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A continuous review inventory model with controllable backorder rate and investments

R. Uthayakumar & P. Parvathi

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Abstra

In this st … lead time, yield var … We assume that the … the amount of shorta … own but its first and … rocedure to mini … unction we describ … y and setup cost wit … ls. Our main aim is to … at minimises the expe … n is given. With the … icies are wrought … posed model greatly differs from the model existing in the literature (the model by Lin and

Hou (2005)) viz: (1) In the above model, yield variability and setup cost were reduced through capital investment. In our model we reduce yield variability setup cost and also the lead time, which plays a vital role in any business. By reducing lead time we can improve the service level to the customer so as to increase the competitive edge in business. (2) In the model (the model by Lin and Hou (2005)), it was assumed that lead time demand follows normal distribution. But in our model we take the distribution of lead time demand as distribution free. That is, it can follow any distribution which is more general. (3) In the above model (the model by Lin and Hou (2005)), shortages are completely backlogged. But we consider partial backlogging and take the backlogging rate as $0 \leq B \leq 1$. If we set backlogging rate $B = 1$ we get the above model. That is, the above model is particular case of our model. (4) We also assume that the backorder rate depends on the length of the lead time through the amount of shortages. If the lead time is longer then shortage accumulation is higher. The patience of customers will result in failure in business since some customers may turn to some other supplier. Hence, the backorder rate will be reduced. This assumption is very realistic.

Keywords:

inventory | controllable backorder rate | yield randomness | reducing lead time and setup cost

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