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A new mathematical modeling and a genetic algorithm search for milk run problem

The idea of milk run has been used in the context of logistic and supply chain problems in order to manage the transportation of materials. In this paper, we propose a new milk run method, as a mixed integer approach, to manage supply chain problems. Since the resulted problem formulation is NP-hard we use some meta-heuristic and compare the results with the optimal solutions of the proposed milk run method. The mathematical modeling of this paper is purposely customized for a special case of an auto industry. We implement the mathematical formulation and the meta-heuristic using some actual data and compare the results with the current strategy. The preliminary results indicate that the proposed method could provide a practical tool to significantly reduce the cost of logistic.