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Accurate Investment Evaluation Model of Power Grid Based on Improved Fuzzy Neural Inference

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Abstract. The role of in construction is very obvious, but there is a problem that the investment accuracy is not high. Previous audit investment methods could not solve the problem of accurate investment, and the evaluation ability projects was low. Therefore, this to improve the fuzzy neural reasoning method and construct an evaluation model for projects. Firstly, the fuzzy theory is used to plan the data, and the evaluation and collection division according to the project funds are used to reduce the uncertainty factors of investment analysis. Then, fuzzy theory will form the power grid investment planning, form an investment project evaluation set, and evaluate the data in the set for inference evaluation. MATLAB simulation shows that under the condition of a certain scale of investment projects, the evaluation accuracy and evaluation time of the improved fuzzy neural reasoning method are better than the previous audit evaluation methods.

Keywords: fuzzy theory · grid investment · investment evaluation · Investment projects

1 Introduction

Investment project evaluation is one of the important evaluation contents of investment and construction. However, in the actual investment management process, there is a problem of poor accuracy of investment projects, which brings certain economic losses to power enterprise [1]. Some scholars believe that the application of intelligent algorithms to the accurate can effectively analyze the risks of investment projects and provide corresponding support for investors [2]. On this improved algorithm for fuzzy neural reasoning, evaluates, and verifies the effectiveness of the model.

2 Related Concepts

2.1 Improve Mathematical Descriptions of Fuzzy Neural Reasoning

The fuzzy neural network inference algorithm uses fuzzy set theory the network, and according to the indicators, it deduces the risks faced by the power grid investment project, integrates the corresponding resources, and finally judges the feasibility of the

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computer investment project. The improved fuzzy neural network combines the advantages of fuzzy theory and uses the method of neural network inference to quantify, which can provide support for the improvement of accuracy [3].

Assumption 1: The scheme project is x_i, the scheme set project is $\sum x_i$, the evaluation index of investment project is y_i [4], and the evaluation scheme is $f(x_i)$ as shown in Formula (1).

$$f(x_i) = \sum x_i | y_i + \xi \tag{1}$$

The adjustment coefficient for projects is ξ mainly to reduce the influence of subjective factors and uncertain factors.

2.2 Selection of Investment Project Plans

Assumption 2: The evaluation function of investment project is $F(x_i)$ and the weight coefficient of investment project is w_i [5], then investment project scheme is shown in Formula (2):

$$F(x_i) = z_i \cdot f(x_i | y_i) + w_i \cdot \xi \tag{2}$$

2.3 Selection of Power Grid Investment Project Schemes

Before improving fuzzy neural reasoning, the investment project scheme should be analyzed discretely, and the scheme should be mapped to a two-dimensional plane to eliminate redundant data. First, the power grid investment plan is comprehensively analyzed, and the threshold and index weights of the scheme are set to ensure the accuracy of the power grid investment evaluation. The grid investment scheme is unstructured and needs to be standardized. If the grid investment plan is in a non-normal distribution, the evaluation results of its investment projects will be affected, reducing the accuracy of the overall assessment. In order to improve the accuracy evaluation and the level of investment project evaluation, the project plan should be selected, and the specific evaluation plan is shown in Fig. 1.

The data in Fig. 1 shows that scheme shows a discrete distribution, and the overall distribution form meets the requirements. The investment plan is not directional, and the wheel power grid investment scheme has strong randomness, so it is used as a later analysis and research. The investment scheme presents scattered characteristics, mainly fuzzy theory analyzes the investment scheme, removes duplicate and irrelevant data, and supplements the default scheme, so that the continuity of the data of the whole scheme is strong.

