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## Study on the Evaluation Framework System for Regional Comprehensive Transport Planning

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### Abstract

Evaluation is an important technical aspect of the Comprehensive Transport Planning. In this paper, the problems in the comprehensive regional transport planning evaluation system, studied the connotation and the concept of comprehensive transport planning evaluation, based on pre-implementation evaluation, the implementation of the process of evaluation and implementation evaluation, the paper put forward multidimensional evaluation framework system and evaluation index. Introduced an assessment idea based on a combination of the ordered weighted averaging (OWA) operator, evaluated the enforceability and expected results based on levels of AHP-Entropy (Analytic Hierarchy Process), given the right of fuzzy comprehensive evaluation and the gray relational grade and evaluated integrate some instances, provide a reference for regional transport planning. Comprehensive Transportation Planning, a systematic analysis of integrated transport planning situation and existing problems, the proposed use of the ideas and methods of transportation planning and systems engineering, means and framework of integrated transport planning and evaluation system, and comprehensive evaluation of transportation planning program, to establish a comprehensive transportation planning program evaluation index system from the program the user point of view, and for the different hierarchical evaluation by the introduction of combination evaluation method based on OWA operator. Through actual case model validation and analysis, validation built evaluation index system and evaluation methods and greater operability. Effect from the program can be implemented, the program is expected to build a system layer, the use of the degree of importance and qualitative analysis to do further screening evaluation index selection, the evaluation screening methods still exists some uncertainty and human factors, and how to select indicators more objective and reasonable remains to be further studied.

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## 1. Introduction

During the "Twelfth Five-Year" period, Transportation in China has entered the new stage of the coordinated development of multi-modal transport, and to build a modern integrated transport system to adapt to the characteristics of China's comprehensive transportation system planning, which caused the extensive attention. As an important stage of the integrated transport planning, evaluation and content optimization and decision feedback provide the basis for an important reference for the design of integrated transport. Evaluation optimizes and perfects the planning program through the feedback, which plays a fundamental role in adaptation between integrated regional transportation system and environment of economic resources, and in promoting the development of coordination between the various ways within the system, and in the traffic network system in line with the law of the distribution of passenger and cargo flow goals.

Abroad on integrated transport planning evaluation has been carried out some research: Hine (2000) proposed British GOMMMS transportation planning and evaluation system method, mainly concern for the environment, the land, and the way the convergence problem; Wu (2006) established the planning objectives and planning the two levels of transportation planning program evaluation in United States, to reflect the degree that transportation project planning program meets the social needs and the possibility of realizing the program, and presented requirements of the transport network reliability evaluation; Wang (2002) integrated transport planning in Japan in order to optimize the overall system and transportation network, so they put forward the accessibility and target indicator. Many domestic scholars also do some research about the single way traffic hub, channel planning evaluation: Zhu and other scholars take the Beijing-Shanghai high-speed rail planning as an example, to build the evaluation indicators system of high-speed rail interfacing to the hub; Some scholar defined the category of evaluation as four aspects (see, e.g. Jia et al., 2009): the play of transport function, economic and social adaptability, environmental constraints and resource integration; other scholars have been carried out some research about reasonable degree evaluation for the overall coordination of the development of an integrated transport system and the different modes of transport division. Transportation planning evaluation method has been explored by a number of scholars, the value function method, AHP; principal component analysis was applied in theory or practice.

To analysis the research about transportation planning evaluation, current domestic and international comprehensive transportation planning evaluation, especially the evaluation that covers the reasonableness of planning workflow, the action ability of the planning, mutual adaptation of traffic goals and regional development objective, and the coordination of internal structure and that the work time covered the whole process of the planning is still in the exploratory stage. Traffic hardware facilities and the technical evaluation of the underlying network is more mature, but systematic and comprehensive evaluation method of integrated transport planning programs still need to be further explored. Establish a scientific, systematic, and comprehensive transportation planning evaluation system for regional characteristics framework has an important role in safeguarding regional integrated transport system.

## 2. The connotation and framework of the Comprehensive Transportation Planning Evaluation System

Integrated transport planning contains physical and institutional planning, and accomplishes the planning step-by-step according to the progressive hierarchy; the evaluation should be based on objective analysis of connotation as a starting point. Rong (2010) proposed the coordination theory, the goal of integrated transport planning can be summarized as the coordinated development, including the development of coordination between the integrated transport system and the external environment, the various subsystems within the integrated transport system as well as the internal subsystems; Based on complex adaptive systems theory, in the planning implementation stage, there are basic characteristics of system between integrated transportation system and regional environmental dynamic evolution, such as co-evolution, alternately pulling and leading, and feedback controllability; The value stream theory stick to that the smooth flow of value is the basis for the coordination development of integrated transport system, circulation effect is largely affected by the circulation of value, integrated transport planning should focus on the implement of the program. Through theoretical analysis of the integrated transport planning target analysis and evaluation, this paper argues that the contents of the framework of integrated transport planning program evaluation should include two aspects: First, implement evaluation of the planning, including technical, economic,

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