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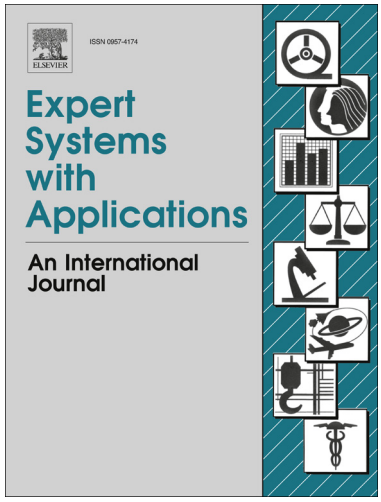

A Contrastive Study of the Stochastic Location-Inventory Problem with Joint Replenishment and Independent Replenishment

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A Contrastive Study of the Stochastic Location-Inventory Problem with Joint Replenishment and Independent Replenishment

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Abstract: A practical and novel location-inventory problem (LIP) with stochastic demand is firstly studied by implementing two replenishment policies, joint replenishment (JR) and independent replenishment (IR). In previous research, the integrated JR and location policy were considered scarcely, and heuristics are used to obtain satisfactory solutions. Intelligent algorithms are designed to solve the proposed LIP. Computational results of example 1 show the effectiveness of these algorithms. Results of extended LIPs suggest that JR policy can obtain better solutions than IR policy. The sensitive analysis of cost parameters reveals their different effects on different policies and provides interesting managerial insights.

Keywords: Stochastic demand; Location-Inventory Problem; Joint replenishment; Independent replenishment; Differential evolution algorithm

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