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**SUNGHO CHO**

KISTEP, Korea, Republic of

## **VERIFICATION OF STATISTICAL RELIABILITY OF AHP OVERALL RATING AND MINIMIZATION OF WRONG DECISION-MAKING**

### **Abstract:**

As the size of investment in R & D investment has increased, the awareness of the efficiency of limited government fiscal enforcement has also increased, and a preliminary feasibility study has been conducted as a system to verify the feasibility of projects from the planning stage before large-scale financial investment. The preliminary feasibility study system examines technically, politically and economically feasibility of the R & D project that is planning large-scale government expenditure in three dimensions and derives comprehensive judgment by using the analytical hierarchical process (AHP) . Depending on the aggregate score of the AHP analysis, a single conclusion is presented to the fiscal authority or stakeholder in the form of binary decision making for the implementation or non-execution of the project. Therefore, not only the objectivity and fairness of the survey process and analysis method, but also the reliability of the survey results are the most important foundation and target for the operation of the system. AHP does not involve statistical or probabilistic concepts of aggregate ratings analyzed because it derives alternative conclusions on project implementation alternatives and non-project alternatives based on an aggregate rating of 0.5, meaning theoretically neutral. However, even if a plurality of experts participate in the AHP, the question of whether the opinion can be viewed as reflecting opinions of experts in the relevant field requires a statistical approach. In particular, when there is a conflict between the evaluators, It is necessary to consider aspects that are difficult to make an informed decision. In this paper, we discuss a method for verifying the reliability of the AHP comprehensive rating when choosing a single alternative, and a method for reducing judgment errors from a statistical point of view.

### **Keywords:**

Preliminary Feasibility Survey, Analytic Hierarchy Process, operational definition, confrontation of opinions, type I-error, type II-error, statistical significance test

**JEL Classification:** O32