

Frequently Asked Questions

1. What is the advantage of allowing shortages?

Answer:

The advantage of allowing shortages is to increase the cycle time, and hence spreading the ordering (or set-up) costs over a longer period.

2. What happens when the inventory system goes out of stock?

Answer:

- I. Customers are not likely to purchase inventory items, and therefore, any sale that would have resulted is lost
- II. Customers wait to receive an order from the supplier and such backorder(s) is filled on stock availability

3. How is the cost in this inventory system?

Answer:

In this inventory system except for the purchase cost C , which will be fixed, all other types of costs will be affected by the decision concerning order cost (Q) and the remaining quantity (M).

4. How is total variable inventory cost calculated?

Answer: Total variable cost is calculated by taking the sum of the Ordering cost, Carrying cost and Shortage cost

5. How do we express the optimal value?

Answer:

Since we want to calculate an optimal value of Q and M , therefore, we need to express t_1 and t in terms of Q and M . in general, Time period in Days equal to Total units overtime period by Demand in units per day.

6. How the time is calculated when there is a positive inventory level?

Answer:

The time (t_1) when positive inventory level is available is given by t_1 equal to remaining quantity by demand; the total cycle time t is given by t equal to order cost by Demand; and the time t_2 during which shortage incurred is given by t_2 equal to (order cost minus remaining quantity) by Demand.

7. Why do we differentiate the total variable inventory?

Answer:

TVC is the function of two variables Q and M , therefore, in order to determine the optimal order size and the optimal shortage level, R , differentiate the total variable cost function with respect to Q and M is necessary.

8. How do we calculate the production cycle time?

Answer:

Production cycle time, t^* is equal to Q^* by D is equal to 1 by D into square root of $2DC_0$ by Ch (p by p minus d) (Ch plus C_s by C_s) is equal to square root of $2C_0$ by DCh (p by p minus d) (Ch plus C_s by C_s)

9. How do we calculate the optimal inventory level?

Answer:

Optimal inventory level, Q_1^* is equal to $(p$ minus d by $p)$ Q^* minus Q_2^* is equal to square root of $2DC_0$ by Ch (1 minus d by p) (C_s by Ch plus C_s).

10. How do we calculate the total minimum variable inventory cost?

Answer:

Total minimum variable inventory cost, TVC^* is equal to square root of $2DC_0$ Ch (1 minus d by p) (Cs by Ch plus Cs).

11. What happens when p is equal to infinite?

Answer:

If p is equal to infinite, then the various results obtained in the model are reduced to the form Q^* is equal to square root of $2DC_0$ by Ch (Ch plus Cs by CS); $Q1^*$ is equal to square root of $2DC_0$ by Ch (Cs by Cs plus Cs) and TVC^* is equal to square root of $2DC_0$ Ch (Cs by Ch plus Cs)

12. What happens when C_s is equal to infinite?

Answer:

If C_s is equal to infinite, then the results of the model will be the same as TVC^* is equal to square root of $2DC_0$ Ch (1 minus d by p).

13. What happens when the c_d for each item in the inventory is given?

Answer:

If in addition to the assumption made for this model, production cost C_d per item is given, then TVC will become TVC equal to (D by Q into C_0) plus (M square by 2Q into Ch) plus (Q minus M whole square by 2Q into Cs) plus (D into C_d)

14. How do we calculate the optimal shortage level?

Answer:

Optimal shortage level (in units), R^* equal to Q^* minus M^* which is equal to Q^* into (Ch by Ch plus Cs).

15. How do we calculate the total cycle time?

Answer:

Total cycle time, t equal to Q^* by D which is equal to square root of $2DC_0$ by DCh into (Ch plus Cs by Cs)