Study on Performance Perception of Targeted Tourism Poverty Alleviation in Minority Areas

—Based on AHP fuzzy comprehensive evaluation model

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Abstract: Targeted poverty alleviation is one of the policies put forward by Chairman Xi Jinping concerning the vital interests of the Chinese people. The proposed effective policy has an important role in reducing poverty in China. This paper will use the AHP fuzzy comprehensive evaluation model, aiming to perceive the actual effect of the poverty reduction policy at the current stage, using the AHP (Analytic Hierarchy Process) algorithm to evaluate the performance of the evaluation model by evaluating the performance of targeted tourism poverty alleviation in ethnic minority areas in China.

1. Introduction

The Poverty Alleviation Policy is a national policy formulated by Chairman Xi Jinping. This policy aims to solve the large number of poor people in China at this stage in accordance with the imbalanced economic development level in various regions of China [1]. Poverty alleviation policies have issued in various stages of China's social development. However, compared to targeted poverty alleviation policies, other poverty alleviation policies start from the region and carry out macro poverty alleviation work, but we know that our country has complex social environment, not only there is a huge economic disparity between regions, but there is also a huge gap between families and families in each region [2]. Accurate poverty alleviation means that China not only has to alleviate poverty from the macro perspective, but also has to carry out poverty alleviation in basic unit of our country's social organization, the family [3]. Chairman Xi Jinping's targeted poverty alleviation policy can be said to have captured the focus of China's unbalanced economic development. Since the implementation of the Accurate Poverty Alleviation Policy, the number of poor people in China has decreased significantly compared with previous years, especially in ethnic areas. It has greatly changed the daily life of many minority people and it has made our people truly rich [4]. Although our country's targeted poverty alleviation policy has achieved great success, our government investigators found in actual work that there are still problems.

2. State of the art

In response to the problems, some governors and social organizations and scholars have conducted a lot of research and have achieved good results, however, most research is mainly reflected in the macro level. The actual use of mathematics to quantify the actual results achieved by government at all levels in the actual poverty alleviation work has not received everyone's attention, so the performance of the higher-level government's targeted poverty alleviation works for the lower-level government. In the assessment, some important issues are reflected (Chatterjee K et al 2017) [5]. Since poverty alleviation work has received the attention of the central government in recent years, some government officials have used the targeted of poverty alleviation performance to quantify this loophole to beautify their own achievements, which has seriously hindered the progress of targeted poverty alleviation in China. Accurate perception of targeted tourism poverty alleviation performance in ethnic minority areas has become an important issue in poverty alleviation work at this stage (Aguarón J et al 2016) [6]. In view of the above deficiencies

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that China's targeted poverty alleviation work cannot be quantified at this stage, so we will use the AHP algorithm (Wang X et al 2016) [7] in this paper, which uses various weights of various factors in quantifying actual performance, effectively quantifies each data of targeted poverty alleviation work, and uses data models to analyze and obtain a performance score (Yagmur L 2016) [8].

3. Methodology

3.1 Research on Accuracy Model of Targeted Tourism Poverty Alleviation in Ethnic Minority Areas Based on AHP Fuzzy Comprehensive Evaluation Algorithm

From the discussion of above chapters, we can understand that there is no comprehensive evaluation model for the precise poverty alleviation effect of the government at current stage. The fuzzy evaluation algorithm plays an important role in the performance assessment of company personnel. In the enterprise performance evaluation, the status of the AHP fuzzy evaluation algorithm cannot be ignored. This algorithm can use the data model to convert the actual text data collected, convert it into digital data, and then calculate the algorithm and use the correlation. The weight coefficient is divided by weight value, and finally comes the effective result. This result does not appear in a large number of numbers that cannot be understood by most ordinary people, but converts the converted digital data into text data and performs images, etc. The conversion of sensory data seeks to use an easy-to-understand approach to assess the performance of corporate personnel. This algorithm was used in modern enterprise management in the Western market economy system in the last century. This algorithm not only facilitates the quantification of actual work performance, but also improves the enthusiasm of employees in practice. The following table is a summary of the main functions of the AHP fuzzy comprehensive evaluation algorithm and the application rate table in the model:

Table.1 An overview of the main functions of the AHP fuzzy comprehensive evaluation algorithm and the application ratio table in the model

