

## **A Super-Efficiency Model for Evaluating Efficiency in the Presence of Time Lag Effect**

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**Abstract :** In many cases, there is a time lag between the consumption of inputs and the production of outputs. This time lag effect should be considered in evaluating the performance of organizations. Recently, a couple of DEA models were developed for considering time lag effect in efficiency evaluation of research activities. Multi-periods input(MpI) and Multi-periods output(MpO) models are integrated models to calculate simple efficiency considering time lag effect. However, these models can't discriminate efficient DMUs because of the nature of basic DEA model in which efficiency scores are limited to '1'. That is, efficient DMUs can't be discriminated because their efficiency scores are same. Thus, this paper suggests a super-efficiency model for efficiency evaluation under the consideration of time lag effect based on the MpO model. A case example using a long-term research project is given to compare the suggested model with the MpO model.

**Keywords :** DEA, super-efficiency, time lag, multi-periods input

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