Department of Technical Education
Capstone project

Cost Breakdown Structure

Capstone project Name: AI Smart Mirror Using Raspberry PI 3B+

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Design:

- Determine user requirements
- Create user interface design
- Choose hardware components

Development:

- Assemble hardware components
- Develop software to integrate components
- Install and configure software on smart mirror

Testing:

- Conduct functional testing of hardware and software
- Perform usability testing with users
- Address any issues or bugs found during testing

Deployment:

- Install smart mirror in desired location
- Provide training to users on how to use smart mirror
- Provide ongoing maintenance and support as needed

Design:

- Determine user requirements: (1^{st} week) = ₹ 300
- Create user interface design: ₹ 750
- Choose hardware components: ₹ 1,850
- Total labour cost for design phase: ₹ 2,900

Development:

- Assemble hardware components: (3^{rd} to 4^{th} week) = ₹ 5,450
- Develop software to integrate components: 300

- Install and configure software on smart mirror: ₹ 750
- Total labour cost for development phase: ₹ 6,500

Testing:

- Conduct functional testing of hardware and software: (12th week) ₹2,300
- Perform usability testing with users: (12 to 13th week) = 500
- Address any issues or bugs found during testing: (13th week) = 200
- Total labour cost for testing phase: ₹ 3,000

Deployment:

- Install smart mirror in desired location: (14th week on 1st to 2nd Day) 900
- Provide training to users on how to use smart mirror: (14th week on 3nd to 5th Day) 400
- Provide ongoing maintenance and support as needed: (14th week on 6th to 7th Day) 400
- Total labour cost for deployment phase: ₹ 1700

Estimate the cost of materials

- Display screen: ₹ 3,000
- Raspberry Pi 4 Model B: ₹ 4,950
- Two-way mirror: ₹ 950
- Wooden frame: ₹ 700
- Power supply and wiring: ₹ 500
- Speakers: ₹ 700
- Microphone: ₹ 700
- Camera module: ₹ 650
- Sensors (such as temperature, humidity, and motion sensors): ₹ 750
- Miscellaneous items (such as screws, bolts, and adhesive): ₹ 500
- Total material cost: ₹ 14,100

Overhead costs.

It's important to consider all of the costs associated with the project, including overhead costs. To ensure that our project estimate is accurate, we added a percentage markup to the total direct costs (labour and materials) of the project to allocate for overhead costs.

The total direct cost for my smart mirror project is estimated at ₹14,100. To account for overhead costs, we added a 25% markup to the total direct costs, which will give us an additional ₹3,535. Therefore, the estimated overhead cost allocation for our smart mirror project will be ₹3,535.

Including an appropriate allocation for overhead costs is important to ensure that our project is financially viable and has the necessary resources to be successful. By accurately estimating overhead costs, we better manage our project budget and resources, and avoid any unexpected expenses that could impact the success of our smart mirror project.

Build contingency into your CBS

The percentage markup for contingency can vary depending on the level of risk associated with the project, the complexity of the project, and other factors. For our smart mirror project, we added a 7% contingency markup to the total estimated cost. This will provide us with a reserve amount to cover unexpected expenses that may arise during the course of the project.

For example, if the estimated cost of the smart mirror project is ₹11,000, a 7% contingency mark-up would add ₹2,100 to the total estimated cost of the project. This contingency amount can be used to cover unexpected expenses or risks that may arise, such as unforeseen material costs or additional labour requirements.

By building contingency into my CBS, we can better manage the financial risks associated with the project and ensure that we have the necessary resources to complete the project successfully. This will help me to stay within budget and avoid any unforeseen expenses that could impact the overall success of our smart mirror project.

Final Check

The final step in creating a cost breakdown structure (CBS) is to compare your estimates with the available budget for the capstone project. This step is crucial because it helps you determine whether the project is financially feasible and whether you have sufficient funds to complete it successfully.

As a student, if my estimate is within the available budget, I would be confident that the financial aspect of my capstone project is on track. However, if my CBS comes in higher than the available budget, we would need to find ways to control costs.

There are several ways to control costs, such as reviewing the CBS and looking for areas where costs can be reduced without affecting the quality or functionality of the smart mirror. Additionally, negotiating with suppliers for better prices, optimizing labour costs by using more efficient processes, and prioritizing project requirements can all help reduce costs.

As a student, I would ensure that my estimate is within the available budget and take steps to control costs if necessary. By doing so, we would be able to manage the financial aspect of my capstone project effectively and ensure its success.

Date:

Signature of the student

Signature of the cohort owner