A Discussion on Tourism Resources Evaluation

Shuang Liu and Nengzhi Tan

Abstract This paper discusses evaluation factors, evaluation system, Analytic Hierarchy Process (AHP)-based evaluation method of tourism resources. Taking into account the evaluation factors should be independent of each other and the number of factors should be manageable, the evaluation system should involve the differentiation of goal layer, project layer, factor layer, and the determination of each element, especially evaluation goal and factors, the evaluation method should be improved. Thus, 35 evaluation factors have been identified. Each factor has a strict definition and evaluation criteria of five levels. And some different indicators could be chosen to measure for a factor. The improvement of evaluation method is presented including introducing strategy options layer and appropriate arrangement for the scoring process. Further work will be carried out on this frame system, which mainly includes the identification of indexes for some factors based on the specific spot area.

Keywords Tourism resources · Evaluation factors · Evaluation system · Evaluation method · AHP

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1 Introduction

With the rapid development of the tourism industry, tourism resources have been developed a lot. The scientific understanding and the proper evaluation of tourism resources are a premise of tourism resources development and utilization, which plays a guiding role in tourism development (Xu 2001). Tourism resources evaluation is the important subject of tourism resources research, and an indispensable link in tourism resources development (Yin and Song 1995). Tourism resources evaluation has gone through the stage of a qualitative evaluation of single factor (experience) and the stage of a multifactor quantitative evaluation (mathematics model) (Qiu 2009).

In China, the tourism resources evaluation started in 1980s. Yong Wanli published a paper, "Division of Scenic Spot and Tourist Resources of The Wuyi Mountains" (Yong 1984). From then to 2000, the number of research papers slowly increased year by year. And the rapid growth has appeared since 2000. According to these papers, mainly qualitative methods of evaluation of tourism resources had been used before 2005. Since 2005, the quantitative evaluation has accounted for the advantage (Fig. 1). China Tourism Resources Census Standard (trial draft) published in 1992, established the state standard for tourism resource evaluation. And in May 2003, the state standard Tourism Resources Classification, Investigation and Evaluation (GB/T18972-2003) officially launched (Fig. 1).

There are a large number of researches and the implementation of state standards to promote the tourism resources evaluation, contributing to the development of tourism. However, there could be found some worth exploring issues through comparative analysis of the literature.

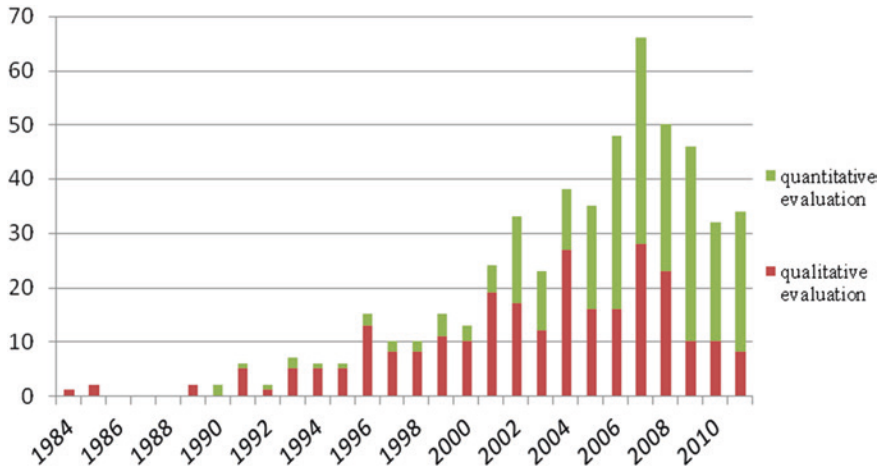

Fig. 1 Qualitative and quantitative variation of tourism resources evaluation

1.1 The Evaluation Factors' Naming is not Enough Standardization

The concepts of state standard's evaluation factors are some fuzzy and the number of factors is only eight, which can not cover all of tourism resources types. Many resources cannot be "pigeon-holing" (He 2006). Therefore, some researchers selected other evaluation factors without standardized name. For example, in rural tourism resources evaluation, one researcher gives the factors' names such as "pleasure," "integrity degree," "science education," and "accommodation" (Hu and Shi 2009). Another one gives "pleasure degree," "integrity," "education science," and "eating" (Xiong 2010). Same meaning factor has a different name.

