

## A special discount strategy for supplier selection and order allocation

### ABSTRACT

In this paper, we consider a special discount where: (1) the price breaks depend on the size of the order quantities, (2) independent products' sales volume affect the prices and discounts of the other products and (3) all products must be sold as a bundle. In this circumstance, which the buyer wants to buy multi-product and suppliers also offer the special discount, the problem becomes more complicated. To formulate the problem, multi-objective mixed integer linear programming (MOMILP) is used to define the optimum quantities among the selected suppliers. The problem includes the three objective functions: to minimize the inverse Total Value of Purchasing (TVP), the total cost and total defect rate, while satisfying capacity and demand requirement constraints. In order to solve the model, a single objective function is used that considers relative importance of the goals. A numerical example is given to illustrate how the multi-objective model is applied.

**Keyword:** Supplier selection; Multi-product; Special discount; MOMILP; Relative importance of the objectives