

INVENTORY PLANNING AND CONTROL CHEATSHEET

By Yashar Ahmadov, Jan 2018

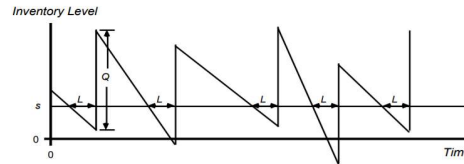
1. Conduct the ABC Analysis of the SKU's.

2. Use the following approaches based on the importance of the items:

- For A items use (s,S) inventory policy.
- For B items use (s,Q) inventory policy.
- For C items manually control (or order when there is demand).

These policies attempt to answer the following questions:

- When to order? → s
- How much to order? → S or Q, depending on the policy



Optimal Order Quantity is calculated using the Economic Order Quantity (EOQ) formula:

$$Q^* = EOQ = \sqrt{\frac{2 * c_t * D}{c_e}}$$

where

- ▶ c → purchase cost of the item (\$/unit)
- ▶ h → annual holding rate (\$/\$ value/time)
- ▶ c_e = c*h → annual holding cost (\$/unit-time)
- ▶ c_t → ordering cost (PO preparation, delivery follow up, standard costs paid to brokers per shipment, etc.) (\$/order)
- ▶ D → Annual demand (units/yr).

For (s,S) policy, S is simply equal to s+Q.

Step 0: Conduct Normality tests for the Demand and Lead Time data (p-values should be greater than 0.05)

Step 1: Calculate the mean (μ_D) and standard deviation (σ_D) of the demand

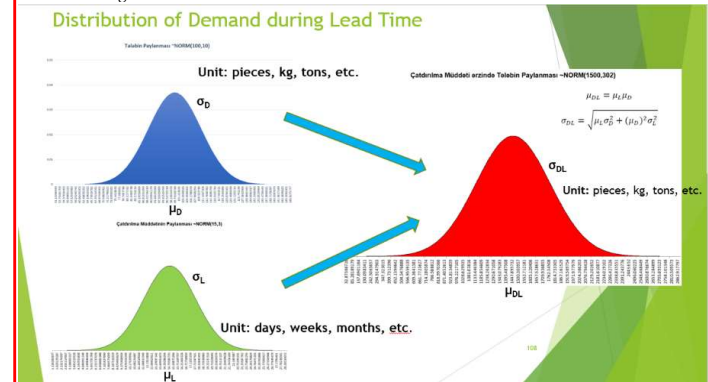
Step 2: Calculate the mean (μ_L) and the standard deviation (σ_L) of the lead time

Step 3: Calculate the mean (μ_{DL}) and the standard deviation (σ_{DL}) of the demand during lead time by using the formulas:

$$\mu_{DL} = \mu_L \mu_D$$

$$\sigma_{DL} = \sqrt{\mu_L \sigma_D^2 + (\mu_D)^2 \sigma_L^2}$$

The following chart depicts relationship between demand / lead time parameters and the demand during lead time.



Step 4: Determine the coefficient corresponding to the confidence level (k), which is ~1.65 for 95% confidence level

Step 5: Calculate the Reorder Point (RP = $\mu_{DL} + k * \sigma_{DL}$)