INNOVATIVE APPLICATION OF OPTIMIZATION IN SUPPLY CHAIN MANAGEMENT

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ABSTRACT

The differential evolution approach has become a promising optimization technique in recent decades. It has been successfully applied to solve various problems in science and engineering fields; however, few applications have been addressed in the domain of supply chain management. In this paper, an improved DE approach is proposed for the aggregate planning problem in a supply chain. The approach comprises an improved DE variant with a winner-based constraint handling mechanism called the winner-based constrained differential evolution. To test the performance of the approach, it is verified and compared with most commonly used DE approaches. The experimental study shows that the winner-based constrained differential evolution possesses particular qualities in convergence, accuracy, and reliability for the aggregate planning problem in supply chains.

KEYWORDS: Supply Chain Management, Operations Management, Aggregate Planning, Differential Evolution