



Feasibility Analysis

Lecture 3



Feasibility Analysis

Feasibility – the measure of how beneficial or practical an information system will be to an organization.

Feasibility analysis – the process by which feasibility is measured.

Feasibility Analysis

- Operational Feasibility
- Technical Feasibility
- Economic Feasibility

Operational Feasibility

- centred on human factors (ie. ergonomics, desire to have a new computer system)
- Is the problem worth solving?
- How do the clients feel about the problem?
- Are there unused computer terminals in the company now? - Are there unread reports being generated?
- A measure how well a solutions meets the system requirements.

Economic Feasibility

- costs and benefits
- early estimates based on rule of thumb
- refined successively until we have a complete Cost-Benefit Analysis

Technical Feasibility

- often computer-oriented
- is the solution practical?
- do we have the technology now?
- do we have the technical expertise and time?

Cost and Benefit Analysis

- the process of isolating and estimating costs and benefits
- in order to do a cost-benefit analysis, two sides must be considered
 - System costs
 - Benefits from the system

System Costs

- **Development costs** are one time costs that will not recur after the project has been completed.
- **Operating costs** are costs that tend to recur throughout the lifetime of the system. Such costs can be classified as:
 - Fixed costs — occur at regular intervals but at relatively fixed rates.
 - Variable costs — occur in proportion to some usage factor.

Cost :Tangible Cost

Tangible costs are accurately projected by the systems analyst and accounting personnel

Example

- direct project costs (eg, staff, office space);
- acquisition costs (eg, purchase of technology);
- implementation costs (eg, loss of productivity); and
- whole of life ownership costs (eg, operating costs, maintenance, upgrade/replacement of facilities, staff, training and support).

Cost :Intangible Cost

Those that are difficult to estimate and may not be known

Example

- Losing a competitive edge
- Losing the reputation of being first
- Declining company image
- Ineffective decision making

Benefit :Tangible Benefit

Tangible benefit In general, a “tangible” benefit is one you can measure. Income would be tangible. Personal satisfaction would not. can be estimated quite accurately.

Example

- usually measured in terms of monthly or annual savings or profit
 - Staff Reductions
 - Savings on Production
 - Faster Cycle Time
 - Manufacture a new Part

Benefit :Intangible Benefit

Intangible benefits are benefits from use of the information system that are difficult to measure

Example

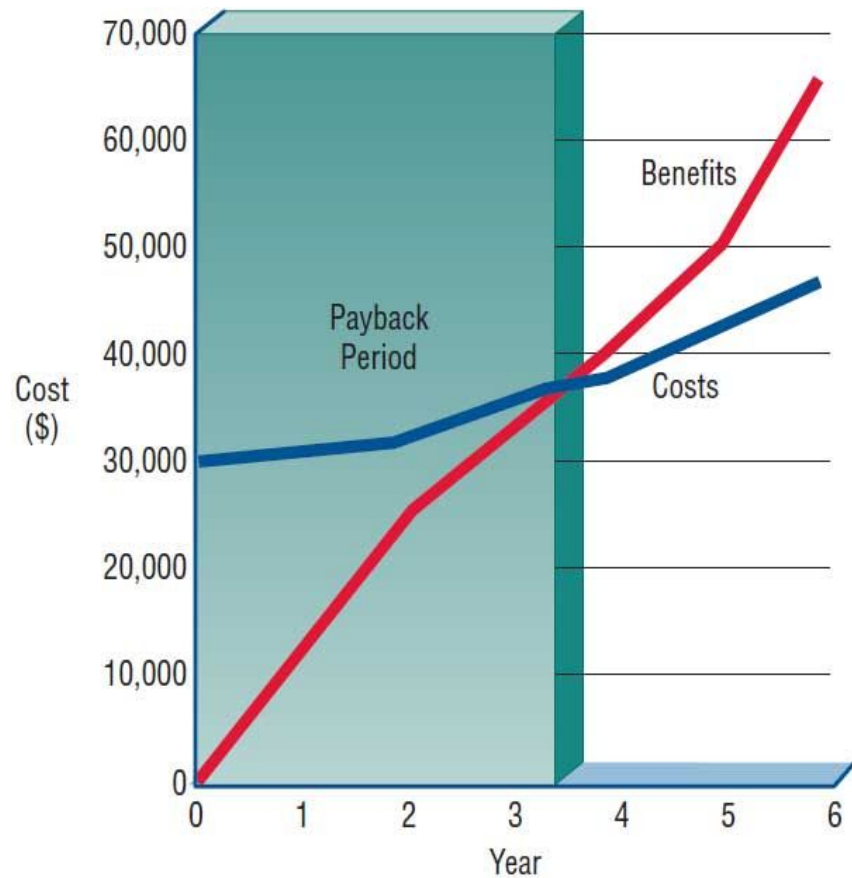
- Enhancing accuracy
- Maintaining a good business image
- Increasing job satisfaction
- Goodwill
- Environmentally Friendly

