Soft Computing Employment to Optimize Safety Stock Levels in Supply Chain Dairy Product under Supply and Demand Uncertainty

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Abstract : In order to overcome uncertainty conditions and inability to meet customers' requests due to these conditions, organizations tend to reserve a certain safety stock level (SSL). This level must be chosen carefully in order to avoid the increase in holding cost due to excess in SSL or shortage cost due to too low SSL. This paper used soft computing fuzzy logic to identify optimal SSL; this fuzzy model uses the dynamic concept to cope with high complexity environment status. The proposed model can deal with three input variables, i.e., demand stability level, raw material availability level, and on hand inventory level by using dynamic fuzzy logic to obtain the best SSL as an output. In this model, demand stability, raw material, and on hand inventory levels are described linguistically and then treated by inference rules of the fuzzy model to extract the best level of safety stock. The aim of this research is to provide dynamic approach which is used to identify safety stock level, and it can be implanted in different industries. Numerical case study in the dairy industry with Yogurt 200 gm cup product is explained to approve the validity of the proposed model. The obtained results are compared with the current level of safety stock which is calculated by using the traditional approach. The importance of the proposed model has been demonstrated by the significant reduction in safety stock level.