

# **Supplier selection and evaluation decision considering environmental aspects**

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### **Abstract.**

Supplier assessment is widely studied in the literature as it is an important means of managing supplier relationships. Based on literature results our paper examines the extension of the vendor evaluation methods with environmental, green issues. This generalization means an extension of the traditional criteria and weight system of the supplier evaluation methods. As green issues are getting recognition in purchasing and supply management, the literature is rapidly growing on how to develop green supplier evaluation systems. Studies focus on evaluation criteria and on evaluation methods. Since the 90's the environmental criteria were widely investigated. Evaluation methodology also receives substantial attention in literature: several assessment methods were developed to incorporate green aspects in supplier management decisions. However it is still the weighted points method, which is mostly used by practitioners.

In our paper the method of Data Envelope Analysis (DEA) is used to study the extension of traditional supplier selection methods with environmental factors. The selection of the weight system can control the result of the selection process. Our goal is to choose such weights which affect the results of the selection process. In this method we divide the criteria in two manners: the traditional and environmental (green) factors. Then with the help of DEA we are searching a weight system with which the environmental criteria can influence the decision with a representation of the green factors. In our study we look for a weight system to determine the environmental factors, as an important decision factors. To choose the mentioned weight system, we apply DEA (Data Envelopment Analysis) with common weights analysis (CWA) method. In this case of DEA/CWA the common weights are calculated with a linear programming problem. The classical DEA requires to solve so many linear programming, as the number of the decision making units, but method DEA/CWA requires only one programming model.

*Keywords:* Green supplier assessment, DEA, Common weights analysis, Multi-criteria decision making

### **Absztrakt.**

A dolgozat a beszállító értékelés kiterjesztését tárgyalja a fenntarthatóság figyelembe vétele mellett. A súlyozott pontrendszer módszerének hiányosságai miatt más módszerek felé irányul. A DEA módszerén alapuló common weights analysis (CWA) rendszert ajánljuk a beszállítók összehasonlítására. Ez abban különbözik a klasszikus DEA-tól, hogy ekkor minden beszállítót egyenlően vesszük figyelembe a hatékonyság megállapításánál. Ez teszi lehetővé, hogy közös súlyokat állapítsunk meg.

*Kulcsszavak:* Zöld beszállító értékelés, DEA, Common weights analysis (CWA),  
Többkritériumos döntés

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