DETERMINATION OF MULTI-ITEM INVENTORY MODEL WITH LIMITATIONS OF WAREHOUSE CAPACITY AND UNIT DISCOUNT IN LEADING GARMENT INDUSTRY IN INDONESIA

RAFLY ISFANUR YASSA¹ & ZULFA FITRI IKTARINASARI²

¹Master Student of Industrial Engineering Program, Mercu Buana University, Jakarta, Indonesia
²Senior Lecturer, Department of Industrial Engineering, Faculty of Engineering, Mercu Buana University, Jakarta, Indonesia

ABSTRACT

Inventory is important so that the company's production process runs smoothly and efficiently. To maintain the supply of raw materials, it is necessary to have an appropriate inventory control system so that inventory problems can be minimized. The raw material used is a type of multi-item to produce intimates of apparel is bra. The actual usage data of raw materials during January - December 2017 experienced a stock out of Nylon Tricot, N / S Elastane, FS Fiberfill, Mesh SM135 and Spacer. Management of raw material inventories has constraints that is the limit of warehouse capacity and discount units. This study aims to determine the number of economical orders and the frequency of bookings for a year with constraints on warehouse capacity and discount units. The method used is EOQ probabilistic multi-item Lagrange Multiplier (LM) and dynamic programming method approaching the Wagner-Within algorithm. From the two methods then compared to find the most optimal solution in determining the number of orders that are economical. The Wagner-within method produces a Total Annual Cost (TAC) of Rp. 137,453,491, while \( Q^* \) was Rp. 187,339,290 and \( Q^* \) lagrange multiplier of Rp. 135,982,935. The optimal results seen from the TAC of all the minimum raw materials are obtained by the \( Q^* \) lagrange multiplier method. With this method \( Q^* \) lagrange multiplier is recommended for planning multi-item raw material control in the company.

KEYWORDS: Inventory Control, Multi-Item EOQ, Lagrange Multiplier Wagner Within, Warehouse Capacity, Discount Units & Total Annual Cost (TAC)

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