Inventory Analytics Formulas - Practical Explanation

1. Safety Stock

Formula:

Safety Stock = Z * StdDev_Demand * sqrt(LeadTime_Days)

Purpose:

Acts as a buffer for variability in daily demand during lead time.

Example:

Z = 1.65 (95% service level)

StdDev_Demand = 4.66

LeadTime = 6

Safety Stock = 1.65 * 4.66 * sqrt(6) ~ 18.83

2. Reorder Point

Formula:

Reorder Point = (Daily_Demand * LeadTime_Days) + Safety Stock

Purpose:

The inventory level at which a new order should be placed.

Example:

Daily_Demand = 19, LeadTime = 6, Safety Stock = 18.83

Reorder Point = (19 * 6) + 18.83 = 132.83

3. Runout Days

Formula:

Runout Days = Current_Stock / Daily_Demand

Purpose:

  Estimate how long current inventory will last.

Example:

  Current_Stock = 152, Daily_Demand = 19

  Runout Days = 152 / 19 ~ 8.0

4. Stock Status

Logic:

  - Understocked: if Current_Stock < Reorder Point

  - Overstocked: if Current_Stock > 1.5 * Reorder Point

  - OK: Otherwise

Purpose:

  Categorizes inventory levels for risk assessment.