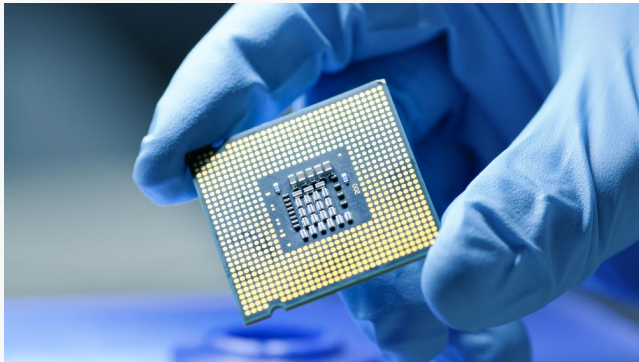


Week 15 Inventory Example Revised

(Use in-place of example solution
beginning on lecture slide 29-31)

The Situation:

You work at GTRI in their IT group. One of your jobs is building minicomputers for use by researchers. Keeping costs down is important. Also important is having the inputs to make minicomputers quickly when requested. Of particular interest are memory chips. Records show 8,000 units a year on average are used with a standard deviation of 400. Each unit costs \$10 and holding cost is 5%. Each order for more costs \$50 and takes a week to arrive. The current Service Level Agreement (SLA) with R&D is 96%. What inventory policy do you recommend for this item



How Much?

No quantity discount mentioned in the problem, so use standard EOQ:

$$EOQ = \sqrt{\frac{2 \cdot D \cdot S}{H}} = \sqrt{\frac{2 \cdot 8,000 \cdot 50}{.5}} = 1264.911 \sim \mathbf{1265 \text{ units}}$$

- $D = 8,000/\text{year}$
- $S = \$50$ per order
- $H = 5\% \text{ of } \$10 = \0.5

When chips are needed based on our ROP (which we will calculate next), we should order 1,265 chips

When?

Demand is described with “average” and “standard deviation”, this indicates demand varies

$$\text{ROP} = \text{Daily Demand} \times \text{lead time} + Z\text{-score}(\text{service level}) * \text{daily standard deviation of demand} * \sqrt{\text{lead time}}$$

$$\text{ROP} = (8000/365) \times 7 + 1.751 * (400/\sqrt{365}) * \sqrt{7}$$

$$\text{ROP} = 21.9178 * 7 + 1.751 * 20.937 * \sqrt{7}$$

$$\text{ROP} = 250.42 \sim 251 \text{ chips}$$

When there are **251 chips left**, place an order for **1,265 more**