Fuzzy DEA Efficiency Ranking Model

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Abstract

In recent years because of increasingly competitive business environment, performance evaluation has received increased attention. Data Envelopment Analysis (DEA) is one of the widely applied models for performance evaluation. Combining fuzzy theory and DEA cannot only reduce the errors resulting from subjectivity and inconsistency of human judgment, but simultaneously evaluate data qualitatively and quantitatively as well. In previous model of Fuzzy DEA presented by scholars, efficiency value of DMU (decision-making unit) will not exceed 1 because the efficiency value derived is expressed in fuzzy interval and the upper bound is confined to 1. As the efficiency interval is restricted from 0 to 1, error may occur during evaluation process for a DMU.
The paper attempts to lift the restriction of upper bound of efficiency value interval as 1 to allow efficiency value potentially exceeding 1 and thus restoring the efficiency value back to original interval.
Accordingly, revised Fuzzy DEA model will allow performance evaluation to be more fair and accurate.

Keyword：Fuzzy sets, DEA, Efficiency, Ranking