

ABSTRACT

Collaboration Vendor and Buyer Model to Minimize Supply Chain Cost

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PT. XYZ is a foreign investment company headquartered in the United States. PT.XYZ operates in Indonesia and is a private commercial aircraft manufacturing company. PT.XYZ has a problem regarding inventory management of BCD components supplied by RTD.co. The problem faced is the instability of demand (stochastic) from their consumers and demand forecasting accuracy with actual demand, poor quality BCD components and total supply chain costs in inventory management have increased from year to year. PT.XYZ uses the economic quantity ordering model (EOQ) approach in inventory management and the purchasing process is carried out with periodic review (periodic period review).

However, the weakness in the EOQ model is unstable demand, cannot be applied to the EOQ model and the set shipping lot size is not optimal for suppliers. The combined economic order size model between suppliers and buyers is known to be able to cover this weakness. In addition, this model contributes to a good partnership relationship between buyers and suppliers or often known as collaboration between buyers and suppliers. In this study, a collaboration model between buyers and suppliers was developed by considering stochastic demand conditions and transportation costs based on shipping weight. The decision variables that are considered to obtain the minimum supply chain costs are the size of the shipping lot, the number of shipments, and the safety stock of the buyer's inventory. Then the model is completed using the genetic algorithm method.

Based on the results of the study, it was found that the collaborative model of buyer and supplier inventory that was developed was proven to be able to minimize supply chain costs. the size of the shipping lot, the number of shipments, and the safety stock of the buyer's inventory are obtained. The savings obtained by PT XYZ is USD 3.15 per year or -1.21% of the current condition. As for suppliers, savings amounted to USD 4,688.72 per year or 22.99% from current conditions.

Keywords: Supply Chain, Integrated Vendor Buyer Inventory Model, Collaborative, Genetic Algorithm