sustainable development, the relatively uniform implementation standards should be quantified according to the actual conditions in each region, so as to support the extension of phased development and eventually present the final result of sustainable development.

2. NATURAL TOURIST ATTRACTIONS DEVELOPMENT MODEL
2.1 DEA Objective Function of Tourism Development and Positioning
In the development and design of tourist attractions, it must fully consider the feasibility of economic activities in order to assess whether the development of scenic spots are in line with economic laws, so as to ultimately promote the implementation of sustainable development planning. When using the DEA objective function, the
direction of tourism development should be fully located and the benefits and efficiency of natural tourism development from several decision-making units should be explored. That is, it is aggregate efficiency of the collection of scale efficiency and pure technical efficiency (Sun, 2017). In assessing whether natural tourist attractions have the objective conditions for development, the introduction of technical efficiency serves as the evaluation criteria and quantitative basis for the tourism development and design. In this aspect, whether the corresponding technical indexes can match the ultimate goal and demand of tourism development in the same time dimension should be considered.

Such technical efficiency is reflected in information technology, construction capabilities, transport facilities, tourism products, supporting projects and the like. The degree of development of the corresponding indexes determines the feasibility and scientific nature of sustainable development, so as to obtain technical support and to improve relevant tourism development details (Wang and Xu, 2015). In addition, the scale efficiency refers to whether the expected construction goal has been met under the coordination of technical management systems and institutional management systems. Excellent technical indexes with the lack of technical management capabilities can promote large-scale results in the initial development of tourism, but they will cause a lot of unfavorable factors in the latter part of the maintenance. However, the adverse effects on the system management will be more obvious. When the development direction is clear and the technical management indexes are defined, a highly feasible system paradigm determines the feasibility of tourism development and results in the improvement of promoting effect and the support of accomplishing the established goals at different stages of the sustainable development.

2.2 Malmquist Efficiency Model Applications

The economic model of the tourism industry itself determines the ultimate goal of sustainable development of production factors, with input-output ratio unchanged. Taking the economic growth point as the development direction alone will reduce the maintenance and support of ecological protection. Exploring new equilibrium points in the dual dimensions of tourism economic growth and conservation of ecological resources is also an important basis for achieving sustainable growth and utilization of tourism resources (Xu, 2015). In this process, Malmquist’s efficiency is the most vivid expression quantitative indicator. In the process of applying DEA method, analyzing the relevant elements of the tourism industry is also based on objectively reflecting the efficiency of the tourism industry market. In the time dimension, tourism products are not fully equipped with conditions that can be extended or developed at any time. Such restrictions can be regarded as the upper limit of tourism ecological resources. However, as long as the vertical geographical dimensions are not changed, the corresponding change rules can still be summed up. Such rule is the calculation method of Malmquist productivity index. In the process of analyzing total production factors of tourism industry in different regions, this model is used to analyze the common development support regarding time node and production efficiency, and the production method of the scale efficiency and the formation of pure technology mechanism. Its computing equation is:

\[
TP = Eff_t \times TE_t = PE_{t+1} \times SE_{t+1} \times TE_{t+1}
\]

In this formula, TFP > 1 means that the production factor and the level of productivity have acted as promotion in the period of time t. On the contrary, the production efficiency of the period t+1 will also be relatively declining trend. In the case of \(TE_{t+1} > 1\), production technology can be regarded to have played an important role; otherwise the technical level of the development is down or backward. \(Eff_t\) represents the changing space and value range of technical efficiency in the development of natural scenic spots. It is also the environmental change caused by adding input elements in a specific environment (Xu et al., 2016). When the evaluation index identified has been transformed, the hypothetical input and output will increase accordingly, then the translation objective evaluation conditions will obtain stable results, resulting in \(Eff_t > 1\), representing accomplishing the goal of the full improvement of production efficiency or technical efficiency; on the contrary, there will be a gradual decline in technology. The formula \(PE_{t+1}\) represents the assumption of scale returns, as an objective condition for the transformation of technological efficiency advantages. When \(PE_{t+1} > 1\), it represents an improvement in the technical management level; on the contrary, the management efficiency does not exactly match the technical application. The formula \(SE_{t+1}\) represents the space for change in the scale of efficiency, and such a change in space is an important factor affecting the efficiency of the development of natural scenic spots. When \(SE_{t+1} > 1\), the initial formation of the scale effect is initially formed; on the contrary, it will show the tendency or result of deteriorating (Su and Li, 2016). In view of the above indexes, when the index \(Eff_{t+1} \times TE_{t+1} \times PE_{t+1} \times SE_{t+1} > 1\), TFP index will definitely increase, which proves that the result of phased planning shows the tendency of expected development; on the contrary, if there is a
diametrically opposite tendency, it represents an obstacle to the development planning at this stage.