	Input end	Model calculation part	Output end
Algorithm function	Digital and text conversion	Formula into calculation	Text and digital conversion
Application ratio	70%	50%	70%

From the above list of main functions of the AHP fuzzy comprehensive evaluation algorithm and the application rate table in the model, we can see that in this study, the targeted tourism poverty alleviation performance model of ethnic minorities uses AHP at the input and output. The rate of fuzzy comprehensive evaluation algorithm has reached an astonishing 70%, because the conversion of data is involved at the input end and the output end. The transformation of the input end specifically translates the text data into digital data. The specific performance of the terminal converts the digital data into text data. The use and the function of the AHP fuzzy comprehensive evaluation algorithm are closely linked. In addition, the AHP fuzzy comprehensive evaluation algorithm also plays an important part in the calculation of the design model of targeted tourism poverty alleviation performance model in ethnic minority areas studied in this paper, because the AHP fuzzy comprehensive evaluation algorithm appears very early and its application is very extensive. Therefore, the calculation formula used this time is extracted from the professional algorithm database to ensure the quality of the calculation formula of the algorithm.

The construction of the accurate tourism poverty alleviation performance model based on the AHP fuzzy comprehensive evaluation algorithm is mainly composed of the government’s basic staff poverty alleviation performance achievements collection, model input conversion, fuzzy mathematical evaluation formula calculation, model output conversion, image evaluation display design and other parts. Based on the AHP fuzzy comprehensive evaluation algorithm, the construction of targeted tourism poverty alleviation performance model in ethnic minority areas is specifically composed of the following components: First, it is the performance of the government's basic staff poverty alleviation performance collection. We know that the targeted poverty

alleviation work of ethnic minorities is very different from other targeted poverty alleviation work. It is mainly manifested in the fact that ethnic minorities have relatively small populations, most of them live in remote villages, and because ethnic minorities do not marry outsiders, they cause few people go to school and basically live on hunting and farming. These characteristics have caused the ethnic minorities to accurately assist in poverty and are inconvenient for evaluation. Therefore, in the actual performance assessment, these characteristics also make this kind of work bad appraisal, the data in this article is collected in the grassroots work of real data ensuring the validity of the collection of basic data; the second is the model input conversion, the input conversion of targeted tourism poverty alleviation performance model in ethnic minority areas is specifically reflected in the conversion of texts to numerical data. It because our work teams often do not have specific data requirements when performing performance assessments. Therefore, the use of survey data for local people is often used. Due to the large number of visits, there are more textual narratives in actual investigations, which has resulted in the inability to quantify this significant shortcoming. This process is to use a weight index for textual narratives to be divided according to four levels: excellent, good, pass, fail, and provide specific scores to quantify, and then add these quantified textual narratives of the model to calculate; the third is the calculation of fuzzy mathematical evaluation formulas. The data we have collected above has been converted from text to value. In this section, we will use the converted values to add to the model and use the calculation formula we extracted in the algorithm database mentioned above. For calculations, the fuzzy mathematics method is an algorithm for data obfuscation, in order to find out their macroscopic relation from a large number of seemingly unrelated data. This is the ultimate goal of the calculation iteration using the model algorithm formula; the fourth is the output end conversion. We already known and used the model's input to convert text data to numeric data. Similarly, at the output end, in order to better express our performance inspection work, it must be both specific and easy to understand, so the conversion of numerical data to textual data at the output end of the model is impossible. So at the output of our model, we have set up a conversion interface for numerical data to text data; fifth is the image function display design. People's identification of image is much easier than the identification of texts and numbers. Therefore, many large-scale demonstrations use images to make this kind of intuitive display. After we complete the output of evaluation results, we use images or it is a video method to intuitively evaluate the performance evaluation of poverty alleviation of ethnic minorities. The following figure is a detailed flow chart of the construction of targeted tourism poverty alleviation performance model in ethnic minority areas based on the AHP fuzzy comprehensive evaluation algorithm:

