

**Controlling Factor Weights in Data Envelopment Analysis
by Incorporating Decision Maker's Value Judgement:
An Approach Based on AHP**

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Abstract

Due to the factor weight flexibility of the DEA (Data Envelopment Analysis) model, a DMU may assign very low factor weight values to some of its unfavorable inputs and outputs and appear as efficient, thus producing nonsensical results in some cases. A common approach to control this factor weight flexibility is to use the averages of weights calculated from the DEA model as bounds for the weights. This article shows that this approach produces results which are similar to the unbounded DEA and it does not seek a proper solution to the underlined problem. We propose a methodology based on the Analytic Hierarchy Process (AHP) for controlling the factor weight flexibility by imposing the decision maker's feel about the relative importance of input-output factors. A decision maker's preference structure on inputs and outputs is imposed into the DEA model using a numerical example and it is shown that more sensible results could be obtained by the proposed methodology.

Keywords: DEA, Efficiency, Education.