Modeling and optimization of four-level integrated supply chain with the aim of determining the optimum stockpile and period length : sequential quadratic programming / Abolfazl Gharaei, Seyed Hamid Reza Pasandideh

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Abstrak

ABSTRAK
In this paper, we modelled a multi-product four-level integrated supply chain network problem consisting of a supplier, a producer, a wholesaler, and multiple retailers. The aims of this paper are both to find the number of optimum stockpiles in each level and the optimum period length such that the total cost of the chain is minimized while constraints such as limited procurement cost, limited space, and limited ordering cost are satisfied. Mentioned problem is a large non linear programming problem so a developed sequential quadratic programming (SQP) is used to solve the problem. Next, three numerical examples are solved in order to demonstrate the applicability of the proposed methodology and also to evaluate the performance of SQP. At the end, a sensitivity analysis is performed on the change rate of the integrated objective function obtained based on the change rate of the period length.