Important Operational and Financial Factors Formulas PDF

Formulas
Examples
with Units

List of 13
Important Operational and Financial Factors Formulas

1) Expected Length of Non-Empty Queue Formula

Evaluate Formula

Formula

$$l = \frac{\mu}{\mu - \lambda_a}$$

Example

$$10 = \frac{2000}{2000 - 1800}$$

2) Expected Number of Customers in Queue Formula

Evaluate Formula

Formula

$$L_q = \frac{\lambda_a^2}{\mu \cdot \left(\mu - \lambda_a\right)}$$

Example

$$8.1 = \frac{1800^2}{2000 \cdot \left(2000 - 1800\right)}$$

3) Expected Number of Customers in System Formula

Evaluate Formula

Formula

$$L_s = \frac{\lambda_a}{\mu - \lambda_a}$$

Example

$$9 = \frac{1800}{2000 - 1800}$$

4) Gross Margin Return on Investment Formula

Evaluate Formula

Formula

$$ROI = \frac{GP}{\frac{S_o - S_c}{2}} \cdot 100$$

Example

$$750 = \frac{7500}{\frac{5000 - 3000}{2}} \cdot 100$$

5) New Number in Simplex Table Formula

Evaluate Formula

Formula

$$N_{new} = O - kr \cdot \frac{kc}{k_n}$$

Example

$$15 = 19 - 6 \cdot \frac{2}{3}$$

6) Non-Empty Queue Probability Formula

Evaluate Formula

Formula

$$P_{neq} = \left(\frac{\lambda_a}{\mu}\right)^2$$

Example

$$0.81 = \left(\frac{1800}{2000}\right)^2$$

7) Number of Kanbans Formula

Evaluate Formula

Formula

$$N_K = \frac{D \cdot T \cdot (1 + X)}{C}$$

Example with Units

$$13000 = \frac{10000 \cdot 432000\,s \cdot (1 + 25)}{100}$$

8) Perfect Order Measurement Formula

Evaluate Formula

Formula

$$M_{po} = \left(\frac{O_t - O_e}{O_t}\right) \cdot 100$$

Example

$$72 = \left(\frac{50 - 14}{50}\right) \cdot 100$$

9) Point r on Line Formula

Evaluate Formula

Formula

$$r = a + \lambda \cdot n_{trials}$$

Example

$$32.5 = 8 + 3.5 \cdot 7$$

10) Probability of Customers Exceeding Number Formula

Evaluate Formula

Formula

$$P_{ex} = \lambda_a \cdot \frac{k}{\mu}$$

Example

$$11.7 = 1800 \cdot \frac{13}{2000}$$

11) Single Exponential Smoothing Formula

Evaluate Formula

Formula

$$Ft = \alpha \cdot D_{t-1} + (1 - \alpha) \cdot F_{t-1}$$

Example

$$40 = 0.2 \cdot 44 + (1 - 0.2) \cdot 39$$

12) Standard Error (Pooled) Formula

Evaluate Formula

Formula

$$E_{std} = \frac{MSE^{0.5}}{n_t}$$

Example

$$0.0418 = \frac{0.7^{0.5}}{20}$$

13) Uniform Series Present Sum of Money Formula

Evaluate Formula

Formula

$$f_c = i_{fc} + i_{u.s}$$

Example

$$33 = 18 + 15$$

Variables used in list of Operational and Financial Factors Formulas above

- **a** Point a
- **C** Container Size
- **D** Demand per Year
- D_{t-1} Previous Observed Value
- E_{std} Standard Error
- f_c Annual_Devaluation_Rate
- F_{t-1} Previous Period Forecast
- **Ft** Smooth_Averaged_Forecast_for_Period_t
- **GP** Gross_Profit
- i_{fc} Rate_of_Return_Foreign_Currency
- $i_{u.s}$ Rate_of_Return_USD
- **k** Exceeded Number Queuing Theory
- k_n Key Number of Simplex
- **kc** Key Column of Simplex
- **kr** Key Row of Simplex
- **l** Expected Length of Non-empty Queue
- L_q Expected Number of Customers in Queue
- L_s Expected Number of Customers in System
- M_{po} Perfect Order Measurement
- **MSE** Mean Square Error
- N_K Number of Kanban
- N_{new} New Number of Simplex Table
- n_t Observations
- n_{trials} Point b
- **O** Old Number of Simplex Table
- O_e Error Orders
- O_t Total Orders
- P_{ex} Probability of Customers Exceeding Number
- P_{neq} Non-empty Queue Probability
- **r** Point r on Line
- **ROI** Return on Investment (ROI)

Constants, Functions, Measurements used in list of Operational and Financial Factors Formulas above

- Measurement: **Time** in Second (s)
  Time Unit Conversion

- S_c Closing Stock
- S_o Opening Stock
- **T** Lead Time *(Second)*
- **X** Safety_Factor
- **α** Smoothing Constant
- **λ** Lambda
- λ_a Mean_Arrival_Rate
- **μ** Mean_Service_Rate

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