Comparing Cost and Benefit

Break-even analysis

Break-even analysis enables a business organization to:

1. Measure profit and losses at different levels of production and sales.
2. Predict the effect of changes in sales prices.
3. Analyze the relationship between fixed and variable costs.
4. Predict the effect of cost and efficiency changes on profitability.



— Cumulative benefits from proposed system

— Cumulative costs of proposed system

Year	Cost (\$)	Cumulative Costs (\$)	Benefits (\$)	Cumulative Benefits (\$)
0	30,000	30,000	0	0
1	1,000	31,000	12,000	12,000
2	2,000	33,000	12,000	24,000
3	2,000	35,000	8,000	32,000
4	3,000	38,000	8,000	40,000
5	4,000	42,000	10,000	50,000
6	4,000	46,000	15,000	65,000

Economic Feasibility : Techniques

Techniques Used to Determine Economic Feasibility

- Payback Analysis
- return on investment
- net present value

Payback Analysis

- determines how much time will lapse before accrued benefits overtake accrued and continuing costs
- time required for investment to break even
- very important when company is 'cash poor' - shows when company will get its money back

Payback Analysis

$$\text{Payback Period (T)} = \frac{\text{Development Costs (D)}}{\text{Annual Revenues - Annual Operating Costs (P)}}$$

Example:

Investment A costs \$40,000 to develop and reduces costs by \$20,000 annually. Payback period is $D/P = \$40,000/\$20,000 = 2$ years.

Investment B costs \$50,000 to develop and reduces costs by \$30,000 annually. Payback period is $D/P = \$50,000/\$30,000 = 1.67$ years.

Return On Investment (ROI)

ROI = Net Income / Cost of Investment

or

ROI = Investment Gain / Investment Base

Return On Investment (ROI)

Example:

An investor purchases property A, which is valued at \$500,000. Two years later, the investor sells the property for \$1,000,000.

We use the investment gain formula in this case.

$$\text{ROI} = (1,000,000 - 500,000) / (500,000) = 1 \text{ or } 100\%$$

Return On Investment (ROI)

Example

Suppose Joe invested \$1,000 in Slice Pizza Corp. in 2017 and sold his stock shares for a total of \$1,200 one year later. To calculate his return on his investment, he would divide his profits ($\$1,200 - \$1,000 = \$200$) by the investment cost (\$1,000), for a ROI of $\$200/\$1,000$, or 20 percent.

Present Value Analysis

Present Value (PV) is a formula used in Finance that calculates the present day value of an amount that is received at a future date. The premise of the equation is that there is "time value of money".

Present Value Analysis

Let:

F = Future Value of Investment

P = Present Value of Investment

i = Interest Rate per Compounding Period

n = Number of Compounding Periods

Then:

$$F = P(1 + i)^n$$

$$P = \frac{F}{(1 + i)^n}$$

Present Value Analysis : Example

You invest \$1,000 and expect to see a 10% annual return for five years, the future value at the end of 5 years would be \$1,610.51.

$$n = 5$$

$$i = 10\%$$

$$P = 1000$$

$$F = 1610.51$$

Net Present Value

$$\text{NPV} = \text{Present Value of Total Benefits} - \text{Present Value of Total Costs}$$

- if NPV is > 0 , then the project is economically feasible

Cash Flow Analysis

Cash Flow Analysis is the evaluation of a company's cash inflows and outflows from operations, financing activities, and investing activities. In other words, this is an examination of how the company is generating its money, where it is coming from, and what it means about the value of the overall company.

