

Research on an Intelligent Optimization Method for Highway Route Schemes

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Abstract

To accurately analyze and evaluate the comparison and selection of multi-index and multi-route highway route schemes and address the disadvantages of traditional scheme evaluations, we focus on the economic costs of construction and improve on previous qualitative and quantitative analysis. A comprehensive weight and intelligent selection algorithm are introduced into the optimization of highway route schemes. This paper presents an evaluation index system for highway route schemes based on the full life cycle and considering technology, the ecological environment, the social environment and the economy. We propose an evaluation system for highway route schemes based on a comprehensive weight. Additionally, an optimization method for highway route schemes based on the TOPSIS model is studied. Finally, the optimal highway route scheme is obtained by calculation. According to the results of the research, the construction of evaluation indexes directly influences the results of the scheme evaluation. When established operations, management and maintenance indexes are based on the full life cycle, the evaluation results are more accurate. In addition to avoiding the defects of a single weighting method, the comprehensive weight vector uses subjective data as well as expert opinion. In addition, the comprehensive weight vector introduces a preference coefficient so that analysts can determine a scheme based on the accuracy of subjective and objective information and requirements. This method uses a large number of evaluation populations to evaluate schemes, and the result is more objective.

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