

# Operations management – assignment 3



Operations Management Assignment 3 Q: Difference between different types of EOQ. Economic Order Quantity: The economic order quantity (EOQ) is the fixed order quantity (Q) that minimizes the total annual costs of placing

orders and holding inventory (TC). This type of model is used when i)

Demand is independent. ii) Compute how much to order. Economic

Production Quantity: The economic production quantity (EPQ) is the production quantity (lot size) that minimizes the total annual cost of setups and holding inventory. This type of model is used when ) Demand is

dependent. ii) Compute how much to make at one time. Reorder Point: EOQ tells us about how much to order but not when to order. ROP tells us about when to order. The reorder point occurs when the quantity on hand falls

below a threshold value. There are 4 determinants of the reorder point: i)

The rate of demand. ii) The lead time. iii) The extent of demand and/or lead variability. The degree of stockout risk acceptable to management. Chapter -

10 Q3) Sample| Mean| Range| 1| 3. 06| 0. 42| 2| 3. 15| 0. 5| 3| 3. 11| 0. 41| 4| 3. 13| 0. 46| 5| 3. 6| 0. 46| 6| 3. 09| 0. 45| Average| 3. 1| 0. 45| The mean of the means and ranges have been calculated as 3. 1 and 0. 45 respectively.

The number of observations , i. e, n = 6 Thus from the table 10. 3 of the

textbook, A2 = 0. 48, D3 = 0, D4 = 2. 00 Computing Upper Control Limits

and Lower Control Limits:  $UCL(\text{Mean}) = \text{Mean} + A2 * \text{Range}$  Mean = 3. 1 + 0.

$48 * 2 = 3. 1 + 0. 96 = 4. 06$   $LCL(\text{Mean}) = \text{Mean} - A2 * \text{Range}$  Mean = 3. 1 -

$0. 48 * 2 = 3. 1 - 0. 96 = 2. 14$   $UCL(\text{Range}) = D4 * \text{Mean Range} = 2. 00 * 0.$

$45 = 0. 9$   $LCL(\text{Range}) = D3 * \text{Mean Range} = 0 * 0. 45 = 0$

As can be seen from the above table, and comparing the UCL and LCL for the mean, it is seen that both the smallest sample mean, 3. 06 and the highest

sample mean, 3. 15, are both within the control limits (calculated above).

Similarly the sample ranges are also within the control limit, 0. 9. This

possibly suggests that the process is very much in control. Q4) | | SAMPLE| |

| | | 1| 2| 3| 4| 5| 6| Mean| Range| 79. 2| 80. 5| 79. 6| 78. 9| 80. 5| 79. 7| 79.

33| 1. 6| 78. 8| 78. 7| 79. 6| 79. 4| 79. 6| 80. 6| 79. 45| 1. 9| 80| 81| 80. 4| 79.

7| 80. 4| 80. 5| 80. 33| 1. 3| 78. 4| 80. | 80. 3| 79. 4| 80. 8| 80| 79. 88| 2. 4|

81| 80. 1| 80. 8| 80. 6| 78. 8| 81. 1| 80. 4| 2. 3| The number of observations

as can be seen above is 5;  $n = 5$  Thus from the table 10. 3 of the textbook,

$A_2 = 0. 58$ ,  $D_3 = 0$ ,  $D_4 = 2. 11$  Mean of observed mean observations = 79.

96 Mean of observed range observations = 1. 9 Computing Upper Control

Limits and Lower Control Limits:  $UCL(\text{Mean}) = \text{Mean} + A_2 * \text{Range}$  Mean =

$79. 96 + 0. 58 * 1. 9 = 79. 96 + 1. 102 = 81. 062$   $LCL(\text{Mean}) = \text{Mean} - A_2 *$

$\text{Range}$  Mean =  $79. 96 - 0. 58 * 1. 9 = 79. 96 - 1. 102 = 78. 858$   $UCL(\text{Range})$

=  $D_4 * \text{Mean Range} = 2. 11 * 1. 9 = 4. 09$   $LCL(\text{Range}) = D_3 * \text{Mean Range} =$

$0 * 1. 9 = 0$  As can be seen from the above table, and comparing the UCL

and LCL for the mean, it is seen that both the smallest sample mean, 79. 33

and the highest sample mean, 80. 4, are both within the control limits

(calculated above). Similarly the sample ranges are also within the control

limit, 4. 009. This possibly suggests that the process is very much in control.

Chapter -12: 15) To determine the order size that will minimize the total

cost, we need to compute EOQ for 4. 85\$ per pulley equipment The quantity

ranges given are : Range| Unit Price|