ABSTRACT

This study aims to propose a replacement spare part inventory policy at PT. XYZ to minimize inventory costs. PT.XYZ acts as the main liaison, to coordinate the flow of goods from suppliers to customers, which shows great responsibility in managing inventory and ensuring customer satisfaction. Of course, with this structure, PT. XYZ faces challenges in synchronizing between the head office and the warehouse, especially in terms of inventory management and customer demand.

Machine maintenance and repairs carried out by customers in their operational activities, PT. XYZ has a very important role as a provider of spare parts used. So there must be inventory management of the stock of spare parts that play an important role in carrying out machine maintenance and repair activities.

Spare parts are an important component in company operations, especially in industries that depend on the smooth running of the production process. However, spare part inventory management often faces challenges in determining the right amount and time to order to reduce inventory costs.

The continuous review method (r, Q) is applied by continuously reviewing inventory and placing orders when the inventory level reaches the reorder point (r). The ordering decision is governed by two main parameters: the reorder point (r), which indicates when to reorder, and the optimal order quantity (Q), which determines how much to order each time an order is placed. The case study was conducted at PT. XYZ, which faced the problem of high replacement part inventory costs. The data used included historical demand, order lead time, ordering cost, holding cost, and shortage cost.

The analysis began with the collection of spare part demand data for 12 periods, followed by the calculation of statistical parameters such as average demand, standard deviation, and lead time. These parameters were used to calculate the reorder point (r) and optimal order quantity (Q) using the continuous review model (r, Q). The results showed that the variability of spare part demand and lead time had a significant influence on the determination of the parameters r and

Q. In situations with fluctuating demand or unstable lead time, the reorder point needs to be adjusted to avoid inventory shortages that can disrupt the company's operations.

This study concluded that the continuous review method (r, Q) is an effective approach to minimize replacement part inventory costs at PT. XYZ. This method is not only able to reduce total inventory costs, but also improve service levels by maintaining optimal spare part availability. However, to achieve optimal results, companies need to consider demand variability, data accuracy, and the ability of information systems to support the inventory review process.

The results of the study showed that the application of the continuous review method (r, Q) was able to reduce total inventory costs by 38% compared to previous costs. This cost reduction was achieved by determining optimal parameters that consider purchasing costs, ordering costs, storage costs, and shortage costs. Determining the right reorder point (r) can reduce the risk of stockouts without increasing excessive storage costs. In addition, determining the appropriate order quantity (Q) can balance ordering costs and storage costs, resulting in lower total inventory costs.

Thus, this study makes a significant contribution to the development of a more efficient replacement parts inventory policy. This policy is expected to be implemented by other manufacturing companies in an effort to minimize costs and increase operational competitiveness.

Keywords: Inventory, Inventory Cost, Spare Parts, Continuous Review Method (r, Q).