Apisit Wiwatyotinchai 2011: Genetic Algorithm for Determination of Replenishment Policy in One-warehouse and Multi-retailer System. Master of Engineering (Industrial Engineering), Major Field : Industrial Engineering, Department of Industrial Engineering. Thesis Advisor: Mr. Wisut Supithak, Ph.D. 164 pages.

The research considers the determination of replenishment policy in the system of one warehouse and multiple retailers locating at different locations. In the study, each retailer has its own demand, ordering cost, and holding cost rates. The case of identical vehicle with limited capacity is assumed. The objective is to determine the proper ordering quantity, time between order, and transportation path of each retailer in such a way that the total cost consisting of ordering cost, holding cost, and transportation cost of overall system has been reduce. The concept of partial joint ordering policy is introduced in the study. According to the policy, retailers are divided into different clusters. Those retailers belong to the same cluster are delivered together which, therefore, form a delivery route. The delivery of each cluster is independent to each other. The genetic algorithm with the insertion of nearest neighborhood and EOI with storage space limitation methods is proposed to determine the good solution to the problem in a reasonable amount of time. In order to evaluate the performance of the proposed method, the solution yielded form the partial joint ordering policy is compared to those solutions obtained from the individual, jointed, and mixed ordering policies. The study result shows that, at all level of factors being considered which are number of retailers, holding cost, and ordering cost, the proposed partial joint ordering policy yields solution than the other three policies.

Student's signature

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