1.2 Many Papers Have no Evaluation Criteria and Show a Stronger Subjectivity

Most of the research papers have no specific factor rating criteria, such as the paper "Tentative study on the quantitative evaluation of water tourism resources—Taken Chongqing metropolis area 'two river four-banks' as an example" (Qin and Yang 2011). Only a few papers dealt with specific ratings criteria, for example, "Classification and evaluation of ecotourism resources of nature reserves in Gansu" in which each factor has a clear score standards' explanation (He and Wang 2011). In addition, some researchers use qualitative description to distinguish among the different levels of factor, which shows a stronger subjective, such as the score standard of the traffic conditions of tourist source is set as "very most convenient," "most convenient," "more convenient," and "convenient" (Li et al. 2010), without introducing some quantitative index such as the distance to tourist source.

1.3 The System of Evaluation is not Enough Standardization

Every tourism resources evaluation refers to the selection of factors and the construction of hierarchical system of evaluation factors. The state standard evaluation system is not comprehensive with limiting tourism resources evaluation to their own value and ignoring the evaluation of development value of tourism resources (Lin and Chen 2010). So many researchers proposed the respective evaluation system such as rural tourism (Yin et al. 2007; Mao 2009), geological tourism (Sun et al. 2008; Yang et al. 2008; Gong et al. 2009) and ecological tourism. There are some differences of selected factors among those evaluation systems. And there are some differences of hierarchical system of evaluation factors among them (Zhou 2007; Wang et al. 2007; Yang et al. 2003). Some systems are divided into four level, goal layer, comprehensive layer, project layer, factor layer, others are divided into three level, goal layer, project layer, factor layer.

1.4 The Use of Analytic Hierarchy Process Method is to be Improved

In order to support decision-making, Analytic Hierarchy Process (AHP) unifies the qualitative factors and quantitative factors through scoring by experts or the public in form of a back-to-back and one more feedback so as far as possible to exclude subjectivity. Many researchers use AHP to evaluate tourism resources with ignoring its advantage of the subjectivity reduction. And AHP hierarchical system has an option layer, all the paper did not refer to the option layer. It is more beneficial to combining tourism resources evaluation with decision option.

Based on the above four issues, this paper presents a discussion of the following three aspects, expected to be helpful in evaluation of tourism resources.

2 The Standardization of Evaluation Factors

This section discusses for the above first two issues. For statistics and comparative analysis, the GB/T18972-2003 and 30 papers was selected, among them each 10 papers is respectively about geological tourism resources, rural tourism resources and ecological tourism resources. Statistics show that 337 specific factors appear in the literature. By comparing and analysing these factors, two facts are focused. The first one is some different name factors with same concept. And the second is some factors could be seen as same object's different attributes. Based on the consideration that evaluation factors should be independent of each other and that the number of factors should be manageable, 35 evaluation factors are selected (Table 1). Each factor is then given a strict definition and evaluation criteria. The latter is divided into five levels, i.e., excellent, good, fine, OK, and poor. Due to

Table 1 35 Detailed evaluation factors

Evaluation factors				
Resources type	Resource size and abundance	Resource level	Scientific research value	Popular science education value
Cultural value	Ornamental value	Leisure values	Mountain landscape	Waters landscape
Forest landscape	Geological landscape	Biological landscape	Astronomical landscape	Humanities landscape
Environmental protection	Environmental safety	Environmental capacity	Air quality	Air pollution index
Air anion content	Water quality	Acoustic quality	Vegetation coverage index	Comfortable travel period
Tourist market	Traffic conditions	Accommodation facilities	Catering facilities	Shopping facilities
Entertainment facilities	Service quality	Economic benefits	Social benefit	Government policy

Table 2 Tourism resources evaluation specific factors, meaning, level, and evaluation standard

Evaluation factors	Meaning	Level	Score basis and standard
Environmental safety	People live in a no pollution and safe state of destruction, it means the risk of natural ecological environment and human ecology in the sense of the survival and development and disasters incidence size	Excellent	Environmental safety guaranteed, disasters incidence 0 time/year
		Good	There are certain environmental safety dangers, disaster incidence 1 time/year
		Fine	Environmental safety has obvious security danger, disaster incidence 2 times/year
		Ok	Environmental safety has serious security problems, disaster incidence 3 times/year
		Poor	Environmental security has very serious security problems, disasters incidence 4 times/year
Environmental capacity	Regional environment of human activities affect the biggest capacity including ecological environmental capacity, physiological environment capacity and basic space capacity	Excellent	Clean ecological environment capacity; let 80 % visitors feel very comfortable; each of the basic space of 100 m^2 standard
		Good	80 % of the ecological environment capacity; let 70 % visitors feel very comfortable; each of the basic space of 80 m^2 standard
		Fine	70 % of the ecological environment capacity; let 60 % visitors feel very comfortable; each of the basic space 60 m^2 standard
		Ok	60 % of the ecological environment capacity; let 50 % visitors feel very comfortable; each of the 40 m^2 basic space standards
		Poor	Below 50 % and net ecological environment capacity; let below 50 % visitors feel very comfortable; each of the 20 m^2 basic space standards

space limitations, Table 2 only lists environmental safety and environmental capacity factors, their definitions and evaluation criteria as examples.

