可靠性

考虑随机性的可靠性与性能多属性决策方法

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摘要： 提出一个考虑可靠性置信区间性能与可靠性的多属性综合决策方法.建立了备选方案到正、负理想决策方案的随机距离函数及随机相对距离函数.依据随机相对距离函数确定备选方案相对优势的可能度矩阵,依据可能度矩阵对各备选方案给出具有定量决策风险的优先排序决策.通过某机载设备竞标方案决策案例,对模型进行了验证.

关键词： 多属性决策 可靠性 随机性 置信区间

Stochastic multi-attribute decision making method of performance and reliability

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Abstract: A multi-attribute decision making method of performance and reliability considering reliability confidence interval is proposed.The random relative distance functions of alternatives to the positive and negative ideal schemes are established,the alternatives' relative priority possibility matrix is determined according to the random relative distance function,then the alternatives' priority is given with quantitative risk.Finally,the model is applied to an on-board equipment bidding decision case.

Keywords: multi-attribute decision making reliability stochasticality confidence interval

扩展功能

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参考文献：

[1] Jones J,Hayes J.A comparison of electronic reliability prediction models[J].IEEE Trans.on

Reliability,1999,48(2):127-134.

[2] Vaidya O S,Kumar S.Analytic hierarchy process:an overview of applicatigns[J].European Journal of Operational Research,2006,169:1-29.

[3] Hwang C L,Yoon K.Multiple attribute decision making-methods and applications:a state-of-the-art survey[M].New York:Spring-Verlag,1981.

[4] Zhang J J,Wu D S,Olson D L.The method of grey related analysis to multiple attribute decision making problems with interval numbers[J].Mathematical and Computer Modeling,2005,42:991-998.

[5] Matos Manuel A.Decision under risk as a multi-criteria problem[J].European Journal of Operational Research,2007,181:1516-1529.

[6] He Y,Huang R H.Risk attributes theory:decision making under risk[J].European Journal of Operational Research,2008,186:243-260.

[7] Maciej N.Preference and veto thresholds in multi-criteria analysis based on stochastic dominance[J].European Journal of Operational Research,2004,158:339-350.

[8] Maciej N.INSDECM-an interactive procedure for stochastic multi-criteria decision problems[J].European Journal of Operational Research,2006,175:1413-1430.

[9] 姚升保,岳超源.基于综合赋权的风险型多属性决策方法[J].系统工程与电子技术,2005,27(12):2047-2050.(Yao Shengbao,Yue Chaoyuan.Method for multiple attribute derision-making under risk based on synthetic weighting[J].Systems Engineering and Electronics,2005,27(12):2047-2050.)

[10] 王坚强,任剑.基于WC-OWA算子的随机多准则决策方法[J].控制与决策,2007,22(12):1429-1432.

[11] 徐泽水.对方案有偏好的三角模糊数型多属性决策方法研究[J].系统工程与电子技术,2002,24(8):9-12.(Xu Zeshui.Study on method for triangular fuzzy number-based multi-attribute decision making with preference information on a iternatives[J].Systems Engineering and Electronics,2002,24(8):9-12.)

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2. 邢会歌1,王卓甫1,尹红莲1,2 ·基于DEA的决策单元排序方法研究[J]. 系统工程与电子技术, 2009,31(11): 2648-2651

3. 常 琦,袁慎芳·飞行器综合健康管理(IVHM)系统 技术现状及发展[J]. 系统工程与电子技术, 2009,31(11): 2652-2657

4. 董 岳,于永利,张 柳,封会娟,薛文力·装备保障对象系统任务持续性模型研究[J]. 系统工程与电子技术, 2009,31(11): 2785-2788

5. 李春洋,陈 循,易晓山,陶俊勇·基于马尔可夫过程的 k/n (G)系统共因失效分析[J]. 系统工程与电子技术, 2009,31(11): 2789-2792

6. 司艳杰，魏法杰·基于直觉模糊优选模型的混合型多属性决策[J]. 系统工程与电子技术, 2009,31(12): 2893-2897