ABSTRACT

Inventory model for deteriorating item have been widely studied, but only some that discuss the integration of lot size determination in Supply Chain. In this study we develop production-distribution model for a deteriorating item with possible shortage in buyers. Buyers make an order to supplier, it produces in batch and sends them to the buyer in multi deliveries with the same size. An integration lot sizing model with backorder has been develop to find the best solution for both. Objective model is minimizing system annual total cost occured on in buyer and supplier.

The results of the study indicate that the integration of suppliers-buyers for deteriorating item provide lower total system cost than no integration. This study shows that increasing deterioration rate effect on increasing the total cost system and declining in production batch size and cycles time. Decreasing 50% of transportation cost results in increase of 4% in total system cost and affecting the production batch size. Reduction in backorder cost of 50% resulted in a decrease total system cost of 7%. Reduction in setup cost of 50% results in reduced total system cost by 15%.

Key Words: Integration; Inventory; Deteriorating; Backorder.