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基于自组织神经网络和DEA的采购拍卖获胜者确定问题模型

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Procurement auction WDP model based on SOM and DEA

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摘要 针对采购拍卖中存在的品种多、数量大、利润差异大以及评价指标体系不合理等特点, 首先在供应商投标后利用自组织神经网络和分包算法对供应商投标进行约减, 以提高包内物品相似度、均衡供应商之间的竞争性、降低胜者确定问题算法的复杂度; 接着利用数据包络分析中的C^2R模型对"约减"后的投标进行相对评价并确定最终获胜供应商, 以解决传统指标体系评价方法中假设属性间不相关以及人为设定权重等不足. 该模型为采购拍卖胜者确定问题的解决提出了新的思路, 具有很好的实用性.

关键词: 采购拍卖 自组织神经网络 分包 胜者确定问题 数据包络分析

Abstract: There are some features existing in the procurement auction, for example huge number, multi-species, profit differences and irrational evaluation index systems. To solve these problems, this paper proposed the following model.Firstly, after vendors finishing biddings, we adopted self-organizing map (SOM) and bundle algorithm to simplify the vendors' biddings. This can enhance the goods' similarity within the bundles, balance the competition among suppliers, and reduce the complexity of the Winner Decision Problem (WDP) algorithm.Then, using the C^2R model in Data Envelopment Analysis (DEA), we conducted a relative evaluation of simplified biddings and determined the final winner supplier. This can solve the problem of the uncorrelated property assumption and artificial weights in traditional evaluation index system method. Our model provides a new idea for WDP in the procurement auction. It has a good practicability.

Key words: procurement auction SOM bundle WDP DEA

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