World Academy of Science, Engineering and Technology
International Journal of Industrial and Systems Engineering
Vol:18, No:06, 2024

A Data Envelopment Analysis Model in a Multi-Objective Optimization with Fuzzy Environment

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Abstract : Most of Data Envelopment Analysis models operate in a static environment with input and output parameters that are chosen by deterministic data. However, due to ambiguity brought on shifting market conditions, input and output data are not always precisely gathered in real-world scenarios. Fuzzy numbers can be used to address this kind of ambiguity in input and output data. Therefore, this work aims to expand crisp Data Envelopment Analysis into Data Envelopment Analysis with fuzzy environment. In this study, the input and output data are regarded as fuzzy triangular numbers. Then, the Data Envelopment Analysis model with fuzzy environment is solved using a multi-objective method to gauge the Decision Making Units' efficiency. Finally, the developed Data Envelopment Analysis model is illustrated with an application on real data 50 educational institutions.

Keywords : efficiency, Data Envelopment Analysis, fuzzy, higher education, input, output
Conference Title : ICOR 2024 : International Conference on Operations Research
Conference Location : Montreal, Canada
Conference Dates : June 13-14, 2024