ABSTRACT

XYZ Provincial Social Department is one of the government agencies that focuses on social welfare in the XYZ region. It has several departments, one of which is Perlindungan dan Jaminan Sosial (Linjamsos). One of Linjamsos' responsibilities is managing the logistics supply of food and clothing items to meet the demands of 27 District and City in the XYZ Province and distributing these logistics to disaster victims in the region.

During its operations, XYZ Provincial Social Department faced an issue of unfulfilled demand between January 2022 and December 2022, with a total percentage of unfulfillment reaching 20.57%. This unfulfilled demand affected the service level, which is an assessment based on a company's ability to meet all customer demands. The service level at XYZ Provincial Social Department aimed to achieve a target fulfillment rate of 95%. However, in practice, it only reached 75.88%. This failure to meet demand and the service level target was primarily due to stockouts in the department's warehouse. Historically, inventory management was reactive, with orders placed when stocks were nearly depleted, lacking specific calculations for how much to order and when. Several factors contributed to these stockouts.

To solve these problems, inventory management and optimal inventory policy planning were implemented at XYZ Provincial Social Department using a probabilistic approach, the Model Q, and Periodic Joint Replenishment. This approach aimed to minimize the identified problems. One advantage of the Model Q and Periodic Joint Replenishment is their ability to minimize total inventory costs, making them suitable for situations with high demand for essential goods. This is due to the need for monitoring and maintaining inventory levels. Periodic Joint Replenishment aligns well with the characteristics of the issues faced by XYZ Provincial Social Department.

The research results showed that using probabilistic inventory policies, specifically the Model Q and Periodic Joint Replenishment, for "vital" food supplies resulted in specific order quantity (q0), reorder point (r), reorder cycle (T), and safety stock

(ss) values, which are attached in the appendix. These policies increased the average service level to 95% for the Model Q and 96% for the Periodic Joint Replenishment. Based on the policy components obtained, the Model Q resulted in a total inventory cost of Rp 21,858,208, while the Periodic Joint Replenishment cost Rp 32,255,268.

Keywords: Inventory, Model Q, Periodic Joint Replenishment