

## An Information-Based Approach for Preference Method in Multi-Attribute Decision Making

**Authors :** Serhat Tuzun, Tufan Demirel

**Abstract :** Multi-Criteria Decision Making (MCDM) is the modelling of real-life to solve problems we encounter. It is a discipline that aids decision makers who are faced with conflicting alternatives to make an optimal decision. MCDM problems can be classified into two main categories: Multi-Attribute Decision Making (MADM) and Multi-Objective Decision Making (MODM), based on the different purposes and different data types. Although various MADM techniques were developed for the problems encountered, their methodology is limited in modelling real-life. Moreover, objective results are hard to obtain, and the findings are generally derived from subjective data. Although, new and modified techniques are developed by presenting new approaches such as fuzzy logic; comprehensive techniques, even though they are better in modelling real-life, could not find a place in real world applications for being hard to apply due to its complex structure. These constraints restrict the development of MADM. This study aims to conduct a comprehensive analysis of preference methods in MADM and propose an approach based on information. For this purpose, a detailed literature review has been conducted, current approaches with their advantages and disadvantages have been analyzed. Then, the approach has been introduced. In this approach, performance values of the criteria are calculated in two steps: first by determining the distribution of each attribute and standardizing them, then calculating the information of each attribute as informational energy.

**Keywords :** literature review, multi-attribute decision making, operations research, preference method, informational energy

**Conference Title :** ICMMAC 2017 : International Conference on Mathematical Modeling, Analysis and Computation

**Conference Location :** Amsterdam, Netherlands

**Conference Dates :** June 18-19, 2017