Time/resource trade off in the robust optimization of resource-constraint project scheduling problem under uncertainty / Zhe Zhang, Xuejuan Zhong

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Deskripsi Lengkap: https://lib.ui.ac.id/detail?id=20479577&lokasi=lokal

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Abstrak

ABSTRACT
This paper focuses on the robust resource constrained project scheduling problem (RCPSP) with discrete time/resource trade offs, in which activity duration and resource are uncertain variables. Combining flexible RCPSP (FRCPSP) with robustness, a discrete mathematical model is developed and resource leveling problem objective is considered to describe the flexible resource allocation comprehensively. In addition, surrogate measures are also introduced, providing an accurate estimate of the schedule robustness. Priority based heuristic methods and resource assignment heuristic are employed to generate and modify the priorities of selected activities, meanwhile obtain the different executing modes. Furthermore, each surrogate measure is compared according to the scheduling performance through the computational experiments. The practicability of proposed multi objective mathematical model and the efficiency of algorithm are verified by a numerical example. Finally, the performance analysis is also presented by the robustness assessment, and the results prove that the proposed approach is more effective than the traditional one.