QUANTITATIVE EVALUATION AND REGIONALIZATION OF TOURISM RESOURCES IN GUANGXI

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ABSTRACT: Since the 1970s foreign and Chinese scholars have researched into quantitative evaluation of tourism resources by mathematical method early or late and made great progress. Guangxi is rich in tourism resources with picturesque scenery. In this paper, Guangxi’s tourism resources are quantitatively evaluated by method of analytic hierarchy process. Firstly a modular tree of quantitative evaluation for tourism resources of Guangxi is set up and weighted values of evaluative factors are defined by method of consulting experts. On the basis of a great amount of data from investigation, synthetic evaluation indexes and their order of tourism resources of 22 cities and counties in Guangxi are calculated. Then, the tourism resources of Guangxi are divided into 6 regions and their development orientations are described by a combination of quantitative analysis and qualitative analysis. The study would be helpful to the exploitation of tourism resource of Guangxi.

KEY WORDS: tourism resource, quantitative evaluation, analytic hierarchy process, regionalization, Guangxi

I. INTRODUCTION

The evaluation of tourism resources can provide the theoretic basis for rational exploitation of tourism resources and it is prerequisite of tourism plan (Lu, 1988). Since the 1970s the great change of the study on evaluation of tourism resources has taken place in foreign countries. The scholars of Canada, USA, France etc. set up evaluation systems of tourism resources successively. They resolved and quantified various kinds of factors which influenced the tourism resources, and dealt with data by mathematical method to make the study of tourism resources be quantitative, thus improving the precision and practicality of evaluation greatly. In the later 1980s Chinese scholars Bao Jigang (1988), Chen Chuankang et al. (1989), Yang Hankui (1987), Chu Yifang (1991), et al. firstly by mathematic method evaluated quantitatively the tourism resources of Beijing, Guizhou, Hunan, etc. and made great progress. Guangxi is in the...
south of China and rich in tourism resources with green hills and clear waters. In this paper, mathematic method is used to evaluate quantitatively tourism resources of Guangxi, and on the basis of this the tourism resources is regionalized for reference of relative organizations and readers.

II. QUANTITATIVE EVALUATION OF TOURISM RESOURCES

1. Establishment of the Modular Tree of Quantitative Evaluation for Tourism Resources of Guangxi

In this paper, analytic hierarchy process is used to analyse and evaluate comprehensively tourism resources of Guangxi. To use analytic hierarchy process to analyse and study tourism resources, firstly the factors which influence the exploitation of tourism resources should be defined. Our predecessors did a lot of work about factors which influence the exploitation of tourism resources. So we analyse comprehensively the nature and importance of each influential factors due to the combination of geographical environment of Guangxi and degree of tourist exploitation by now. On the basis of this the evaluation index system of tourism resources of Guangxi is established, that is, to divide various main factors into different levels, then to illustrate the stair structures of levels and the subordinate relationship of factors in the form of diagram, and to set up the modular tree of quantitative evaluation for tourism resources of Guangxi (Fig. 1). There are four levels in the modular tree: the first level is the level of general objective, that is level 0; the second level is the level of comprehensive factors, that is level C; the third level is the level of evaluative norms, that is level F; the fourth level is the level of evaluative reference content, that is level S.

2. Definition of Weighted Values of Evaluative Factors

In order to define weighted values of evaluative factors, we distribute consulting sheets to Guangxi's and national experts and scholars. In consulting sheets one judges by the degree of importance which is divided into 9 classes and fills in list. 1, 3, 5, 7, 9 or their reciprocals are used as quantitative standards to judge the relative importance of various factors at the same level for some factors at higher level, and raise one’s own opinions. We altogether distributed 82 pieces of consulting sheets and received back 68 pieces, and the returning rate was 82.9%. In such 68 pieces of consulting sheets we all gained 2652 effective firsthand data. Comprehensively sorting out such data, we calculated the maximum eigen root of determination matrix \( \lambda_{max} \) and corresponding regular vector \( W \) and got permutation weighted values of relative importance of the factors at the same level for some factors at higher level. In order to make the permutation results have satisfactorily uniform, we put them to a test of random uniform rate \( CR = \frac{CI}{RI} \).