CSE 495: IT Project Management and Entrepreneurship

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Project Management Information System (PMIS)

- PMIS is a **set of tools and techniques** used to manage project information
- Helps the **project manager plan, execute, monitor, and control** the project
- Part of **Enterprise Environmental Factors (EEF)**
- Supports **decision-making** throughout the project lifecycle
- **PMIS Includes**
  - Scheduling tools (e.g., Gantt charts)
  - Cost control systems
  - Change management systems
  - Document management systems
  - Reporting tools (dashboards, status reports)
  - Configuration management systems
- PMIS tools are Jira, Trello, Asana, Microsoft Project and so on

PMIS

- PMIS supports Project Process
  - **Initiating** – project charters, stakeholder data
  - **Planning** – schedules, budgets, risk registers
  - **Executing** – work performance data
  - **Monitoring & Controlling** – performance reports
  - **Closing** – lessons learned, final reports
- **PMIS in Monitoring & Controlling**
  - Tracks actual vs planned performance
  - Supports **Earned Value Analysis (EVA)**
  - Helps identify variances and trends
  - Enables corrective and preventive actions

What is Expert Judgment?

- Expert Judgment is the use of **specialized knowledge or training**
- Provided by individuals or groups with **experience in a specific area**
- Used to **make decisions** when information is complex or uncertain
- Applied throughout the **entire project lifecycle**
- **Experts:**
  - Project team members
  - Subject Matter Experts (SMEs)
  - Consultants and Stakeholders
  - Functional managers
  - Professional and technical associations

What are Meetings?

- Meetings are **formal or informal gatherings** of stakeholders
- Used to **discuss, plan, review, or decide** project matters
- A key **Tool & Technique** in many PMP processes
- Supports **communication, collaboration, and decision-making**

Types of Project Meetings

- Kick-off meeting
- Planning meetings
- Daily stand-ups (Agile)
- Status review meetings
- Risk review meetings
- Change control meetings
- Lessons learned meetings
- Closing meetings

Meetings Across Process Groups

- **Initiating** – Kick-off meetings
- **Planning** – Scope, schedule, risk planning meetings
- **Executing** – Team coordination meetings
- **Monitoring & Controlling** – Status & performance review meetings
- **Closing** – Lessons learned & final review meetings

What is Work Performance Data?

- **Raw, unprocessed facts** about project execution
- Collected during the **Executing** process group
- Shows the **current status** of project activities
- No analysis, no interpretation — **just facts**
- **Examples of Work Performance Data**
  - % of work completed
  - Actual start and finish dates
  - Actual costs incurred and hours worked
  - Number of defects identified
  - Quantity of materials used
  - Change requests submitted

Work Performance Information

- **Work Performance Information** is **processed and analyzed project data** that shows how the project is performing compared to the project plan.
- In simple words: **Data → analyzed → meaningful information**
- **Work Performance Data (Input)**
- Raw facts collected during execution
- **Examples:**
  - % of task completed, actual cost spent
  - Start and finish dates
  - Number of defects
- **Work Performance Information**
  - Schedule variance (SV), Cost variance (CV)
  - SPI (Schedule Performance Index), CPI (Cost Performance Index)
  - Trend analysis and Forecasts
  - Information answers: **"Is the project on track?"**

Work Performance Reports (Output)

- Formatted information shared with stakeholders.
- **Examples:**
  - Status reports
  - Dashboards
  - Progress presentations
  - Performance reviews
- Reports are **for communication**, not analysis.
- **Example**
- Actual cost = $120,000
- Planned cost = $100,000
  - **Data**: cost values
  - **Information**: project is **over budget by $20,000**
  - **Report**: cost variance chart sent to sponsor

Project Selection

- Project selection is the process of **evaluating and choosing projects** that best support the **organization's strategic objectives**.
- Projects are selected to **benefit the organization**, not just because they are interesting or technically attractive.
- **Why Project Selection Is Important**
  - Limited resources
  - Multiple competing project proposals
  - Need for maximum business value
  - Alignment with organizational strategy

Project Selection

- Project selection starts with generating project ideas, estimating costs and benefits, analyzing financially (NPV, IRR, ROI, Payback), comparing alternatives, and selecting the project that delivers the maximum business value.

