**TUTORIAL 4**

➢ **Multiple Choice:**

1. What is the main Accountants usually define \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as a resource sacrificed or foregone to achieve a specific objective or something given up in exchange.
   1. money
   2. liability
   3. trade
   4. cost
2. goal of project cost management ?
   1. to complete a project for as little cost as possible
   2. to complete a project within an approved budget
   3. to provide truthful and accurate cost information on projects
   4. to ensure that an organization’s money is used wisely
3. Which of the following is not an output of estimating costs ?
   1. activity cost estimates
   2. a cost baseline
   3. basis of estimates
   4. project documents updates
4. If a company loses $5 for every $100 in revenue for a certain product, what is the profit margin for that product ?
   1. -5%
   2. 5%
   3. -$5
   4. $5
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ reserves allow for future situations that are unpredictable.

a. Contingency

* 1. Financial
  2. Management
  3. Baseline

1. You are preparing a cost estimate for a building based on its location, purpose, number of square feet, and other characteristics. What cost-estimating technique are you using ?

a. parametric

* 1. analogous
  2. bottom-up
  3. top-down

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ involves allocating the project cost estimate to individual material resources or work items over time.
   1. Reserve analysis
   2. Life cycle costing
   3. Project cost budgeting
   4. Earned value analysis
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a project performance measurement technique that integrates scope, time, and cost data.
   1. Reserve analysis
   2. Life cycle costing
   3. Project cost budgeting
   4. Earned value management
3. If the actual cost for a WBS item is $1,500 and its earned value is $2,000, what is its cost variance, and is it under or over budget ? Cv=EV-AC>0 => UNDER COST
   1. The cost variance is -$500, which is over budget.
   2. The cost variance is -$500, which is under budget.
   3. The cost variance is $500, which is over budget.
   4. The cost variance is $500, which is under budget.
4. If a project is halfway completed, its schedule performance index is 110%, and its cost performance index is 95%, how is it progressing ?
   1. It is ahead of schedule and under budget.
   2. It is ahead of schedule and over budget.
   3. It is behind schedule and under budget.
   4. It is behind schedule and over budget.

* Dùng nhiều chi phí để đẩy nhanh tiến độ
* 5%CPI đổi lấy 10%SPI

**Schedule Performance Index (SPI)**

SPI = EV/PV=110% >1 => ĐI trước thời hạn

**Cost Performance Index (CPI)**

CPI= EV/AC=95% <1=> CV<0 => cost xấu

1 dự án tốt phải đảm bảo SPI>1 VÀ CPI>1

➢ **Short Answer:**

1. Discuss why many software professionals may overlook project cost management and how this might affect the ability to complete projects within budget.

Many software professionals overlook project cost management due to several key factors:

**1. Technical Focus**

* Emphasis on coding and functionality over budgeting.

**2. Lack of Training**

* Insufficient knowledge in financial management leads to underestimating costs.

**3. Optimism Bias**

* Overconfidence in abilities can result in unrealistic budget expectations.

**4. Poor Stakeholder Engagement**

* Limited communication about budget constraints can lead to scope creep.

**5. Dynamic Environment**

* Rapid changes in technology and project requirements complicate budget adherence.

**Impact on Budget Completion**

* **Budget Overruns:** Increased likelihood of exceeding budgets.
* **Inefficient Resource Use:** Misallocation affects timelines and quality.
* **Erosion of Trust:** Frequent budget issues can lower morale and stakeholder confidence.

Overall, failing to prioritize cost management can jeopardize project success and financial stability.

1. Explain some of the basic principles of cost management, such as profits, life cycle costs, tangible and intangible costs and benefits, direct and indirect costs, and reserves.

Some basic principles of cost management :

**1. Profits**

* **Definition:** The difference between total revenues and total costs.
* **Importance:** Understanding profit margins helps in setting realistic budgets and pricing strategies, ensuring the project remains financially viable.

**2. Life Cycle Costs**

* **Definition:** The total cost of ownership over the entire life span of a project or product, including initial development, maintenance, and disposal.
* **Importance:** Assessing life cycle costs aids in making informed decisions about long-term investments and sustainability.

**3. Tangible and Intangible Costs and Benefits**

* **Tangible Costs:** Measurable expenses, such as salaries, materials, and equipment.
* **Intangible Costs:** Non-quantifiable factors, like employee satisfaction or brand reputation.
* **Tangible Benefits:** Direct financial gains, such as increased sales.
* **Intangible Benefits:** Non-monetary advantages, like improved customer loyalty or market positioning.
* **Importance:** A comprehensive view of both tangible and intangible factors helps in evaluating the true value of a project.

**4. Direct and Indirect Costs**

* **Direct Costs:** Expenses directly attributable to a project, such as labor and materials.
* **Indirect Costs:** Overhead costs that are not directly tied to a specific project, such as administrative expenses.
* **Importance:** Distinguishing between these costs is crucial for accurate budgeting and financial reporting.

**5. Reserves**

* **Definition:** Funds set aside to address unexpected costs or risks that may arise during a project.
* **Types:**
  + **Contingency Reserves:** For known risks.
  + **Management Reserves:** For unknown risks.
* **Importance:** Having reserves ensures that a project can absorb unforeseen expenses without jeopardizing overall financial health.

1. What is meant by a sunk cost ? Give examples of typical sunk costs for a software project as well as examples from your personal life. Why is it difficult for people to ignore them when they should?

