

# **Solving flexible job-shop scheduling problem with transfer batches, setup times and multiple resources in apparel industry**

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## **Abstract**

Apparel industry is characterized by the presence of flexible job-shop systems that have been structured to manufacture a wide range of customized products. However, Flexible Job-shop Scheduling is really challenging and even more complex when setup times, transfer batches and multiple resources are added. In this paper, we present an application of dispatching algorithm for the Flexible Job-shop Scheduling Problem (FJSP) presented in this industry. Days of delay, throughput, earlier date and monthly demand are used as rules of operation selection. A case study in apparel industry is shown to prove the validity of the proposed framework. Results evidence that this approach outperforms the company solution and other algorithms (PGDHS and HHS/LNS) upon reducing average tardiness by 61.1%, 2.63% and 1.77% respectively. The inclusion of throughput in the model resulted in low tardiness for orders with high speed to make money. Promising directions for future research are also proposed.

## **Keywords**

Apparel industry, Dispatching algorithm, Flexible job-shop scheduling problema, Setup times, Throughput, Transfer batche