EXAMPLE

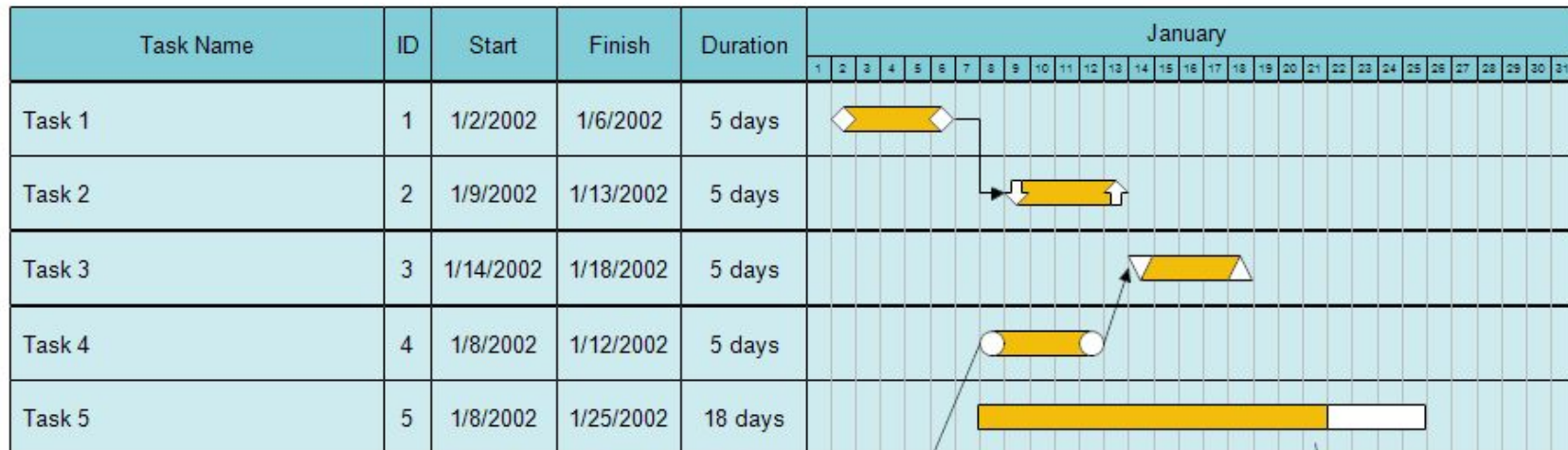
Financing Activities				
Issuance of Debt	1,169.30	3,744.20	2,218.10	36.40
Issuance of Capital Stock	332.10	548.20	1,137.60	975.70
Repayment of Debt	-950.00	-2,698.50	-1,645.50	-2,301.10
Repurchase of Capital Stock	-2,797.40	-3,919.30	-3,943.00	-2,959.40
Payment of Cash Dividends	-2,235.50	-1,823.40	-1,765.60	-1,216.50
Other Financing Charges, Net	60.50	34.30	2.10	5.00
Cash from Disc. Financing Activities	0.00	0.00	0.00	0.00
Net Cash from Financing Activities	-4,421.00	-4,114.50	-3,996.30	-5,459.90
Effect of Exchange Rate Changes	57.90	-95.90	123.30	267.60
Net Change in Cash & Cash Equivalents	-267.40	82.10	-146.80	-2,124.90
Cash at Beginning of Period	2,063.40	1,981.30	2,128.10	4,253.00
Cash at End of Period	1,796.00	2,063.40	1,981.30	2,128.10

Gantt Chart

A Gantt chart, commonly used in project management, is one of the most popular and useful ways of showing activities (tasks or events) displayed against time. On the left of the chart is a list of the activities and along the top is a suitable time scale. Each activity is represented by a bar; the position and length of the bar reflects the start date, duration and end date of the activity. This allows you to see at a glance:

- What the various activities are
- When each activity begins and ends
- How long each activity is scheduled to last
- Where activities overlap with other activities, and by how much
- The start and end date of the whole project

Gantt Chart - Project Schedule



You can
annotate by
drawing lines
and text.

Different colors
show how much
is completed