- **A sunk cost** is an expense that cannot be recovered by additional spending or investment.

**Examples of Sunk Costs in a Software Project**

1. **Development Costs:**
   * Money spent on initial coding or software architecture that cannot be recovered if the project is abandoned.
2. **License Fees:**
   * Fees paid for software licenses or tools that are now unused due to project changes.
3. **Training Expenses:**
   * Costs for training team members on technologies or methodologies that are no longer applicable.
4. **Research and Development:**
   * Investments in preliminary research that do not lead to viable products.

**Examples of Sunk Costs in Personal Life**

1. **Gym Membership Fees:**
   * Money paid for a yearly gym membership that you no longer use but feel compelled to continue going.
2. **Concert Tickets:**
   * Tickets purchased for an event that you can no longer attend, but you still feel the urge to go because of the money spent.
3. **Education Expenses:**
   * Tuition fees for a course that you realize isn’t beneficial but feel obligated to complete.

**Ignoring sunk costs can be difficult for several reasons:**

1. **Loss Aversion:** Humans are generally more sensitive to losses than gains. When we've invested time, money, or effort into something, we feel a sense of loss if we abandon it. This emotional bias can make it hard to let go, even if it's no longer a good investment.
2. **Confirmation Bias:** We often seek out information that confirms our existing beliefs or decisions. If we've invested in something, we may be more likely to focus on positive aspects or downplay negative ones, reinforcing our commitment.
3. **Fear of Failure:** Abandoning a project can feel like admitting defeat. We may fear the social or personal consequences of failure, leading us to cling to the original course of action.
4. Give an example of how you would use each of the following techniques for creating a cost estimate: analogous, parametric, and bottom-up.

**Example:**  
Managing a software development project similar to a previous project that involved building a mobile application.

* **Technique:** Review the previous project’s costs, which amounted to $100,000 and took six months to complete.
* **Application:** Based on similarities in scope, complexity, and team size, you estimate the new project will also cost around $100,000, adjusting for any minor changes in technology or team rates.

**2. Parametric Estimating**

**Example:**  
Estimating the cost of developing a web application based on specific metrics.

* **Technique:** Use a cost per feature metric derived from historical data. For instance, you find that, on average, each feature costs $5,000 to develop.
* **Application:** If your new project requires 10 features, you estimate the total cost as $5,000 x 10 = $50,000.

**3. Bottom-Up Estimating**

**Example:**  
Estimating the cost of a comprehensive software project that includes multiple components.

* **Technique:** Break down the project into smaller tasks (e.g., UI design, backend development, testing).
* **Application:**
  + UI Design: $15,000
  + Backend Development: $30,000
  + Testing: $10,000
  + Documentation: $5,000
* **Total Estimate:** Sum the individual estimates: $15,000 + $30,000 + $10,000 + $5,000 = $60,000.

1. Explain what happens during the process to determine the project cost.

**Project Cost: A Step-by-Step Process**

Determining the cost of a project involves a systematic process that considers various factors. Here's a breakdown of the key steps:

**1. Project Scope Definition:**

* **Clarify Objectives:** Clearly define the project's goals and deliverables.
* **Outline Tasks:** Break down the project into smaller, manageable tasks.
* **Identify Deliverables:** Determine the specific outputs or outcomes of the project.

**2. Cost Estimation Techniques:**

* **Analogous Estimating:** Compare the current project to similar past projects to estimate costs.
* **Parametric Estimating:** Use historical data and statistical techniques to calculate costs based on project parameters (e.g., size, weight, distance).
* **Bottom-Up Estimating:** Estimate the cost of each individual task and sum them to determine the total project cost.
* **Three-Point Estimating:** Use an optimistic, most likely, and pessimistic estimate to calculate a range of potential costs.

**3. Resource Identification and Costing:**

* **Labor:** Determine the required personnel, their hourly rates, and the time needed to complete tasks.
* **Materials:** Identify the materials needed, their quantities, and costs.
* **Equipment:** Estimate the cost of any equipment or tools required.
* **Overhead Costs:** Consider indirect expenses like rent, utilities, and administrative costs.

**4. Contingency Planning:**

* **Risk Assessment:** Identify potential risks that could impact the project's cost.
* **Contingency Fund:** Allocate a portion of the budget to cover unexpected costs or changes in scope.

**5. Cost Breakdown Structure (CBS):**

* **Organize Costs:** Create a hierarchical structure to categorize and track project costs.
* **Detailed Breakdown:** Break down costs into smaller, manageable components.

**6. Cost Control and Monitoring:**

* **Track Expenses:** Monitor actual costs against the estimated budget.
* **Identify Variances:** Analyse differences between planned and actual costs.
* **Take Corrective Action:** Implement measures to address cost overruns or underruns.

**7. Periodic Reviews and Adjustments:**

* **Evaluate Progress:** Regularly assess the project's progress and costs.
* **Make Adjustments:** If necessary, revise the cost estimate based on changes in scope, risks, or performance.

**Key Factors Influencing Project Cost:**

* **Project Complexity:** More complex projects generally have higher costs.
* **Scope Creep:** Unplanned changes to the project scope can increase costs.
* **Risk Management:** Effective risk management can help mitigate cost overruns.
* **Experience and Expertise:** The experience and expertise of the project team can impact costs.
* **Economic Conditions:** Inflation and other economic factors can influence material and labor costs.