

Important Project Evaluation and Review Technique Formulas PDF



Formulas Examples with Units

List of 25 Important Project Evaluation and Review Technique Formulas

1) Earliest Expected Occurrence Time of Event i Formula

Formula

$$TE^i = TE^j - t_{ij}$$

Example with Units

$$19_d = 24_d - 5_d$$

Evaluate Formula 

2) Earliest Expected Occurrence Time of Event j Formula

Formula

$$TE^j = TE^i + t_{ij}$$

Example with Units

$$24_d = 19_d + 5_d$$

Evaluate Formula 

3) Expected Time given Probability Factor Formula

Formula

$$t_e = T_s - (\sigma \cdot Z)$$

Example with Units

$$4.0001_d = 6.7_d - (1.33 \cdot 2.03)$$

Evaluate Formula 

4) Expected Time of Activity i-j Formula

Formula

$$t_{ij} = TE^j - TE^i$$

Example with Units

$$5_d = 24_d - 19_d$$

Evaluate Formula 

5) Least Allowable Occurrence Time of Event i Formula

Formula

$$TL^i = TL^j - t_{ij}$$

Example with Units

$$25_d = 30_d - 5_d$$

Evaluate Formula 

6) Least Allowable Occurrence Time of Event j Formula

Formula

$$TL^j = TL^i + t_{ij}$$

Example with Units

$$30.01_d = 25.01_d + 5_d$$

Evaluate Formula 

7) Mean or Expected Time Formula

Formula

$$t_e = \frac{t_0 + (4 \cdot t_m) + t_p}{6}$$

Example with Units

$$4_d = \frac{2_d + (4 \cdot 3_d) + 10_d}{6}$$

Evaluate Formula 



8) Most Likely Time given Expected Time Formula ↻

Formula

$$t_m = \frac{6 \cdot t_e - t_0 - t_p}{4}$$

Example with Units

$$3_d = \frac{6 \cdot 4_d - 2_d - 10_d}{4}$$

Evaluate Formula ↻

9) Optimistic Time given Expected Time Formula ↻

Formula

$$t_0 = (6 \cdot t_e) - (4 \cdot t_m) - t_p$$

Example with Units

$$2_d = (6 \cdot 4_d) - (4 \cdot 3_d) - 10_d$$

Evaluate Formula ↻

10) Optimistic Time given Standard Deviation Formula ↻

Formula

$$t_0 = - (6 \cdot \sigma - t_p)$$

Example with Units

$$2.02_d = - (6 \cdot 1.33 - 10_d)$$

Evaluate Formula ↻

11) Pessimistic Time given Expected Time Formula ↻

Formula

$$t_p = 6 \cdot t_e - t_0 - 4 \cdot t_m$$

Example with Units

$$10_d = 6 \cdot 4_d - 2_d - 4 \cdot 3_d$$

Evaluate Formula ↻

12) Pessimistic Time given Standard Deviation Formula ↻

Formula

$$t_p = 6 \cdot \sigma + t_0$$

Example with Units

$$9.98_d = 6 \cdot 1.33 + 2_d$$

Evaluate Formula ↻

13) Probability Factor Formula ↻

Formula

$$Z = \frac{T_s - t_e}{\sigma}$$

Example with Units

$$2.0301 = \frac{6.7_d - 4_d}{1.33}$$

Evaluate Formula ↻

14) Scheduled Time given Probability Factor Formula ↻

Formula

$$T_s = (\sigma \cdot Z) + t_e$$

Example with Units

$$6.6999_d = (1.33 \cdot 2.03) + 4_d$$

Evaluate Formula ↻

15) Slack of Event i or j Formula ↻

Formula

$$S = TL^j - TE^i$$

Example with Units

$$6_d = 30_d - 24_d$$

Evaluate Formula ↻



16) Standard Deviation given Probability Factor Formula

Formula

$$\sigma = \frac{T_s - t_e}{Z}$$

Example with Units

$$1.33 = \frac{6.7_d - 4_d}{2.03}$$

Evaluate Formula 

17) Standard Deviation of Activity Formula

Formula

$$\sigma = \frac{t_p - t_0}{6}$$

Example with Units

$$1.3333 = \frac{10_d - 2_d}{6}$$

Evaluate Formula 

18) Quality Control in Construction Formulas

18.1) Average Non-Conformities in Inspected Unit Formula

Formula

$$c_u = \frac{R}{U}$$

Example

$$0.4555 = \frac{5.01}{11}$$

Evaluate Formula 

18.2) Average Proportion Non-Conforming Formula

Formula

$$p = \frac{R}{I}$$

Example

$$0.2505 = \frac{5.01}{20}$$

Evaluate Formula 

18.3) Coefficient of Variation Formula

Formula

$$V = \sigma \cdot \frac{100}{AM}$$

Example

$$13.2867 = 1.33 \cdot \frac{100}{10.01}$$

Evaluate Formula 

18.4) Number Non-Conforming in Sample Formula

Formula

$$nP = \frac{R}{S_n}$$

Example

$$0.2004 = \frac{5.01}{25}$$

Evaluate Formula 

18.5) Number of Defective Units given Reliability Number Formula

Formula

$$D = (100 - RN) \cdot \frac{T_u}{100}$$

Example

$$97.99 = (100 - 2.01) \cdot \frac{100}{100}$$

Evaluate Formula 



18.6) Number of Units Tested given Reliability Number Formula

Formula

$$T_u = \frac{100 \cdot D}{100 - RN}$$

Example

$$100.0102 = \frac{100 \cdot 98}{100 - 2.01}$$

Evaluate Formula 

18.7) Proportion Non-Confirming in Sample Formula

Formula

$$P = \frac{nP}{n}$$

Example

$$0.004 = \frac{0.2}{50}$$

Evaluate Formula 

18.8) Reliability Number Formula

Formula

$$RN = 100 - \left(\left(\frac{D}{T_u} \right) \cdot 100 \right)$$

Example

$$2 = 100 - \left(\left(\frac{98}{100} \right) \cdot 100 \right)$$

Evaluate Formula 



Variables used in list of Project Evaluation and Review Technique Formulas above

- **AM** Arithmetic Mean
- **C** Average Non-Conformity
- **D** Defective Units
- **I** Number of Inspected
- **n** Number of Items in Sample
- **nP** Number of Non-Conforming
- **p** Average Proportion
- **P** Non-Conforming Proportion
- **R** Number of Rejected
- **RN** Reliability Number
- **S** Slack of an Event (Day)
- **S_n** Number of Sample
- **t₀** Optimistic Time (Day)
- **t_e** Mean Time (Day)
- **t_{ij}** Duration of i-j (Day)
- **t_m** Most Likely Time (Day)
- **t_p** Pessimistic Time (Day)
- **T_s** Scheduled Time (Day)
- **T_u** Tested Units
- **TEⁱ** Earliest Occurrence Time of i (Day)
- **TE^j** Earliest Occurrence Time of j (Day)
- **TLⁱ** LOT of Event i (Day)
- **TL^j** LOT of Event j (Day)
- **U** Unit Numbers
- **V** Variation Coefficient
- **Z** Probability Factor
- **σ** Standard Deviation

Constants, Functions, Measurements used in list of Project Evaluation and Review Technique Formulas above

- **Measurement: Time** in Day (d)
Time Unit Conversion 



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