For the second fact, some different indicators could be chosen to measure for a factor. For example, there are at least two evaluation index for the factor of water

Table 3 Water quality evaluation factors connotation and evaluation standard

Evaluation factors	Meaning	Level	Score basis and standard
Water quality	Around the crowd space and it can be directly or indirectly influenced the development of human life	Excellent	The surface water environment quality standards (GB3838-2002) the first class
		Good	The surface water environment quality standards (GB3838-2002) the second class
		Fine	The surface water environment quality standards (GB3838-2002) the third class
		Ok	The surface water environment quality standards (GB3838-2002) the fourth class
		Poor	The surface water environment quality standards (GB3838-2002) the fifth class
Water quality	The ground water, especially the hot spring	Excellent	Classification and accreditation for service-rated hot spring enterprise (LB/T016-2011) the five star
		Good	Classification and accreditation for service-rated hot spring enterprise (LB/T016-2011) the four star
		Fine	Classification and accreditation for service-rated hot spring enterprise (LB/T016-2011) the three star
		Ok	Classification and accreditation for service-rated hot spring enterprise (LB/T016-2011) the two star
		Poor	Classification and accreditation for service-rated hot spring enterprise (LB/T016-2011) the one star

quality (Table 3). The first evaluation index is referred to the water environment quality and the second evaluation index to the water tourism value.

3 The Establishment of the Evaluation System

In Sect. 1.3, it was mentioned that evaluation system is four-layer system or three-layer system. Because most of evaluation systems have no option layer, four-layer systems would become five-layer systems if option layer added. So, the three-layer system is preferred.

The establishment of the evaluation system involves the differentiation of goal layer, project layer, factor layer, and the determination of each element, especially evaluation goal and factors.

While building the evaluation system, several questions should be considered.

3.1 Whom Do the Evaluation Work?

In other words, who request the project of tourism evaluation? Generally, it is a government or a company. The goal of evaluation is determined by the requirement of a government or a company. Of course, it is possible to evaluate tourism resources for visitors.

3.2 What is the Object of Evaluation?

The object of evaluation falls into the great range. It could be a spot, or a scenic area, or an administrative region (a city, a county, etc.), or a class of spots, or a class of scenic areas.

3.3 What are Resources Types?

According to the classification of tourism resources, the tourism resources is divided into natural resources and human resources. Natural resources can be subdivided into ecological resources, geological resources, forest resources, nature reserve, and so on. Cultural resources can be subdivided into rural tourism resources, sports tourism resources, industrial tourism resources, red tourism, black tourism resources, and so on.

3.4 What Is the Development Situation of Tourism Resources?

Some tourism resources have not been developed. Many tourism resources is developed. For the former, it should do a pre-evaluation. For the latter, it generally do a postevaluation, it could also do a pre-evaluation if you want to reinvent the wheel. Tourism resources' pre-evaluation primarily focus on resources potential evaluation. And in postevaluation, the focus would be transferred to economic benefits and ecological security.

3.5 Does the Evaluation Object Have One or More Strategy Options?

It is best if the answer is yes, because the different strategy option could changes the evaluation of factors. It is important that selected evaluation factors should cover all of strategy options.

Based on the answers of above questions, every element of goal layer, project layer, factor layer, and option layer could be selected or determined. Therefore the evaluation system could be built.

4 Evaluation Method and Process

Through internet 488 papers about tourism resources evaluation had been searched. The sum of used evaluation methods is up to 36. Among them, AHP is a quantitative method that the used frequency is 99 (Fig. 2).

4.1 AHP Summary

The AHP is a structured technique for organizing and analysing complex decisions in group decision-making. It was developed by Thomas L. Saaty in the 1970s.

Users of the AHP first decompose their decision problem into a hierarchy of more easily comprehended subproblems, each of which can be analysed independently. Section 3 discusses the evaluation system of tourism resources, which is the first step of AHP.

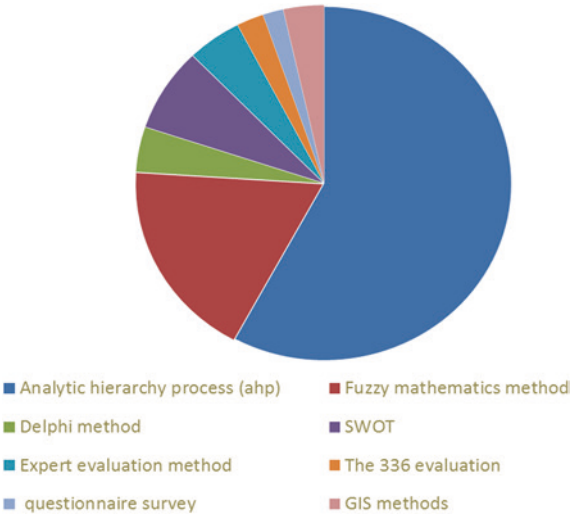

Fig. 2 Tourism resources evaluation method

The second step is to do pairwise comparisons for every two elements at each layer. Here experts give their judgments about the elements' relative meaning and importance.

