Research on Tourism Resources Development Pattern Effect Evaluation based on Regression Analysis and Neural Network

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Abstract

In this paper, we conduct research on the tourism resources development pattern effect evaluation based on regression analysis and neural network. Tourism resources development and the protection of all sorts of the contradictions, in the final analysis is the conflict between the interests of stakeholders. Real life in China, and tourism resources development and protection of the interests of the relevant party basically has the following six parties: the local government, investment and the business practice, the original residents, tourists, tourism practitioners, the social organization. The survival and the development of general tourism industry is based on the premise of environmental protection, tourism landscape are carefully protected, let the natural landscape and human landscape form a virtuous cycle, to attract more tourists, promote the sustainable development of scenic spots. Under this basis, this paper proposes the new idea on the issues that is meaningful.

Keywords: Tourism Resources, Effect Evaluation, Regression Analysis, Neural Network.

Introduction

Tourism is the important part in the service industry, service industry to promote national economic growth has the effect that cannot ignore. Tourism project prophase for national people's congress, the fund long payback period and seasonal fluctuation is bigger, so do the early stage of the economic effect analysis for the protection of the interests of the investors, the reasonable use of resources is of great significance and economic effect analysis including sources of investment and financing advice, financial prediction, analysis and argumentation of financial benefits evaluation index.

Tourism as a involved in the economic, social, environmental, multi-sectoral integrated industry, both in the tourism resource development and in protecting management, clear and introducing the theory of sustainable development of green tourism development has very important meaning. As for the review, the typical tourism resource development concept can be defined as follows.

- Tourism resource development is the tourism resources as the "raw material", through some form of mining, processing and perfect, to show its value and meet the demand of tourists.
- Tourism resource development is the purpose of that human from the tourism development through additional materialized labor and living to the tourism resources and make it can be used by the mass tourists or enjoy the object of technical and economic process [1-3].
- Tourism resource development is to use a certain technology give full play to people's creative and intellectual resources, will exist in the development zone has ordered all real and potential resources, scientific combination utilization and effective protection reasonably, make its can be lasting sustainable land utilization and to realize the coordinated development of the three benefits of comprehensive development.

Travel demand differences on the basis of quantitative indicators can be classified into question, through the classification can be more objective understanding of the differences of different urban

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residents travel demand. From the method of point of view, has long been the traditional classification method of systematic clustering method, the decomposition method, join method, dynamic clustering method, orderly sample clustering method, the overlapping clustering method and fuzzy clustering method, etc., but most are supervised learning, prone to human subjectivity. In recent years due to the progress of the artificial intelligence, neuroscience, artificial neural network shows it step by step in the treatment of complex systems, especially with the person on the main areas of advantage. It has advantages of pattern recognition and classification as can effectively improve the classification of the objectivity of judgment, is a class of effective ways to solve classification problems. In the study of modern tourism management, with the constant improvement of the tourism economy quantitative level, makes many scholars began to use mathematical model to forecast the trend of the development of the tourism industry, tourists prediction is one of the important aspects. In this paper, we conduct research on the tourism resources development pattern effect evaluation based on regression analysis and neural network. In the later sections, we will discuss in detail [4-5].

![Figure 1. The Tourism Resources Development Pattern Principles.](image)

**The Proposed Methodology**

**The Regression Analysis.** Regression analysis and correlation analysis is the analysis of that two different methods. Correlation analysis has formed a set of theory, regression analysis, there is no complete theory can follow. Therefore science and technology workers cross application in solving the practical problems, to learn more and more complicated. Practice shows that regression analysis can only use right of return, etc. If use weighted regression analysis, the regression curve deviation is bigger. The main reason is that the data are often focused on the curve. Also a regression equation is very appropriate rights, such as analysis, weighted and then make the other end of the curve deviate from far away. In the existing statistics textbook, generally has the content of the Logistic regression model, but are often not content as the center, and the lack of detailed discussion about the method. Machine learning books though involved in Logistic regression, but no further discussion. Relevant monograph rarely at home and abroad. So it is necessary for the theoretical background and framework of the model a more in-depth discussion, in order to achieve reasonable application of the model and the regression function could be generally defined as follows [6].
If the response $y$ in the regression problem for binary feature will become a classification problem actually, the so-called binary classification problems and in order to make the problem more intuitive, suppose $y$ values to 0 or 1 as logistic regression is one of the effective methods to solve the problem of the binary classification and the function can be transferred into the follows.

$$
prob(y|x,w) = \frac{1}{\sqrt{2\pi}\sigma}\exp\left(-\frac{(y-w'x)^2}{2\sigma^2}\right)
$$

Model structure especially the cumulative model technique is very strong as should be in full understanding model theory background, the characteristic and the probability assumption under the premise of the particular case according to the practical problems in applications and data, select the appropriate model and reasonable structure, the use of effective cost function or likelihood function regression analysis, so as to ensure reasonable regression effect.

**The Neural Network.** In new prediction method and application of research and the research and development of the intelligent forecasting support system has made great achievements. In the new prediction method and application research, using the theory of neural network to forecast method and application of research work has a more outstanding performance. Which mainly includes the use of neural network was applied to predict time series prediction and the general method and application research, the neural network combination forecast method and application research.

