

A soft time-windowed mechanism for vendor selection model

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Abstract

This paper presents a vendor selection model for buyers practicing Just-in-time management strategy. Five vendor evaluation criteria including quality, delivery, net price, geographical location, and production capacity are utilized for the selection of vendors and determination of associated purchasing quantities. A soft time window mechanism is incorporated to allow purchased parts been delivered within a grace period of time with a specified penalty function. A mixed-integer programming model is developed for this vendor selection problem. The proposed model encourages the buyer to select vendors capable of providing quality in-time products which will minimize the total cost of purchasing, quality, transportation, and penalty charge for violating the delivery time window. An illustrative example is given to demonstrate the implementation of the time-window model.

Keywords: *Vendor selection; JIT purchasing, mixed-integer programming; soft time window*