3. ASSOCIATION MODEL OF DEVELOPMENT OF NATURAL TOURIST ATTRACTIONS AND VERIFICATION METHODS

3.1 Association Model of Sustainable Development Space

The spatial index of any tourist scenic area has particularity, with a certain degree of unity. Particularity means that the characteristics of tourism resources are significantly different from those of other tourism products. Unity refers to the unification of phased development goals, which in turn forms the fundamental driving force of sustainable development (Zhang et al., 2014). Under the guidance of spatial index, this paper designs an association model of sustainable development space, and reflects the spatial clustering characteristics of natural tourist attractions, in order to analyze the changing expectation of each region. Based on the value range between the high-value cluster and low-value cluster, the spatial distribution of sustainable development planning can be determined. The formula is:

$$G(d) = \sum \sum W_{ij}(d) / \sum \sum X_{ij}$$

According to this formula, the spatial aggregation operation can be deduced to calculate the expected value $G(d)$:

$$E(G) = \omega \ln(n - 1)$$

In this formula, $G(d)$ can be regarded as the objective expression of the global index $G$, and $W_{ij}(d)$ as the stage of distance space weight, and $n$ can also be regarded as the specific number of spatial units. At the same time, $X_i$ and $X_j$ can respectively represent the production efficiency of tourism industry at provincial and municipal levels. So within the space weight $\omega$, the highest value cluster in the threshold space $Z(G)$ can be obtained through $G(d) \geq E(G)$. By analogy, the lowest value cluster of the value range of $Z(G)$ can be obtained. The verification formula is

$$\omega = \sum \sum Wn(d)$$

3.2 Data Test Form of Development Model

The development of the tourism industry itself is related to the design and development of scenic spots. Whether it can meet the basic conditions for sustainable development needs to be measured from the time dimension. It must be evaluated and verified in terms of the economic benefits (Zhou, 2013). Then in the links that affect the spatial change and the time production efficiency, such change rules are closely related to the objective indexes such as the personnel quality, economic conditions and technical level. Therefore, this study designs the efficiency evaluation system of the tourism industry. According to the data model, the construction variable is calculated as:

$$TIE = +UL + OP + TIP$$

where, $\alpha_i, \beta_i, \chi_i, \delta_i$ represent the reference coefficients of the calculated variables respectively, so as to provide the constraints of the relevant variables and to identify the degree of generality and the degree of fusion in the formula design. Figure 1 shows the theoretical definition of the scalar related categories.
First, UL represents the level of urbanization. The natural scenic spots can form the basis of sustainable development and their relative productivity has been raised, which can indicate the level of urban development that has met the phased development needs of the tourism industry (Wang and Xie, 2014). Therefore, it can be confirmed that the urbanization level and the tourism industry have the driving force to promote each other. This situation reflects the economic support effect of ensuring the gradual improvement of infrastructure construction in tourism industry.

Second, with hard targets of the construction conditions adjusted from the urbanization level, the development potential is also measured from a humanistic point of view. Therefore, the second-level reference variables of UL is set in this study as indexes of the education level of urban residents. Such indexes can be defined from a humanistic point of view which can use as the supportive dimension of quantitative criteria (Hong et al., 2013). If there is a big gap between the calculated results and this expectation, it shows that it is difficult to achieve the desired level of development at present, implying that the humanistic environment needs to be improved urgently.

Third, the opening up of a tourist city is often an objective condition to attract external tourism. This degree of openness represents the urban residents’ understanding and tolerance of the humanistic concept, which will be reflected in the service industries in the tourism industry. Therefore, the openness degree is set as OP, measuring whether the degree of openness possesses the motivation to achieve the goal of sustainable development.

