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Operational and Financial Factors Formulas

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List of 13 Operational and Financial Factors Formulas

Operational and Financial Factors

1) Expected Length of Non-Empty Queue

Open Calculator

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

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

2) Expected Number of Customers in Queue

Open Calculator

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

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

3) Expected Number of Customers in System

Open Calculator

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

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

4) Gross Margin Return on Investment

Open Calculator

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

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

5) New Number in Simplex Table

Open Calculator

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

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

6) Non-Empty Queue Probability

Open Calculator

fx $$\mathrm{P_{neq}} = \left(\frac{\lambda_\mathrm{a}}{\mu}\right)^2$$

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

7) Number of Kanbans

Open Calculator

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

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

8) Perfect Order Measurement

Open Calculator

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

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

9) Point r on Line

Open Calculator

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

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

10) Probability of Customers Exceeding Number

Open Calculator

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

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

11) Single Exponential Smoothing

Open Calculator

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

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

12) Standard Error (Pooled)

Open Calculator

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

ex $$0.041833 = \frac{(0.7)^{0.5}}{20}$$

13) Uniform Series Present Sum of Money

Open Calculator

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

ex $$33 = 18 + 15$$

Variables Used

- **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)
- 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

Constants, Functions, Measurements used

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

Check other formula lists

- **Industrial Parameters Formulas**
- **Manufacturing and Purchase Model Formulas**
- **Operational and Financial Factors Formulas**
- **Time Estimation Formulas**

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