Mixed Binary Integer Programming Formulation for the Two-Echelon Supply Chain System with Two Customer Locations

Jen-Shiang Chen

Takming University of Science and Technology

Abstract

Coordinating works between production and delivery is a crucial issue for the management of production and logistics. This study developed a single machine scheduling model that incorporated delivery vehicle routing decisions and serves two customer locations. The objective was to minimize the mean arrival time. The problem is NP-hard in the strong sense in general. A mixed binary integer programming (BIP) model was developed to optimally solve this problem. In addition, computational results of the illustrative example are reported using the mixed BIP model to solve the proposed problem.

Keywords: Scheduling, single machine, arrival time, supply chain, mixed binary integer programming.