CHAPTER: 13

STUDY ON OPTIMIZING INVENTORY BY APPLICATION OF ABC ANALYSIS, FORECASTING AND ECONOMIC ORDER QUANTITY AT SANKARA EYE HOSPITAL, COIMBATORE

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INTRODUCTION

Efficient management and control of inventory represent crucial aspects of effective organizational operations. It is imperative for any organization to regulate the movement of goods and materials. The fundamental objective of inventory management is to prevent excessive stockholding and avoid shortages. Successful inventory management ensures maintaining an optimal stock level, contributing significantly to a company's profitability [1,2].

In the healthcare sector, where the primary goal is to deliver exceptional patient care at a reasonable cost, there is a growing imperative to reduce expenses. Hospitals are increasingly adopting modern techniques like six sigma, lean operations, and radio frequency identification (RFID) to achieve this. To address cost-cutting initiatives, hospitals are focusing on maximizing resource utilization and optimizing inventory control. The Economic Order Quantity (EOQ) model has proven effective in optimizing stock quantities and minimizing associated costs [3].

RESEARCH QUESTIONS

1. What inventory control model is presently in use at Sankara Eye Hospital, Coimbatore?
2. How would implementing the economic order quantity inventory control model impact the current state of inventory?

RESEARCH OBJECTIVES

1. To identify drugs, medical consumables, and surgical instruments suitable for the application of economic order quantity.
2. To anticipate the demand for the identified items.
3. To calculate the economic order quantity for the identified items.

RESEARCH METHODOLOGY

The study employed a quantitative descriptive design conducted retrospectively. It took place at Sankara Eye Hospital, Coimbatore, from

February 3, 2020, to May 3, 2020. The sample size calculation was based on the total items in the hospital stores, with specific proportions assigned to Item Categories A, B, and C. The sample selected for analysis included eight medicines and five medical consumables. Non-probability convenience sampling was employed as the sampling method.

Data collection involved the retrieval of secondary consumption data for the last two years from the Management Information System of Sankara Eye Hospital, Coimbatore. The statistical methods utilized included the Seasonal Index method and Linear Regression. The inclusion criteria encompassed inpatient medicines and consumables, while intraocular lenses were excluded. A limitation of the study was the unavailability of ordering cost (S), which was then calculated based on unit cost.

RESULTS & DISCUSSION

The optimum quantity of 5CC Syringe to be ordered for meeting forecasted demand requirements and minimizing associated costs, with holding cost and ordering cost considered as 6% and 20% of unit cost for each quarter, was 272, 308, 299, and 229, respectively. Similarly, the optimum quantity of Appavisc PFS 3ML to be ordered for meeting forecasted demand requirements and minimizing associated costs was 182, 208, 182, and 157 for each quarter.

The optimal quantity of Ribolink 1MG to be ordered for meeting forecasted demand requirements and minimizing associated costs, with holding cost and ordering cost considered as 6% and 20% of unit cost for each quarter, was 12, 16, 13, and 14, respectively. Additionally, the optimum quantity of Patient Interface Cone to be ordered for meeting forecasted demand requirements and minimizing associated costs was 28, 26, 28, and 20 for each quarter.

CONCLUSION

The existing forecasting model employed at Sankara Eye Hospital; Coimbatore relies on a simple average consumption approach. This method lacks the ability to account for trends and seasonal

variations in consumption patterns, potentially leading to stockouts or overstocking. Such scenarios can result in sales losses or increased carrying costs. The proposed seasonal index forecasting model aims to address this limitation by capturing trends and seasonal fluctuations in demand, enhancing the organization's ability to forecast demand effectively.

Implementing the economic order quantity (EOQ) concept would enable the organization to make informed decisions regarding the optimal quantity to order for a given commodity. This, in turn, would contribute to minimizing associated costs. While the results have demonstrated a more comprehensive forecasting method, a more accurate determination of the economic order quantity would require quantifying the associated ordering costs.

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