

New Batch Construction Heuristics to Optimize the Performance of Order
Picking Systems

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Abstract

Two new batch construction heuristics called K-means Batching (KMB) and Self-organisation Map Batching (SOMB) are developed and verified by simulation experiments. Both KMB and SOMB have a preference of superior performance in total travel distance and average picking vehicle utility, and even a conspicuous improvement in total CPU running time. Besides, this paper investigates the overall performance of order picking systems integrating storage assignment, order batching and picker routing to find the optimal policy combinations under different order types. The sensitivity analysis is performed to distinguish the relative importance of the various strategies to enhance the performance of operations management.

Keyword : Operations management, Storage assignment, Order batching, Picker routing, Order type