

Sani Midevan 2014: Cost Reduction in Warehouse Management for Pet's Food Factory. Master of Engineering (Industrial Engineering), Major Field: Industrial Engineering, Department of Industrial Engineering. Thesis Advisor: Associate Professor Prapaisri Sudasna-na-Ayudhya, Ph.D. 137 pages.

This research considered an inventory management problem in a pet food factory. The material ordering of the factory is based on an inventory policy without applying inventory management theory, i.e. considering the related costs: raw material cost, ordering cost and inventory holding cost. This study aimed to formulate mathematical model to help the factory inventory management that leads to the total cost minimization without shortage. The optimal inventory policy is developed by using dynamic programming under uncertainties in demand and price, and different transportation lead time depending on suppliers. The costs of both inventory policies are compared. Sensitivity analysis is performed to describe cost parameters: total fixed ordering cost per period of time, joint ordering cost per period of time, fixed holding cost per period of time and variable holding cost per unit.

The analysis results indicate that the purchasing in every period, which has the demand, minimizes the inventory holding cost but the raw material cost might be incurred if the raw material price is high in that period. On the other hand, the applying the mathematical model in inventory management, which satisfies all demand by purchasing the material in the low price period, increases the inventory holding cost but the variable cost of raw material cost decreases. However, the decreasing of the variable cost of raw material cost is more than increasing of the inventory cost. Hence, the total cost reduces for 5.20 percent. Moreover, the sensitivity analysis of the model reveals that the fix purchasing cost and the fix monthly inventory holding cost are the highest sensitive parameters to the total cost. In conclusion, the mathematical model should be applied in the inventory management problem in the case study factory to minimize the total cost.

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Student's signature

Thesis Advisor's signature