ABSTRACT

The importance of supplier selection and order allocation has given the advantage to manufacturer to improve the flow of supply chain and reduce cost. Although, recent several studies have been accomplished to incorporate environmental sustainability for supplier selection, but there is still much less attention to consider the supply risk. In this study, those aspects will be taken into consideration. Sustainability has been considered as the most decisive criteria for selecting the most suitable supplier. For supplier selection, AHP analysis is used to determine the weight of supplier based on supplier evaluation of environmental criteria. For order allocation, multi-objective linear programming (MOLP) is proposed to determine the initial order allocation considering the aspect of economic and environmental criteria, which the objective function consists of minimizing total purchasing cost and maximizing supplier evaluation. Then, risk management is used to mitigate supply risk by transferring the product from risky supplier to a least risky supplier. The problem of supplier selection and order allocation is applied to PT. Yoska Prima Inti, an automotive component manufacturer. There are 4 suppliers and 5 materials to be analyzed in determining the supplier selection and order allocation. Result shows, for the supplier selection, based on the assessment of environmental criteria, supplier 4 is the best supplier, followed by supplier 3, supplier 2, and supplier 1. Then, for the order allocation, the optimum order allocation is obtained. The last, based on supply risk criteria, the optimum revised order allocation is obtained corresponding to risk rating.

Keywords: Sustainabile Supplier Selection, Order Allocation, AHP, MOLP, Risk Management

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