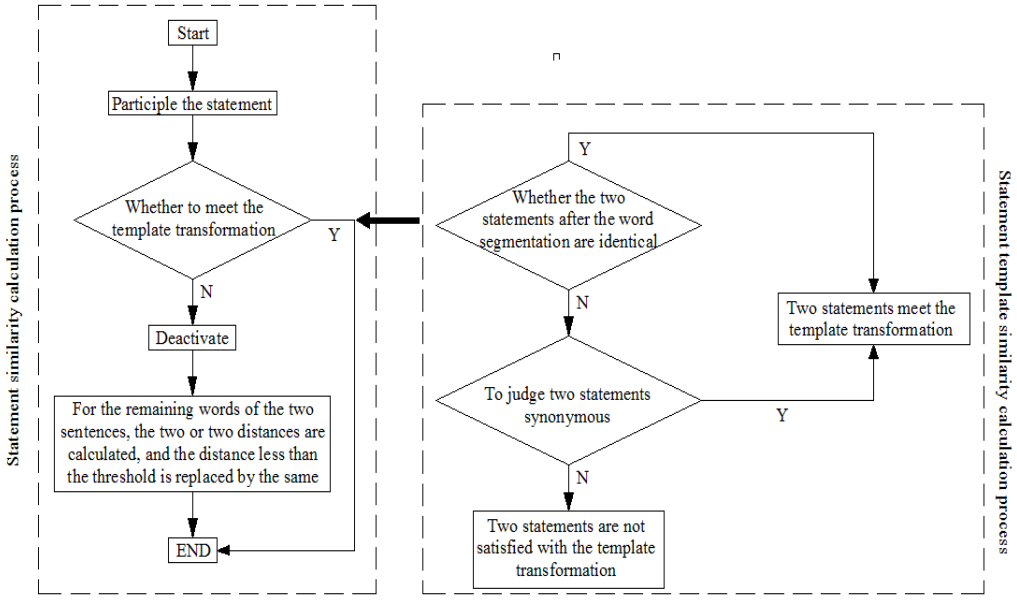

Figure.1 Research flow chart of targeted tourism poverty alleviation performance model based on AHP fuzzy comprehensive evaluation algorithm

3.2 Formula calculation of targeted tourism poverty alleviation performance model construction in ethnic minority areas based on AHP fuzzy comprehensive evaluation algorithm

Above is a specific process design part for the construction of targeted tourism poverty alleviation performance model in ethnic minority areas based on the AHP fuzzy comprehensive evaluation algorithm. After the completion of the AHP fuzzy comprehensive evaluation algorithm for the targeted tourism poverty alleviation performance model in the ethnic minority areas, the specific process design is studied. This is the specific calculation part of the AHP fuzzy comprehensive evaluation algorithm. In this section, we use the algorithm formula is more suitable for our current model, and can find the relative to this design model. The fit formula performs our current calculation. Based on the AHP fuzzy comprehensive evaluation algorithm for the construction of accurate tourism poverty alleviation performance model in ethnic minority areas, the specific formula calculations are as follows.

In order to avoid subjective assessment of the weight of performance appraisal indicators, a comparative strategy of the analytic hierarchy process is used to determine the weight coefficients of the indicators through the comparison of the performance indicators, and then a one-time verification and verification of the calculation results is performed:

$$f(A_1)=\begin{bmatrix} & B_{11} & B_{12} & \ldots & B_{1n} \\ B_{11} & 1 & a_{12} & \ldots & a_{1n} \\ B_{12} & a_{21} & 1 & \ldots & a_{2n} \\ \ldots & \ldots & \ldots & 1 & \ldots \\ B_{1n} & a_{n1} & a_{n2} & \ldots & 1 \end{bmatrix} \tag{1}$$

In the above formula, a_{ij} represents the ratio of importance to the target and uses the 1-9 scale method. According to the basic principles of analytic hierarchy process are:

$$\overline{\omega_{ki}}=\left(\prod_{j=1}^{n} a_{ij}\right)^{1/n} \tag{2}$$

Among them, $\overline{\omega_{ki}}$ represents the weight coefficient of the performance index of the criterion level. The normalization of the above formula is:

$$\overline{\omega_{ki}}=\overline{\omega_{ki}}/\sum_{k=1}^{n}\overline{\omega_{ki}} \tag{3}$$

For the above formula K, R consistency test, if it meets:

$$C.R.=C.I./R.I.<0.1 \tag{4}$$

Then it thinks it meets the consistency requirements, so the vector:

$$\overline{\omega_{ki}}=[\omega_{k1},\omega_{k2},\ldots,\omega_{kn}]^T \tag{5}$$