![Figure 2. The Systematic Architecture of the Artificial Neural Network.](image)

Application Bagging technology, the network training set is composed of several examples were randomly selected from the original training focus, the size of the training set is often with the original training set, the training sample allows repeated selection, in this way, the original training focused on some example may focus appear multiple times in the new training, and some example could also not appear at the time. Neural network is integrated with a finite number of neural networks to learn the same question, this integration under an input output by integration of each individual neural network in the same input to the output. Weighted average method is used to synthesize the output as the output of neural network ensemble could be expressed as the formula 3.

$$
F_k = \sum_{i=1}^{n} \lambda_if_i
$$
set for training, in order to achieve the purpose of produce larger difference of network, the network was achieved by the choice of the training set of individual choice, the main disadvantage of this method is to build integrated network individuals tend to be more, using network integration to predict when a relatively large amount of calculation which can be expressed as follows [7].

\[ f_i = \sum_{i=1}^{N} w_i f_d \]  \hspace{1cm} (4)

Another aspect of genetic algorithm is used in ANN learning the weights of neural network with genetic algorithm are also is to use genetic algorithm to replace some traditional learning algorithms. The evaluation standards of basic learning algorithm are simplicity, plasticity and effectiveness. In general, a simple algorithm is not effective and the algorithm of plastic and not simple, and effective algorithm requires the specificity, perfection, which is in conflict with the plasticity, simplicity.

The Effect Evaluation. Because of the complexity of the tourism industry range and vagueness of the concept of competitiveness, the concept of tourism competitiveness and evaluation in industry and academia have not been able to get the unified. These methods use language description and basic questionnaire survey that more difficult to comprehensive express all kinds of factors in the tourism resources of contribution to the overall tourism value. Based on the multi-level fuzzy evaluation theory in fuzzy mathematics and the principle of maximum membership function and that complex multi-factor comprehensive evaluation of tourism resources of mathematic model, and applied. The calculation procedures and steps could be organized as the follows.

- The data collection. Indicators divided into objective indicators and subjective indicators. Objective indicators data directly from all kinds of statistical yearbook, statistics, or get the data again later.
- The statistical calculation of data. To solve the indexes of different dimension is difficult to make a comprehensive summary of the problem, after the complete data collection, but also to the original data with the measurement processing, namely dimensionless and to eliminate the influence of the dimension.

The Tourism Resources Development Pattern. Characterized by things in the evolution process of integrated form of various conditions as the so-called "conditions", both advantageous aspects also include the unfavorable aspects. The former is the apparent or potential of development advantages, the development of the latter is disadvantages or limitations.

Tourism resources is the first condition of tourism development, inappropriate development will make damage to tourist resources. Therefore, the protection of the basic tourism resources should be incorporated into the whole of tourism planning, from the height of the overall layout of the tourism development to the correct view of the protection of tourism resources. The planning to distinguish between the reasonable reserve or protection zone, by divided into different levels of protected areas to determine the reasonable degree of resources protection. Since the nature of the tourism resource development is innovation, so innovation and its relevant theories of economics, management and sociology should has a guiding significance for the development tourism resources. With the aid of these theories, combined with the science and technology method, tourism resources can be beyond the experience type development mode and blindness using stage, to the scientific development, efficient utilization, and sustainable development from listed perspectives [8].

- Free creative space is large, it is the premise of creating the product must be in harmony with the surrounding environment, and the coordination of the elasticity is larger. The difficulty is to must have sufficient material basis and relatively convenient geographic location.
- Has obvious availability, is advantageous for the development and utilization of rapidly, low cost, but it is a one-off or the irrefrangible. Therefore, unless as a last resort or predictable more comprehensive benefits, keep the resource value is the first condition of maintenance.
- Have good base will not necessarily naturally bring value transformation, in many cases, this kind of good foundation conditions are ignored or idle and cause the waste of resources.
Tourism industry is not only a covers the primary industry, and secondary industry and tertiary industry, composed of numerous industry group, and from different industries in the tourism industry in the order of the status, function and development of view, the industry shows the characteristics of obvious hierarchy distribution. The development and protection of tourism resources are connected with each other. One is the precondition of protection and development is the development, protection is in order to better develop tourism resources, is the basis and prerequisite for tourists in tourism activities, once destroyed, the tourism industry will lose dependent conditions that would be no development to speak of. Therefore, the protection is the current urgent task. Second, the scientific development is the foundation of protection, and is also the basis for the development of tourism. From the perspective of sustainable development, resource protection in the final analysis is in order to better development. Starting from development goal of the whole national economy investigation project for the national economic development and reasonable utilization of resources and the effect of eliminating has financial benefits and costs of transfer payment, clear external benefit and external cost of the project, adopt the method of quantitative analysis and qualitative description.

Conclusion
In this paper, we conduct research on the tourism resources development pattern effect evaluation based on regression analysis and neural network. Kohonen network model is composed of input layer and output layer to input layer used to receive input mode, the input layer through the weight vector of each neurons gathered outside information to output layer neurons. Output layer is also competition, distribution with discrete neurons and its arrangement has many forms, such as the one dimensional linear array, the two-dimensional plane and three-dimensional grid array. With this basis, in this paper, we integrate the regression analysis to finalize the tourism resources development pattern effect evaluation model that is innovative. In the future research, we will combine more related and new methodologies to enhance the current research result.

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