PENALTY MINIMIZATION JOB SHOP SCHEDULING UNDER UNCERTAINTY

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ABSTRACT

In this study, a penalty minimization job-shop scheduling model under uncertainty is developed. The model considers a job-shop of J jobs and M machines. Each task has a random duration with a specific probability distribution. Each job has a specific due date and the bulk penalty if it is not delivered on time. An additional penalty must be paid for each time unit of delay.If any job is accomplished early, it will cost holding expenses. The problem is to determine the optimal start times of each task to minimize the expected penalties. A numerical problem has been solved to minimize both the makespan and total penalties separately and a comparison between results was done. Analysis of the results prescribed that optimizing penalties is important to be taken into consideration besides considering the uncertainty in JSSP.

KEYWORDS: *Job-Shop Scheduling; Optimization; Uncertainty; @Riskoptimizer*