Classification of Project Selection Methods

- **1. Benefit Measurement Methods** (Quantitative techniques)
- These methods compare projects using **financial value**.
- **a) Net Present Value (NPV)**
  - NPV is the **present value of inflows minus the present value of outflows**.
  - **Rule :** Higher NPV = **better project**
  - NPV > 0 → Accept project
  - **Formula**
  - NPV = Σ (Cash Inflow / (1 + r)^n) – Initial Investment
  - r-interest rate, n- time intervals
  - Always select the project with the **highest positive NPV**.

Benefit Measurement Methods

- **b) Internal Rate of Return (IRR)**
- IRR is the **interest rate at which NPV = 0**.
- **Rule :** Higher IRR = better project
- If comparing projects, choose the one with **higher IRR**, assuming similar risk.
- **c) Payback Period**
- Time required to recover the initial investment.
- **Rule:** Shorter payback = better project
- Payback ignores **time value of money** and benefits after payback.

Benefit Measurement Methods

- **d) Return on Investment (ROI)**
- Measures profitability.
- **Formula:** ROI = (Net Profit / Investment) × 100
- ROI is simple but not very precise.

Benefit Measurement Flow

- **1Project Ideas**
- **Meaning:** This is the **starting point** — potential projects proposed by stakeholders, departments, or management.
- **Examples:**
  - Implement a new ERP system
  - Upgrade the company website
  - Launch a mobile banking app
- **Key point:** All projects should support **strategic objectives**. Don't pick just because it's "interesting" or "technically cool."

Benefit Measurement Flow

- **2 Estimate Costs & Benefits**
- **Meaning:** For each project, calculate:
  - **Costs:** Capital, labor, tools, training, maintenance
  - **Benefits:** Revenue increase, cost savings, productivity, risk reduction
- **Key idea:** This is **raw data collection**, not analysis yet.
- **Example:**
  - Cost = $200,000
  - Expected benefits = $300,000
- Always include **all direct and indirect costs/benefits** for accurate comparison.

Benefit Measurement Flow

- **3 Financial Analysis (NPV, IRR, ROI, Payback)**
- **Meaning:** Analyze the costs and benefits **using quantitative methods** to see which project is financially attractive.
- **Methods:**
  - **Net Present Value (NPV):** Present value of inflows – present value of outflows → higher NPV = better
  - **Internal Rate of Return (IRR):** Rate at which NPV = 0 → higher IRR = better
  - **Return on Investment (ROI):** Profit / Investment × 100 → measures profitability
  - **Payback Period:** Time to recover investment → shorter = better
- NPV is the **most reliable** for decision-making; Payback is simple but ignores long-term benefits.

Benefit Measurement Flow

- **4 Compare Projects**
- **Meaning:** After analysis, rank the projects based on financial results and other factors (e.g., risk, strategic alignment).
- Consider **risk, strategic fit, and resources**, not just financial numbers.

Project	NPV ($)	IRR (%)	Payback (yrs)	Score
ERP Upgrade	120,000	18%	3	1
Website Revamp	80,000	25%	2	2
Mobile App	100,000	22%	2.5	3

Benefit Measurement Flow

- **5. Select Project with Maximum Business Value**
- **Meaning:** Choose the project that delivers **the highest overall value** to the organization.
- **Factors considered:**
  - NPV, IRR, ROI, Payback
  - Strategic alignment
  - Risk tolerance
  - Resource availability
- **Example:**
  - ERP Upgrade may have the **highest NPV** → selected despite longer payback period
- Decision should be **defensible and measurable**

2. Constrained Optimization Methods

- (Mathematical models)
- Used when **multiple constraints** exist.
- Linear programming
- Integer programming
- Multi-objective optimization

3. Comparative Methods (Non-financial)

- **a) Scoring Models**
- Projects are scored based on **weighted criteria**.
- **Example Criteria**
  - Strategic alignment
  - Risk level
  - Expected benefits
  - Resource availability

3. Comparative Methods (Non-financial)

- Scoring Table Example
- Highest **total weighted score** wins.

Criteria	Weight	Project A	Project B
Strategy Fit	40%	8	6
Risk	30%	7	9
ROI	30%	6	7

- **b) Expert Judgment**
  - Senior management
  - Subject matter experts
  - PMO decisions
  - Expert judgment is often used **with** other methods.

Project Selection vs Project Prioritization

Selection	Prioritization
Choosing which projects to do	Ordering selected projects
Happens first	Happens after selection
Strategic decision	Resource-based decision