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Multi-criteria decision model for selecting repair contracts by applying utility theory and variable interdependent parameters.

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Summary: The selection of contracts is a very important stage for the process of outsourcing maintenance in the current trend towards reducing costs and increasing competitiveness by focussing on core competences. The prominence of this theme can be seen in many studies carried out on outsourcing repair and maintenance contracts, most of which deal with qualitative aspects. However, quantitative approaches, such as multi-criteria decision aid, play an important role in helping decision makers (DMs) to deal with multiple and conflicting criteria and uncertainties in the selection process for outsourcing contracts. In this context, several decision models have been developed using different multi-criteria methods. This paper presents a multi-criteria methodology to support the selection of repair contracts in a context where information is imprecise, when DMs are not able to assign precise values to importance parameters of the criteria used for contract selection. Utility functions are integrated with the variable interdependent parameters method to evaluate alternatives through an additive value function regarding mean time to repair, contract cost, the geographical spread of the candidate's (bidder's) service network, the candidate's reputation and the compatibility of company cultures. To illustrate the use of the model, a numerical application is presented.

Keywords: utility theory; repair contract; multi-criteria method
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