

## ABSTRACT

**AN INEFFICIENCY MEASUREMENT METHOD  
FOR MANAGEMENT SYSTEMS**

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This paper at first, proposes a new method "Inverted Data Envelopment Analysis(Inverted DEA)" for measuring the relative inefficiency of a set of systems (Decision Making Units). By applying this method, we can identify the relative inefficiency factors of each decision making unit (DMU). The method has, in a sense, an inverse relation with Data Envelopment Analysis (DEA) developed by Charnes, Cooper and Rhodes. More precisely, our proposed measure of the inefficiency of any DMU is obtained as the maximum of a ratio of weighted inputs to weighted outputs subject to the condition that the similar ratios for every DMU be less than or equal to unity.

Secondly, we propose a method to classify DMUs by integrating the information from DEA and Inverted DEA. This method can find the singularity of DMUs. Finally, we show the practicability and effectiveness of the classification method by using real financial and business activity data of the branches of a Japanese department store.