An inventory control model for an optimal batch quantity of a beverage company

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Inventory is an essential concept in the operation of a system or an organization. An inventory can be classified into three categories such as; raw materials inventory, work-in-process inventory and finished-goods inventory. This research is mainly based on the finished-goods inventory. The main objective of the research is to find out an inventory model to optimize the batch quantity of the production of finished-goods for a well- known beverage company in Sri Lanka. The quantities of sales collected from all the distributors of this beverage company were considered as the demands for the inventory model. These demands were used to determine the optimal batch quantity of the production of the company.

Three methods were considered in this research to estimate the production volumes were; the current estimation method used by the company, time series forecasting method and the finished-goods inventory method. The best method that gives the optimal batch quantity was chosen to estimate the volume of the products. In the time series method seasonal autoregressive integrated moving average (SARIMA) models were fitted to forecast the productions. In the third method, the solutions were obtained by minimizing the differentiated total cost function by considering all the associated costs of each product such as; ordering cost per production run and carrying cost per unit per period. The finished-goods inventory model was chosen as the best method to estimate the total volume of production by comparing with the actual demand. This study was carried out to estimate the production volume of two products which are highly demanded, and the findings can be extended the other products.