

## Design and Optimization of Open Loop Supply Chain Distribution Network Using Hybrid K-Means Cluster Based Heuristic Algorithm

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**Abstract :** Radio frequency identification (RFID) technology has been attracting considerable attention with the expectation of improved supply chain visibility for consumer goods, apparel, and pharmaceutical manufacturers, as well as retailers and government procurement agencies. It is also expected to improve the consumer shopping experience by making it more likely that the products they want to purchase are available. Recent announcements from some key retailers have brought interest in RFID to the forefront. A modified K- Means Cluster based Heuristic approach, Hybrid Genetic Algorithm (GA) - Simulated Annealing (SA) approach, Hybrid K-Means Cluster based Heuristic-GA and Hybrid K-Means Cluster based Heuristic-GA-SA for Open Loop Supply Chain Network problem are proposed. The study incorporated uniform crossover operator and combined crossover operator in GAs for solving open loop supply chain distribution network problem. The algorithms are tested on 50 randomly generated data set and compared with each other. The results of the numerical experiments show that the Hybrid K-means cluster based heuristic-GA-SA, when tested on 50 randomly generated data set, shows superior performance to the other methods for solving the open loop supply chain distribution network problem.

**Keywords :** RFID, supply chain distribution network, open loop supply chain, genetic algorithm, simulated annealing

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