World Academy of Science, Engineering and Technology
International Journal of Computer and Systems Engineering
Vol:8, No:09, 2014

Fuzzy Multi-Component DEA with Shared and Undesirable Fuzzy Resources

Authors : Jolly Puri, Shiv Prasad Yadav

Abstract : Multi-component data envelopment analysis (MC-DEA) is a popular technique for measuring aggregate performance of the decision making units (DMUs) along with their components. However, the conventional MC-DEA is limited to crisp input and output data which may not always be available in exact form. In real life problems, data may be imprecise or fuzzy. Therefore, in this paper, we propose (i) a fuzzy MC-DEA (FMC-DEA) model in which shared and undesirable fuzzy resources are incorporated, (ii) the proposed FMC-DEA model is transformed into a pair of crisp models using cut approach, (iii) fuzzy aggregate performance of a DMU and fuzzy efficiencies of components are defined to be fuzzy numbers, and (iv) a numerical example is illustrated to validate the proposed approach.

Keywords : multi-component DEA, fuzzy multi-component DEA, fuzzy resources, decision making units (DMUs)
Conference Title : ICCSAM 2014 : International Conference on Computer Science and Applied Mathematics
Conference Location : Singapore, Singapore
Conference Dates : September 11-12, 2014