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An Effective Lateral Transhipment Model for A Multi-Location Inventory Setting to Minimize Stockouts

A.G.K.C. Kumari
Dept. of Industrial Management
University of Kelaniya, Sri Lanka
komudyaz.7@gmail.com

A. N. Wijayanayake*
Dept. of Industrial Management
University of Kelaniya, Sri Lanka
anni@kln.ac.lk

D. H. H. Niwunhella
Dept. of Industrial Management
University of Kelaniya, Sri Lanka
hirunin@kln.ac.lk

Abstract **- Managing inventory levels to ensure on-shelfavailability of products is a challenge that retailers face ona daily basis. Even though it is desirable to have additional inventory to ensure the availability of products, it increases the inventory holding cost. Hence, retailers use lateral transhipment as a method to redistribute inventory from a location which has excess inventory to another outlet which faces / will face stockouts. This paperproposes a mathematical model to minimize the total costthrough proactive lateral transhipment while reducing the stockouts, significantly. A multi-item, multi-location inventory system was considered, and a cost minimization model was developed based on the tradeoff between the potential gain and the transhipment cost. The model was implemented using Python programming language and validated using a real-world data set from one of the leading supermarket chains. The results from the model have shown that it can reduce the total cost and stockout occurrences significantly.**

Keywords**—inventory management, lateral transhipment, proactive transhipment, retail industry**