

Developing a New Model of Supplier Selection and Lot-Sizing for Disruptive Supply Chain Network under Uncertainty

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Abstract

To achieve the competitive superiority, companies must provide the sources and deliver the produced products with high efficiency, high quality and low cost. To this end, firms must offer products according to changes in customer demands, and they must resolve drawbacks in the network from suppliers to end customers. Supplier selection with order quantity and network designing are known as two main streams in the SCM context. In this paper, two models are developed based on order quantity with supplier selection problem. The problem is related with supplying the products' items (component) from the right suppliers (supplier selection), with the most economical costs (determining the order quantity), producing in the optimal quantities (determining the lot-size of the products), delivering the final products in the most appropriate quantities to the sellers (determining distribution quantity) by considering the possible disruption rate between layers. Then, to encounter with uncertain situation of real cases, we present two fuzzy linear programming models for described problem. For solving proposed linear programming problems where all the coefficients are, in general, fuzzy numbers, we applied a possibilistic linear programming approach. In order to demonstrate the significance and applicability of the proposed model as well as the usefulness of the proposed solution approach, case study is conducted in wood industry.

Keywords

Supplier selection, Order quantity, Possibilistic Linear Programming, Supply network design

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