

Practical 8 - 23DCS119

Cost Estimation of Kanbango Project

For estimating the cost of our Software Group Project “**Kanbango**”, I applied two standard approaches: **Function Point Analysis (FP)** and the **COCOMO model**. Finally, the results were compared with what we would get in estimation tools like COSTAR/SYSTEM STAR.

1. Function Point (FP) Calculation

Kanbango mainly provides login, signup, project creation, adding team members, dashboards, reports, and notifications. Based on this, I identified the five FP categories:

- **External Inputs (EI):** Login, Signup, Create Project, Add Member, Update Profile - 5 inputs
- **External Outputs (EO):** Dashboard, Reports, Notifications - 3 outputs
- **External Inquiries (EQ):** Search Projects, View Members - 2 inquiries
- **Internal Logical Files (ILF):** Users, Projects, Teams, Tasks - 4 files
- **External Interface Files (EIF):** Email API, Authentication API - 2 interfaces

Now, Assigning weights:

Using the IFPUG standard weights:

- $EI (5 \times 4) = 20$
- $EO (3 \times 5) = 15$
- $EQ (2 \times 3) = 6$
- $ILF (4 \times 10) = 40$
- $EIF (2 \times 5) = 10$

So, Unadjusted FP = 91

Now I will take the complexity adjustment factor (VAF) as 1.0 (medium project).

So, Adjusted FP = 91

(Assuming nearly 50 LOC per FP for our tech stack (Python/JS))

\therefore Estimated size = $91 \times 50 = 4550 \text{ LOC } (\sim 4.5 \text{ KLOC})$

2. COCOMO Estimation

I considered our project as Organic type (small team, familiar domain). The Basic COCOMO model uses the formula:

- Effort (PM) = $2.4 \times (\text{KLOC})^{1.05}$
- Development Time (TDEV) = $2.5 \times (\text{Effort})^{0.38}$

∴ Effort = $2.4 \times (4.55)^{1.05} \approx \mathbf{11.8 \text{ Person-Months}}$

∴ TDEV = $2.5 \times (11.8)^{0.38} \approx \mathbf{5.9 \text{ months}}$

∴ Average staff = $11.8 \div 5.9 \approx \mathbf{2 \text{ people}}$

∴ If 1 person-month $\approx \text{₹}50,000$,

Total = $11.8 \times 50,000 = \mathbf{\text{₹}5,90,000 \text{ approx.}}$

3. COSTAR/SYSTEM STAR Tool

After manual calculation, these values can be fed into COSTAR/SYSTEM STAR. The tool allows us to explore additional parameters like:

- Effort distribution across phases (analysis, design, coding, testing)
- Cost per LOC and productivity metrics
- Risk factors and reliability estimates

For Kanbango, entering **4.5 KLOC** as size and selecting “Organic” type will give similar results, i.e., around **12 PM effort, 6 months duration, and ~₹6 Lakhs cost.**

4. Final Result

- **Function Points:** 91 FP (~4.5 KLOC)
- **COCOMO Effort:** ~12 Person-Months
- **Time:** ~6 months
- **Team Size:** 2 developers
- **Estimated Cost:** ~₹6,00,000

CONCLUSION:

Thus, both FP and COCOMO give us a realistic estimate that Kanbango can be built by a small team of 2 people in around 6 months with a budget of about six lakhs.