Abstract

Multi-Criteria Decision-Making (MCDM) is one of the most widely used decision methodologies in the sciences, business, and engineering worlds. MCDM refers to screening, prioritizing, ranking or selecting the alternatives based on human judgment from among a finite set of alternatives in terms of multiple usually conflicting criteria. In this paper, we develop a new methodology for solving multi-Criteria decision-making problems. The hybrid between three methods are used, these methods are: Simple Multi-Attribute Rating Technique (SMART), ELimination Et Choix Traduisant la Réalité (ELECTRE) and The Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS). The SMART method is applied to determinate the weights for each of the criteria to reflect its relative importance. Here, the ELECTRE method which based on the concept of an outranking relationship is used. Also, the TOPSIS method to rank all of the alternatives and to determine the best alternative is used. Finally, an illustrative numerical example is given to evaluate performance of the new developed methodology, where program system MATLAB is being used to obtain the results.
References


Index Terms

Computer Science Information Sciences

Keywords
MCDM; SMART; ELECTRE; TOPSIS