Solving and modeling a stochastic multiproduct vendor managed inventory problem with defective items

Khashayar Amirhosseini, author

Abstrak

ABSTRACT
This paper proposes a multi-product Vendor-Managed Inventory (VMI) supply chain inventory model by considering defective items. In this way, vendor purchases different kinds of products from a remote supplier and then delivers them to the retailer. On the other hand, delivered batches have some imperfect items while there is no access to the supplier to replace them. Consequently, there are two options to face imperfect items in order to satisfy the demand, buy or repair. Additionally, some innovations and contributions in this paper are Join Replenishment Policy, all units discount, different alternatives for shipping goods and backlogging shortage. They result in a novel VMI model that is as close as possible to the real world. Since, the proposed problem was NP-complete, two evolutionary algorithms are developed to solve it, Genetic Algorithm (GA) and imperialist Competitive Algorithm (ICA). After calibrating their main parameters by Taguchi approach, their performance is compared by solving numerical examples.