Inventory Control of Tofu Raw Materials at "Ridho Ilahi" Home Industry Using the Economic Order Quantity (EOQ) Method

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ABSTRACT

The efficiency of raw material inventory management was an essential aspect in maintaining the smoothness of the production process, especially amid frequent fluctuations in soybean prices. The "Ridho Ilahi" industry procured raw materials only when the stock in the warehouse was nearly depleted, without applying a safety stock and reorder point system. This approach had the potential to cause stockouts or shortages of soybeans, which were the main raw material for production. The Economic Order Quantity (EOQ) method was used in inventory management to determine the optimal purchase quantity with the aim of minimizing total inventory costs. However, until this study, there had been no specific research applying the EOQ method to the "Ridho Ilahi" industry. This research aimed to compare the conventional method previously used with the EOQ method to reduce costs and improve the efficiency of raw material ordering by using soybean ordering and usage data throughout 2023. The EOQ method was implemented through five analytical techniques, including determining the optimal order quantity, calculating order frequency, setting safety stock, determining reorder point, and analyzing total inventory costs. The results showed that in 2023, the total soybean requirement reached 356.600 kg with an order frequency of 45 times and an average order quantity of 7.925 kg. Based on EOQ calculations, the optimal order quantity was 12,887 kg with a frequency of 28 orders per year. The company was also advised to maintain a safety stock of 1.810 kg and a reorder point of 2.793 kg. The total inventory cost before applying EOQ was Rp15.336.000. The application of the EOQ method reduced the inventory cost to Rp13.918.458, resulting in a cost efficiency of Rp1.417.542 or approximately 9%. These findings indicated that the EOQ method was effective in reducing inventory costs, optimizing the ordering process, and supporting uninterrupted production.

Keywords: Soybean, Inventory, EOQ