Weight vector is for performance indicators:

$$x_k=\sum_{kj=1}^{kn}(r_{kj}\bullet\omega_{kj}) \tag{6}$$

In the above formula, x_k is expressed as a value measure of value criterion A. The specific flow chart of the above process is shown in the following figure:

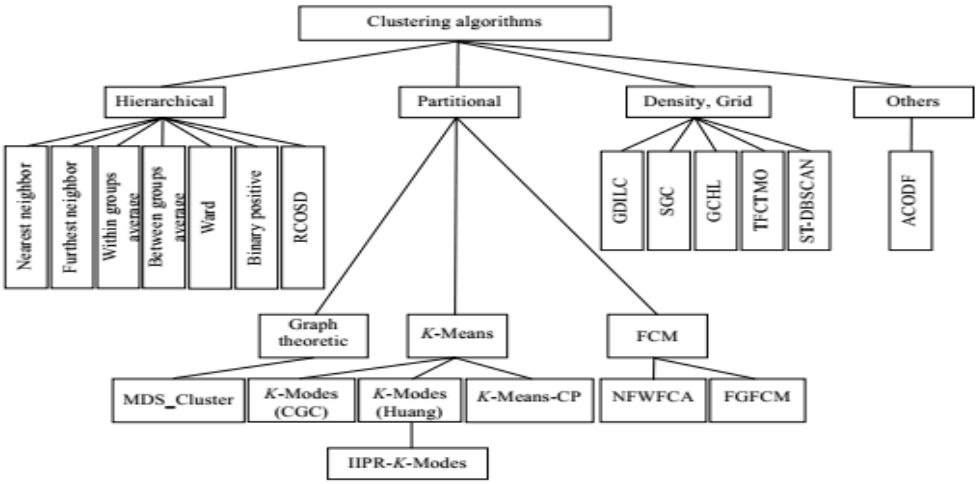

Figure.2 Art design based on SDD-1 distributed query algorithm teaching resources research and development formula calculation concrete flow chart

In our research, we found that gender factors have a significant impact on residents' perceptions of social and cultural poverty alleviation performance; age factor has a significant impact, so does cultural factor. The table below shows the impact of different factors on the performance of targeted poverty alleviation in the four regions studied in this paper:

Table.2 The weight list of the effect of different factors on the performance of targeted poverty alleviation in the four regions studied in this paper

	Gender factors	Age factors	Family income factors	Occupational factors
A	0.78	0.21	0.61	0.41
B	0.32	0.72	0.71	0.57
C	0.62	0.32	0.72	0.65
D	0.71	0.32	0.42	0.67

4. Result analysis and discussion

After completing the detailed process construction and formula calculation for the accurate tourism poverty alleviation performance model in ethnic minority areas based on the AHP fuzzy comprehensive evaluation algorithm, the following part is the performance evaluation model for targeted tourism poverty alleviation in ethnic minority areas and the AHP fuzzy comprehensive evaluation algorithm. We first test the evaluation model of targeted tourism poverty alleviation performance in ethnic minority areas. It is known that the test of a model must pass the test of practice. Therefore, in the testing process of the targeted tourism poverty alleviation performance evaluation model in this minority region, the correctness of the model calculation data was tested, and the model calculation rate was also tested. The test results show that our current model has good performance. The specific conclusions are shown in the following table:

Table.3 Test result table of targeted tourism poverty alleviation performance evaluation model in Minority Areas

	Model calculation rate	Model accuracy
A group	A	90%
B group	A	80%
C group	A	90%
D group	A	95%

The poverty alleviation performances of four different regions are selected, which are respectively divided into four groups: A, B, C, and D. Among them, there are 120 people in each group, and a total of 360 data of four groups are used as its test data. From the test results table of

the targeted tourism poverty alleviation performance evaluation model, we can clearly see that the accuracy evaluation model for targeted tourism poverty alleviation in ethnic minority areas has a high calculation accuracy of these four groups, all at 80%. In addition, the calculation time of the model is also very short, and the calculation time for these four groups is similar, so the calculation time has been rated as A, etc. From the calculation time and accuracy of the above-mentioned evaluation model for targeted tourism poverty alleviation performance in minority areas, this model test was very successful. The test results are shown in the following table:

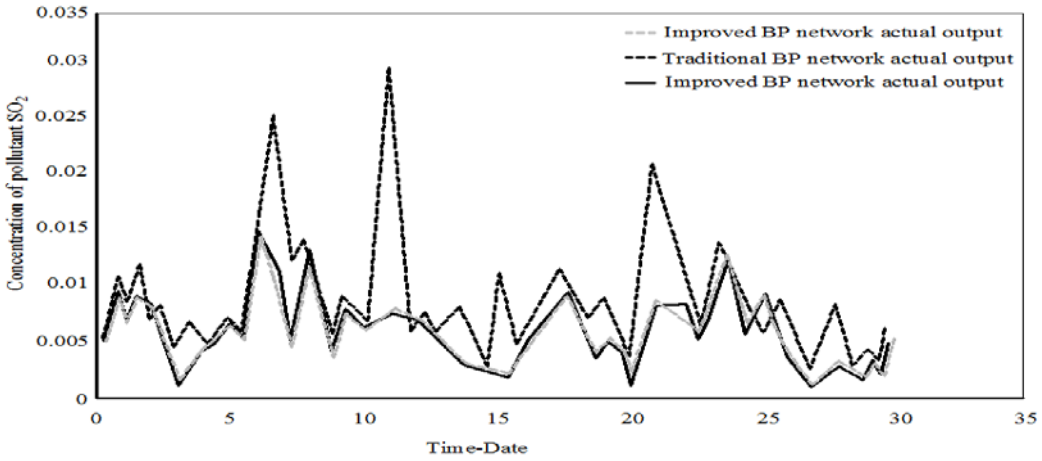

Figure.3 AHP fuzzy comprehensive evaluation algorithm test chart

As shown in the above chart, it uses four different regions of ethnic minorities for targeted poverty alleviation performance, we use algorithms to conduct these four different groups each month during the research process. Shown separately, from the data, we can clearly see that the 10-month accurate poverty alleviation data algorithm itself has a large difference, which is mainly due to the nature of ethnic minorities, in the daily spring and autumn, because of the May 1st Labor Day and the National Day holiday resulted in an increase in the number of tourists. Tourism is the economic source of ethnic minorities in many areas. The following is a graph of the stability evaluation of the four data algorithms:

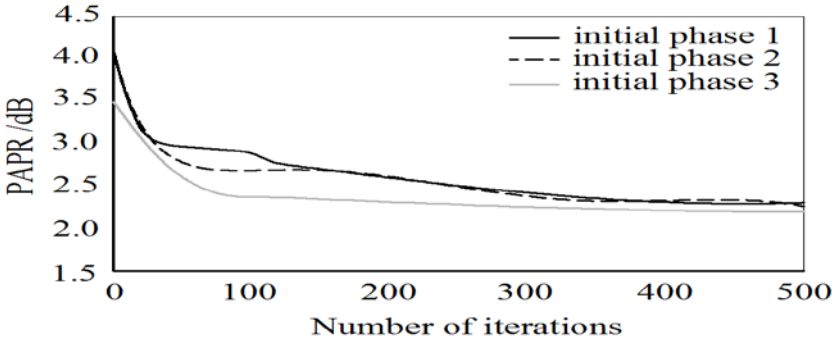

Figure.4 Stability evaluation of four groups of data algorithms

5. Conclusion

The construction of the accurate tourism poverty alleviation performance model based on the AHP fuzzy comprehensive evaluation algorithm is mainly composed of the government's basic staff poverty alleviation performance achievements collection, model input conversion, fuzzy mathematical evaluation formula calculation, model output conversion, image evaluation display design and other parts. In the performance appraisal process, determining the correlation between the indicators and their deviations are the key events that affect the feasibility of performance appraisal operations. The AHP is used to obtain the expert assessment of the weights of the performance evaluation index for targeted tourism poverty alleviation in ethnic minority areas, and the comparative model and algorithm of subjective empowerment is used to obtain the performance

assessment scores for targeted tourism poverty alleviation in ethnic minority areas so that the indicators' right the number is more accurate and objective, and the performance assessment is conducted in an objective and fair manner. Fuzzy mathematics is used to make an overall systematic evaluation of the performance appraisal problems that are constrained by a variety of factors, forming a fuzzy judgment matrix to obtain a quantitative performance appraisal result.

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