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Solving the vendor-buyer integrated inventory system with arithmetic-geometric inequality

Cárdenas-Barrón, L.E.[a,b,e], Wee, H.-M.[c], Blos, M.F.[d]
[a]Department of Management, School of Business, Instituto Tecnológico y de Estudios Superiores de Monterrey, ITESM, Campus Monterrey, Mexico
[b]Department of Industrial and Systems Engineering, School of Engineering, Instituto Tecnológico y de Estudios Superiores de Monterrey, ITESM, Campus Monterrey, Mexico
[c]Department of Industrial Engineering and Systems Engineering, Chung Yuan Christian University, Chungli 32023, Taiwan

In the past, economic order quantity (EOQ) and economic production quantity (EPQ) were treated independently from the viewpoints of the buyer or the vendor. In most cases, the optimal solution for one player was non-optimal to the other player. In today's competitive markets, close cooperation between the vendor and the buyer is necessary to reduce the joint inventory cost and the response time of the vendor-buyer system. The successful experiences of National Semiconductor, Wal-Mart, and Procter and Gamble have demonstrated that integrating the supply chain has significantly influenced the company's performance and market share (Simchi-Levi et al. (2000) [1]). Recently, Yang et al. (2007) [2] presented an inventory model to determine the economic lot size for both the vendor and buyer, and the number of deliveries in an integrated two stage supply chain. In this paper, we present an alternative approach to determine the global optimal inventory policy for the vendor-buyer integrated system using arithmetic-geometric inequality. © 2010 Elsevier Ltd.

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