Finally, the tertiary industry is an important factor that cannot be ignored in the tourism industry. When the tertiary industry flourished, it implies that the scenic spots can develop tourist business systems or formats that could make good use of the local economic environment and comply with each other. TIP will be set as the proportion of the tertiary industry, in order to promote the upgrading and development of tourism resources development with the healthy development of industrial mode, and to inject fundamental efficiency support into its industrial efficiency.

Combining with the design dimension of the above parameters, the efficiency value of tourism industry can represent the economic support for sustainable development. In this study, TIE represents the efficiency of the industry, in order to explain the interaction and development of the above variables. Thus the impact or contribution of the tourism industry on the development of natural scenic spots can be evaluated.

4. SUSTAINABLE DEVELOPMENT STRATEGY OF NATURAL SCENIC AREA IN CURRENT CHINA’S TOURISM INDUSTRY

According to the construction of the above model system, the most crucial factor in the sustainable development planning of tourism industry lies in balancing the harmonious relationship between human beings and the natural environment. There are three measurement indexes, for instance, first, whether the urbanization level can support the sustainable development of natural scenic spots in terms of educational level (Shang et al., 2017); second, whether the economic growth potential and space can support the sustainable development of natural scenic spots; third, whether ecological resources allow development conditions to maintain sustained growth and eventually can reach balance in sustainable development. Therefore, based on the above three principles of

\[ \text{Figure 1. The Development Model of The Data Test Form of Mind Mapping} \]
development, China should adopt the basic strategy of steady development, so as to support the sustainable development of natural tourist attractions. Figure 2 shows the theoretical framework of its support system.

![Figure 2. Sustainable Development Strategy of Natural Scenic Spots in Tourism Industry](image)

4.1 To Establish Urban Cultural Image and Brand Value

Urban culture is the image of the tourism industry to support the sustainable development of natural tourism resources, as the interplay of urban cultures. In such a process, tourism and cultural images should be established according to the natural conditions of each region, which will support the objective needs of phased development. For example, Huangshan Mountains is located in the beautiful mountainous area of Wannan in the northwest of Huangshan City, Anhui Province. It is famous for its heavenly peaks, exquisitely carved rocks, the pines, which constitute the inexhaustible magical beauty. As early as in 1990s, it has been included in the world heritage (culture and nature) list. Such tourism resources are the local tangible assets, while the attachment of intangible assets should use cultural image as the dominant advantage. The specific image symbols are put forward in the process of communication and development, which support the cultural balance and the phased opening of the tourist attractions, forming a sound support system.

4.2 To Improve Economic Development and Space Efficiency

The economic development is a supplement to ensure that the follow-up capitals will always be available in the development process. At the same time, the development of tourism projects in most regions fails to achieve the final development goal for the lack of follow-up financial support (Lin et al., 2015). Previously, the sustainable development of tourism resources of Hengdian World Studio in China has been delayed for many years successively due to the weak continuous economic support. However, the development of tourist attractions is not accomplished overnight. It is especially important to use the economic compensation of tourist attractions. On October 12th, 2017, Hengdian Yingshi formally went listed on the Shanghai Stock Exchange, offering 53 million public shares at an issue price of 15.45 yuan per share. The number of public offering of shares accounted for 11.70% of the total share capitals of the company. Such development strategy will be more conducive to the sustained growth of economic growth points. Subsequent development resources and funds will be guaranteed. This will provide a boost to the economic development of tourism resources. At the same time, the space efficiency, due to the phased supplement and support, is bound to have a good momentum of development. Even if it cannot attract external investment, its own operating space has shaken off the shackles of the traditional operating strategy, enjoying high practical value in the natural tourist attractions development.

5. CONCLUSION

To sum up, the development of natural tourist attractions should take economic and cultural factors into account. The association model of the sustainable development space can provide a theoretical reference for the development of various regions. However, in the process of practical application, the development conditions of various places and the protection of natural ecological environment should be considered. Therefore, this paper proposes two strategies for development respectively, establishing the urban cultural image and brand value and improving the economic development level and space efficiency. In addition, all regions should balance the development elements of tourism eco-resources in planning stage indexes. The expected sustainable development conditions should be obtained by balancing eco-resources indexes and development effects, so as
to support and perfect the sustainable growth of China’s tourism industry.

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