Forecasting of Optimum Raw Material Inventory Level using Artificial Neural Network

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This paper develops an artificial neural network (ANN) model to forecast the optimum level of raw materials inventory as a function of product demand, manufacturing lead-time, supplier reliability, material holding cost, and material cost. The model selects a feed-forward back-propagation ANN with twelve hidden neurons as the optimum network. We test the model with pharmaceutical company data. The results show that the model can be useful to forecast raw material inventory level in response to different parameters. We also compare the model with fuzzy inference system (FIS) and simple economic order quantity (EOQ). It can be seen that ANN model outperforms others. Overall, the model can be applied for forecasting of raw materials inventory for any manufacturing enterprise in a competitive business environment.

Keywords: Raw Material Inventory, Artificial Neural Network, Forecasting, Economic Order Quantity