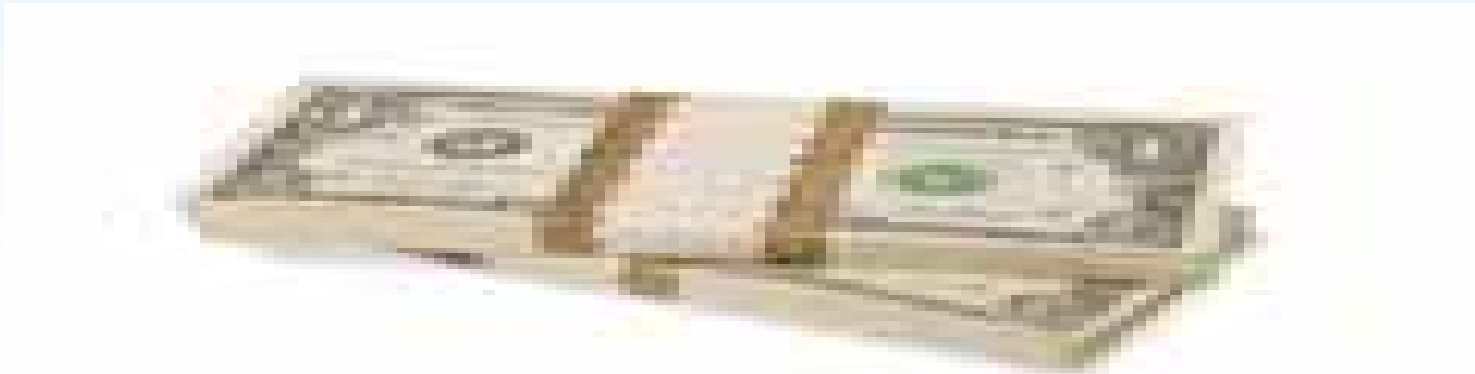# Cost Benefit Analysis

- Determines the cost effectiveness of a project or solution

- The purpose of a cost/benefit analysis is to answer questions such as:

  - Is the project justified (because benefits outweigh costs)?

  - Can the project be done, within given cost constraints?

  - What is the minimal cost to attain a certain system?

  - What is the preferred alternative, among candidate solutions?

How much will the system cost?

- Two types of costs, costs associated with

  - Developing the system
    - Can be estimated from the outset of a project
    - Should be refined at the end of each phase
    - One time costs (will not recur after the project has been completed

  - Operating a system
    - Can be estimated only after specific computer-based solutions have been defined
    - Recur throughout the lifetime of the system

How much will the system cost?

- System development Cost Categories
  - Personnel costs
  - Computer Usage
  - Training
  - Supply, duplication, and equipment costs
  - Cost of any new computer equipment and software

What benefits will the system provide?

- Benefits
  - increase profit
  - Decrease costs
  - Can be classified as
    - Tangible benefits – a benefit that can be easily quantified.
    - Intangible benefits – a benefit that is believed to be difficult or impossible to quantify

Is the proposed system cost effective

- Cost effectiveness techniques

  – Payback Analysis
  – Return on Investment Analysis
  – Net present value Analysis

Payback Analysis

- A technique for determining if and when an investment will pay for itself

- How long will it take (usually, in years) to pay back the project, and accrued costs:

  - Total costs (initial + incremental) - Yearly return (or savings)

Return-on-Investment (ROI) Analysis

- A technique that compares the lifetime profitability of alternative solutions

$$\frac{\text{Lifetime benefits - Lifetime costs}}{\text{Lifetime costs}}$$

Net Present value Analysis

- Compares the annual discounted costs and benefits of alternative solutions

- Spreadsheets such as Excel, Lotus 1-2-3 can be used to calculate all these values

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