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| **COCOMO, 81. FORMULAS AND TABLES** |

**Equation1. Effort.** *E(V,a,b,m)=aVbm*

**Equation2. Duration.** *T(E,c,d)=cEd*

**Equation3**. **Adjustment multipliers.** *m(x)=*

**Equation4. Cost** C(E,S)=E.SS(salary)=UnitMoney/MM

**Equation5. Productivity** P(V,E)=

**Equation6. Average Staff** S P(E,T)=

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Table 1. Product Size. Calibrated, 1981** | | | | | |
|  | **Size** | | | | |
| **Small** | **Intermediate** | **Medium** | **Large** | **Very Large** |
| **Volume (KLSC)** | **2** | ***8*** | ***32*** | ***128*** | ***512*** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 2. Product Size. Calibrated, 1981** | | | | | | | | |
|  | **Level** | | | | | | | |
| **Basic** | | | | **Intermediate** | | | |
| **Coefficients** | **a** | ***b*** | **c** | **d** | a | b | c | D |
| **Mode** |  |  |  |  |  |  |  |  |
| **Orgánic** | 2.40 | *1.05* | 2.50 | 0.38 | 3.20 | 1.05 | 2.50 | 0.38 |
| **Medium** | 3.00 | *1.12* | 2.50 | 0.35 | 3.00 | 1.12 | 2.50 | 0.35 |
| **Complex** | 3.60 | *1.20* | 2.50 | 0.32 | 2.80 | 1.20 | 2.50 | 0.32 |

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 3. Effort Multipliers. Intermediate Level. Calibrated, 1981** | | | | | | | | |
|  | | **Valores** | | | | | | |
| Cost Drivers  *(CC) (xi)* | | **Rank** | **Very low** | **Low** | **Nominal** | **High** | **Very High** | **Extra high** |
| **Product Attributes** | | 5.43 |  | | | | | |
| **RELY** | Reliability Required | 1.87 | 0.75 | 0.88 | 1.00 | 1.15 | 1.40 |  |
| **DATA** | Size of the database | 1.23 |  | 0.94 | 1.00 | 1.08 | 1.16 |  |
| **CLPX** | Product complexity | 2.36 | *0.70* | 0.85 | 1.00 | 1.15 | 1.30 | 1.62 |
| **Computer Attributes** | | 5.09 |  | | | | | |
| **TIME** | Restriction runtime | 1.66 |  |  | 1.00 | 1.11 | 1.30 | 1.66 |
| **STOR** | Restriction on the size of memory | 1.56 |  |  | 1.00 | 1.06 | 1.21 | 1.56 |
| **VIRT** | Instability of the virtual machine | 1.49 |  | 0.87 | 1.00 | 1.15 | 1.30 |  |
| **TURN** | Full Time Computer back | 1.32 |  | 0.87 | 1.00 | 1.07 | 1.15 |  |
| **Personal Attributes** | | 10.56 |  | | | | | |
| **ACAP** | Capacity Analyst | 2.06 | *1.46* | 1.19 | 1.00 | 0.86 | 0.71 |  |
| **AEXP** | Experience in the application area | 1.57 | *1.29* | 1.13 | 1.00 | 0.91 | 0.82 |  |
| **PCAP** | Capacity Programmer | 2.03 | *1.42* | 1.17 | 1.00 | 0.86 | 0.70 |  |
| **VEXP** | Experience in the virtual machine | 1.34 | *1.21* | 1.10 | 1.00 | 0.90 |  |  |
| **LEXP** | Experience in language | 1.20 | *1.14* | 1.07 | 1.00 | 0.95 |  |  |
| **Project Attributes** | | 2.77 |  | | | | | |
| **MODP** | Using modern practices | 1.51 | *1.24* | 1.10 | 1.00 | 0.91 | 0.82 |  |
| **TOOL** | Using software tools | 1.49 | *1.24* | 1.10 | 1.00 | 0.91 | 0.82 |  |
| **SCED** | Restrictions on the duration of the project | 1.23 | *1.23* | 1.08 | 1.00 | 1.04 | 1.10 |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Table 4. Effort Multipliers. Intermediate Level. Calibrated, 1981** | | | | | | | |
|  | | **Valores** | | | | | |
|  | |
| *(CC) (xi) / Unit* | | **Very Low** | **Low** | **Nominal** | **High** | **Very High** | **Extra High** |
| **Product Attributes** | |  | | | | | |
| **RELY** | Effects of failure | Slight drawbacks | Small easily recoverable losses | Moderate losses recoverable | High economic costs | Risk of life |  |
| **DATA** | Bytes/LCF |  | D/P<10 | 10≤D/P<100 | 100≤D/P<1000 | D/P≥1000 |  |
| **CLPX** |  |  |  |  |  |  |  |
| **Computer Attributes** | |  | | | | | |
| **TIME** | Availability |  |  | ≤50% | ≤70% | ≤85% | ≤95% |
| **STOR** | Availability |  |  | ≤50% | ≤70% | ≤85% | ≤95% |
| **VIRT** | Days |  | M360-m30 | M180-m15 | M60-m7 | M15-m2 |  |
| **TURN** | Hours |  | Interactivo | <4 | 4-12 | >12 |  |
| **Personal Attributes** | |  | | | | | |
| **ACAP** | Percentile | 15 | 35 | 55 | 75 | 90 |  |
| **AEXP** | Years | ≤0.25 | 1 | 3 | 6 | 12 |  |
| **PCAP** | Percentile | 15 | 35 | 55 | 75 | 90 |  |
| **VEXP** | Months | 1 | 4 | 12 | 36 |  |  |
| **LEXP** | Months | 1 | 4 | 12 | 36 |  |  |
| **Project Attributes** | |  | | | | | |
| **MODP** | Utilization | None | Beginnig | Any | General | Essential |  |
| **TOOL** | Utilization | *None* | Beginnig | Any | General | Essential |  |
| **SCED** | Availability | *75%* | 85% | 100% | 130% | 160% |  |