

## New way to select multiple suppliers for a supply chain

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### **Abstract**

Supplier selection has received extensive attention in supply chain management. This investigation assumes that  $K$  candidates are being considered using a given set of independent performance evaluation indices. Each candidate can either be selected or excluded. The total number of possible supplier composites that can be selected is  $2^K$ , and the sum of the values of an assessment index of the suppliers in a composite is the index value of that composites. Data Envelopment Analysis (DEA) is applied to assess all  $2^K$  composites. This investigation presents a novel procedure for selecting 'efficient' composites from the  $2^K$  composites. Sensitivity analysis is also performed on each supplier index value. This result captures differences in the competition indices of suppliers that allow them to rapidly respond to the dynamic environment. In their tolerance, the managers will change the to-be-minimized values or to-be-maximized values to realize all the suppliers that are too unstable. These results can be used to enhance and alter decisions.

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*Keywords* : *Data envelopment analysis (DEA), decision-making unit (DMU), decision composite unit (DCU), sensitivity analysis.*

### **1. Introduction**

The increasingly competitive global business environment not only requires more efficient use of supply chain resources to coordinate

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