The third step is to check the consistency of the judgments. The AHP converts these judgments to numerical values that can be processed and compared over the entire range of the problem. If passed the testing, a numerical weight or priority is derived for each element of the hierarchy in a rational and consistent way.

4.2 Tourism Resources Valuation Method Based AHP

There are many cases in which AHP was used for tourism resources valuation. It is necessary that the evaluation of tourism resources should be in accordance with the AHP method steps. Here are the further description of the issues mentioned to be improved in Sect. 1.4.

First of all, introducing strategy options layer would be an important improvement in tourism resources evaluation. For example, there is a spot. It could be developed as a state park or as a theme park. Two options may not only increase the number of factors, but will have a different perspective and therefore will change the scores of factors.

Secondly, an appropriate arrangement for the scoring process would be another important improvement. The scoring process can be divided into two or three times. Every time scoring can be done by experts in form of a back-to-back. Before the second time scoring, the experts should receive the statistics data about the first scoring, therefore each one can independently decide whether or not his scoring need to be changed. The third time, and so on. This is a stepwise process of consensus with reducing subjectivity as far as possible.

5 Case Illustration

Here is the illustration of the postevaluation system of ecotourism resources (Fig. 3). Ecological tourism has developed rapidly in recent years, which meet an increasing demand for people returning to nature and understanding the nature. Most important feature of ecotourism is nature-oriented. It can make more people aware of the nature, promoting the awareness of nature conservation and love of nature (Yang and Wang 2000).

Taking into account the characteristics of ecotourism and the developed state, three evaluation projects and 13 evaluation factors have been identified, while introducing two development programs at the option layer. It is important to note that some of the factors that belong to the resource value project, but also belong to the environmental quality project.

In fact, that is a postevaluation frame system of ecotourism tourism resources system. Further work will be carried out on this frame system, which mainly

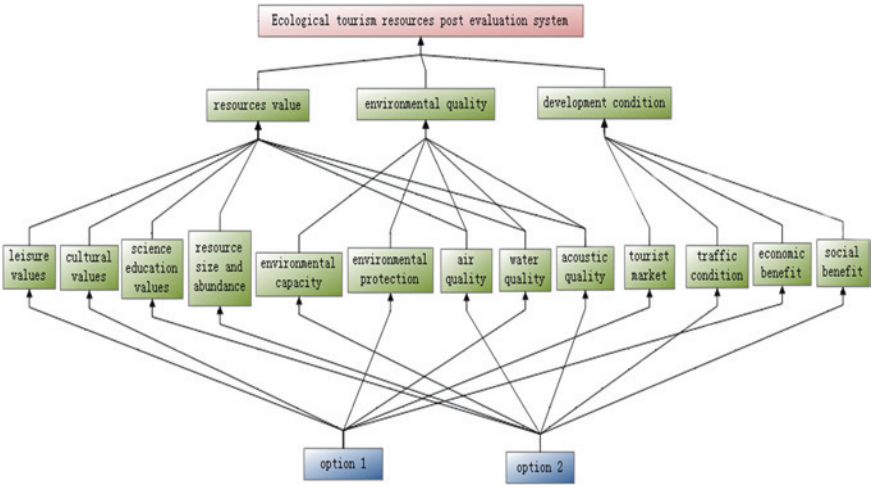

Fig. 3 Ecological tourism resources postevaluation system

includes the identification of indexes for some factors based on the specific spot area and scoring those factors according to above mentioned AHP method (Fig. 3).

6 Conclusion

On the basis of hundreds of papers, this paper discusses evaluation factors, evaluation system, and AHP-based evaluation method in relation to tourism resources.

Taking into account the evaluation factors should be independent of each other and the number of factors should be manageable, 35 evaluation factors have been identified. Each factor has a strict definition and evaluation criteria of five levels. And some different indicators could be chosen to measure for a factor.

While the evaluation system is built, it should know the answers of five questions, that is, who do evaluation work? What is the object of evaluation? What are resources types? What is the development situation of tourism resources? Does the evaluation object have one or more strategy options?

This paper also discusses tourism resources valuation method based AHP, which is currently widely used and presents from two aspects to improve the use of AHP, that is, introducing strategy options layer and appropriate arrangement for the scoring process.

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