Inventory Management

Assignment

Determination of the Inventory Control System

What is the inventory control system for Tegdiws? That is, what is the reorder quantity?

We know that,

$$Q^* = \frac{2DS}{H} = \frac{2 * 10000 * 150}{.020(10)} = 1224.74 = 1225\ units\ (Approx.)$$

We also have,

D = 10000 / 52

Lead time = 4 weeks

Safety stock (ss) = 55 units.

$$R = dL + ss = \left(\frac{10000}{52}\right) * (4) + 55 = 824.23 = 824\ units$$

What is the inventory control system for Widgets?

Average weekly demand of the widgets: d = 5000/53.

The inventory control system is based on the periodic review. Inventory is checked after every 3 weeks. I.e. T = 3 weeks. Let I be the current inventory. The inventory for fulfilling the demands of three weeks is equal to q + 1. Here q is the quantity ordered. The safety stock is 5 units. The lead time is kept to be 1 week so this means that the new order will reach after every 4 weeks. (3+1). The quantity to be ordered is:

$$q = d(T + L) + ss - I = \left(\frac{5000}{52}\right) * (e + 1) + 5 - 0 = 390$$

Reorder Point Calculation

What is the economic order quantity?

We know that,

$$Q^* = \frac{2DS}{H} = \frac{2 * 500 * 100}{.020(500)} = 31.62 = 32\ refrigerators\ (Approx.)$$

If the distributor wants a 97 percent service probability, what reorder point, R, should be used?

σ_{LT} = 10 Refrigerators.
Now we look the value of z at the 97% interval in the z curve. The value is found to be 1.90..

The re-order point is given to be:

R = d x LT + z*$\boldsymbol{\sigma_{LT}}$ = (500/365)(7) + (1.90)*10 = 9.59 + 19. 28.60 = 29 Refrigerators (Approx.).

We need to order 32 refrigerators every time the inventory reaches 29 refrigerators. The safety stock is 19 refrigerators.

Kroger Inc.

How many pumpkin pies should Kroger make at the start of each day?

Cu=$17.50–$10=$7.50
Co=$10-$8.50=$1.50
CSL= Cu/ (Cu+Co)= 7.50/(7.50+1.50)= 83.33%
So Q*= 20

Determine the average number of pumpkin pies sold to bowling green food bank (Average Overstock) and average number of customers turned away (Average Under stock).

Whenever the demand is lesser than the Q*, the Kroger has to sell the leftover to the bowling green food bank. Average cake sold to food bank is

(20 – 15)*0.10 + (20-10)*0.25 + (20 - 5)*0.15 + (20-0)*0.10 = 0.5 + 2.5 + 2.25 + 2.25 + 2 = 9.5

If the demand is greater than the $30, the average number of customers turned away will be:

(25 – 20)*0.05 + (30 – 25)*0.05 + (35 – 30)*0.05 = 0.25 + 0.25 + 0.25 = 0.75