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Review of efficiency ranking methods in data envelopment analysis

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Abstract

This paper reviews the literature on the ranking of data envelopment analysis (DEA) in order to increase the discrimination power of this analytical technique. The methods covered by this review are organized into 10 categories based on their structure, and they include those approaches published up to 2016. The paper then describes the advantages and disadvantages of each approach. Many of the numerous DEA ranking methods in the literature are considered to be post-analysis approaches. Of these, some have the advantage of using a relatively simple process to generate accurate results, whereas others achieve a similar accuracy level with more complex procedures. Moreover, a number of these ranking methods are customized to deal with a specific dataset, and thus, not necessarily applicable to all DEA problems. These findings allow us to conclude that DEA evaluation relies heavily on input by decision makers, who should select their preferred ranking method carefully. The discussion and the findings of this paper can be used as a guideline to analysts to determine the best fit ranking method when DEA evaluation is applied to any dataset.

Keywords: Data envelopment analysis (DEA); ranking; discrimination power; virtual DMU; decision-making unit.

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