2.4 Strategies for Evaluating Power Grid Investment Projects

The fuzzy neural reasoning method adopts the heterogeneization strategy for power grid investment, and adjusts the corresponding parameters to realize the evaluation of distributed investment projects of power grid investment. The improved fuzzy neural

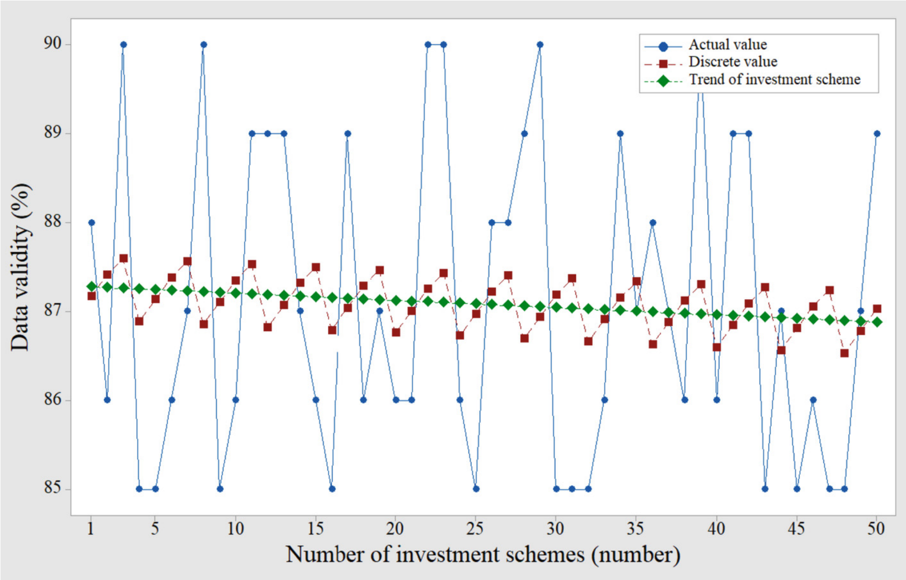

Fig. 1. Processing results of the plan

reasoning method divides grid investment into different types and adopts different investment project evaluation measurements. During the iteration process, different kinds of grid investments are obfuscated at the same time. After the obfuscation is completed, the investment project evaluation level of the scheme is compared, and the best grid investment plan is recorded.

3 The Case of Grid Investment

3.1 Introduction to Power Grid Investment Plan

In order to facilitate the evaluation, the scheme in is 65, the index is 12, and the test time is 12 days, and the specific evaluation scheme is shown in Table 1.

The investment scheme in Table 1 is shown in Fig. 2.

As from Table 1, the evaluation results of the improved fuzzy neural reasoning method are closer to the actual evaluation scheme compared with previous audit methods. In terms of evaluating the rationality and fluctuation range of scheme selection, the fuzzy neural reasoning method was improved in the previous audit method. From the curve changes in Fig. 4, it can be seen that the improved fuzzy neural reasoning method has better stability and faster judgment speed. Therefore, the investment project evaluation speed, power grid investment project evaluation, and summation stability of the fuzzy neural reasoning method are better.

Table 1. Relevant parameters of investment

Scale of investment projects	Short time	Number of investment options	Solution research
80 million–100 million	prophase	62	Questionnaires, interviews
	anaphase	71	Questionnaires, interviews
100 million–500 million	prophase	56	Questionnaires, interviews
	anaphase	76	Questionnaires, interviews
500 million–1 billion	prophase	53	Questionnaires, interviews
	anaphase	60	Questionnaires, interviews

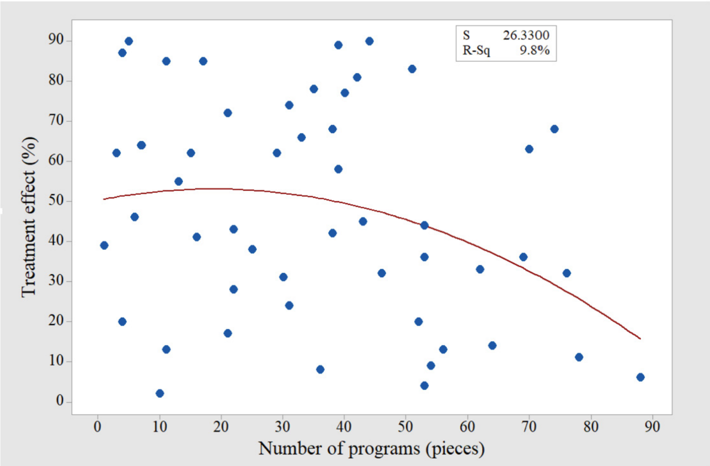

Fig. 2. The processing process of the power grid investment plan

3.2 Power Grid Investment

The project evaluation includes non-structural information, semi-structural information, and structural information. After the pre-selection of the reasoning method, the preliminary investment project plan are obtained Analysis of the feasibility of the investment project plan. In order to more accurately verify effect, select power grid investment in different time periods, which are: 80 million– 100 million and 500 million–1 billion, the data evaluation scheme, as shown in Table 2.

Table 2. Overall situation of grid investment plans

Time period	Scenario adjustment rate	Feasibility
80 million–100 million	94.21	90.63
100 million–500 million	90.00	90.16
500 million–1 billion	95.79	98.89
Mean	92.00 ± 4.21	94.74 ± 3.42
X2	84.212	87.377
P = 0. 031		

3.3 Accuracy and Stability of Investment Solutions

In order to verify the accuracy of the improved fuzzy neural reasoning method, the scheme is compared with the previous audit evaluation method, Fig. 3 that the accuracy of the improved fuzzy neural reasoning the previous audit evaluation method, but the error rate is lower, indicating that the evaluation of the improved fuzzy neural reasoning method is relatively stable Previous audit assessment methodologies have been uneven. Table 3 shows that the previous audit and evaluation methods had shortcomings in accuracy and stability in power grid investment, and the evaluation scheme changed significantly, and the error rate was high. The comprehensive results of the improved fuzzy neural reasoning method have a high accuracy and are better than previous audit evaluation methods.

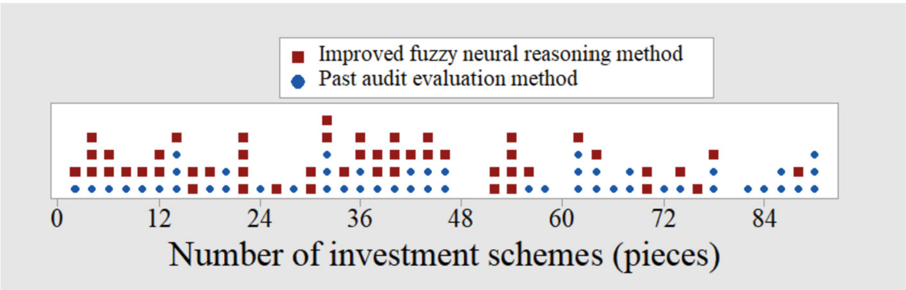

Fig. 3. The accuracy of different algorithms

The average scheme of the above three algorithms is shown in Table 3.

At the same time, the accuracy of the improved fuzzy neural reasoning method is greater than 90%, and the accuracy has not changed significantly. In of improving the fuzzy neural reasoning method. In the effectiveness, different methods are used to comprehensively analyze the evaluation, and the result 4 is shown.

Table 3. Comparison of investment project evaluation accuracy in the time period

Algorithm	Precision	stability	Error rate
Improved fuzzy neural reasoning methods	92.11	95.79	4.74
Previous audit evaluation methods	70.25	85.26	6.21
P	0. 012	0.021	0.023

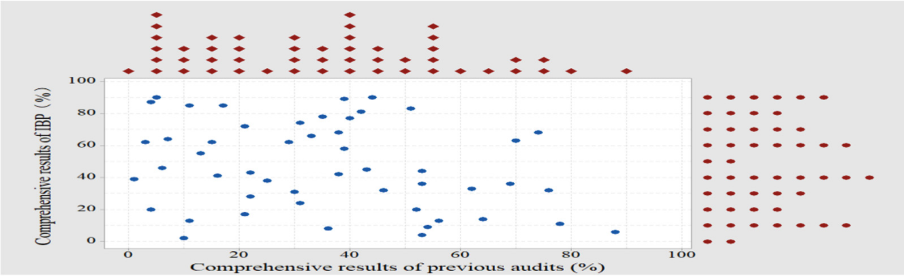

Fig. 4. Integrated programme for the evaluation of investment projects with different methodologies

4 Conclusion

In this paper, an reasoning method is proposed, and combined with fuzzy theory, the power grid investment is improved. At the departments and threshold standards analyzed in depth, and the planning and evaluation collection is constructed. This study shows that improving the fuzzy neural reasoning method can improve the accuracy and stability, and can evaluate the comprehensive investment project. However, in the process of investment evaluation, too much attention is paid to the project capabilities, resulting in a relative decline in the analysis between indicators.

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