Feasibility Analysis

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Feasibility Analysis

- Once the need for the system and its business requirements have been defined → **feasibility analysis**
- **Feasibility analysis:**
  - Guide the organization in determining whether to proceed with the project
  - Identify the important risks
- **Detailing Expected Costs and Benefits**
  1. Technical feasibility
  2. Economic feasibility
  3. Organizational feasibility

#1 Technical Feasibility: Can we build it?

- Familiarity with application/functional areas
  - Knowledge of business domain
    - If analysts are unfamiliar with the business application area, they have a greater chance of misunderstanding the users or missing opportunities for improvement.
    - Development of new system is riskier than extensions to an existing system, because existing system tend to be better understood
- Familiarity with technology
  - Risk increase dramatically when the technology is new

#1 Technical Feasibility: Can we build it?

- Project size
  - Number of people, time, and features
- Compatibility with the existing technology
  - System rarely built in vacuum
  - Should rely on existing data, infrastructure

#2 Economic Feasibility: Should we build it?

- ❑ Identify costs and benefits
- ❑ Assign values to costs and benefits
- ❑ Determine cash flow
- ❑ Assess financial viability
  - Net present value (NPV)
  - Return on investment (ROI)
  - Break even point (BEP)

#2 Economic Feasibility: Should we build it?

1. Identify Costs and Benefits
2. Assign Values to Costs and Benefits
3. Determine Cash Flow
4. Determine Net Present Value
5. Determine Return on Investment
6. Calculate Break-Even Point
7. Graph Break-Even Point

#2 Economic Feasibility: Tangible vs. Intangible Costs

- *Tangible Costs* – Includes revenue that the system enables the organization to collect, such as increased sales.
- *Intangible Costs* – Are base on intuition and belief rather than "hard numbers."

Example Costs and Benefits for Economic Feasibility

Development Costs		Operational Costs
Development Team Salaries		Software Upgrade
Consultant Fees		Software Licensing Fees
Development Training		Hardware Repair
Hardware and Software		Hardware Upgrade
Vendor Installation		Operational Team Salaries
Office Space and Equipment		Communications Charges
Data Conversion Costs		User Training
Tangible Benefits		**Intangible Benefits**
Increased Sales		Increased Market Share
Reduction in Staff		Increased Brand Recognition
Reduction in Inventory		Higher Quality Products
Reductions in IT Costs		Improved Customer Service
Better Supplier Prices		Better Supplier Relation

Formulas for Determining Value

Calculation	Definition	Formula
Present Value (PV)	The amount of an investment today compared to that same amount in the future, taking into account inflation and time.	$\frac{\text{Amount}}{(1 + \text{interest rate})^n}$ n = number of years in future
Net Present Value (NPV)	The present value of benefit less the present value of costs.	PV Benefits − PV Costs
Return on Investment (ROI)	The amount of revenues or cost savings results from a given investment.	$\frac{\text{Total benefits} - \text{Total costs}}{\text{Total costs}}$
Break-Even Point	The point in time at which the costs of the project equal the value it has delivered.	$\frac{\text{Yearly NPV*} - \text{Cumulative NPV}}{\text{Yearly NPV*}}$ *Use the Yearly NPV amount from the first year in which the project has a positive cash flow. Add the above amount to the year in which the project has a positive cash flow.

Example of NPV Calculation

Benefits						
Increased Sales		500,000	530,000	561,800	595,508	
Reduction in Customer Complaint Calls[a]		70,000	70,000	70,000	70,000	
Reduced Inventory Costs		68,000	68,000	68,000	68,000	
Total Benefits[b]		638,000	668,000	699,800	733,508	
Present Value Total Benefits		**601,887**	**594,518**	**587,566**	**581,007**	**2,364,978**
Development Costs						
2 Servers @ $125,000	250,000	0	0	0	0	
Printer	100,000	0	0	0	0	
Software Licenses	34,825	0	0	0	0	
Server Software	10,945	0	0	0	0	
Development Labor	1,236,525	0	0	0	0	
Total Development Costs	**1,632,295**	**0**	**0**	**0**	**0**	
Operational Costs						
Hardware		50,000	50,000	50,000	50,000	
Software		20,000	20,000	20,000	20,000	
Operational Labor		115,000	119,600	124,384	129,359	
Total Operational Costs		**185,000**	**189,600**	**194,384**	**199,359**	
Total Costs	**1,632,295**	**185,000**	**189,600**	**194,384**	**199,359**	
Present Value Total Costs	**1,632,295**	**174,528**	**168,743**	**163,209**	**157,911**	**2,296,686**
NPV (PV Total Benefits – PV Total Costs)						**68,292**

[a] Customer service values are based on reduced costs of handling customer complaint phone calls.

[b] An important yet intangible benefit will be the ability to offer services that our competitors currently offer.

If NPV >= 0,

Project is OK

If NPV < 0,

Project is unacceptable

Assess Financial Viability – Break Even Point

- How long before the project's returns match the amount invested (make a graphic of ROI).
- The longer it takes to break even, the higher the project's risk.

#3 Organizational Feasibility: If we build it, will they come?

- There are two ways to assess:

  (1) How well the goal of the project **align with business objectives**

  Strategic alignment → the fit between the goals of the project and business strategy

  (2) **Stakeholder analysis**

  - Project champion(s)
    - ❑ A high-level non-IS executive who is usually but not always the person who created the system request.
  - Organizational management
    - ❑ Does management support the project ?
  - System users

#3 Organizational Feasibility: Stakeholder Analysis

- **Champion**
  - Initiate, promote, allocate his/her time and provide resources to the project
- **Organizational Management**
  - Know about the project
  - Budget enough money for the project
  - Encourage users to accept and use the system
- **System Users**
  - Make decisions that influence the project
  - Perform hands-on activities for the project
  - Ultimately determine whether the project is successful by using or not using the system

Decision on the Result of Feasibility Analysis

- It is suggested to make several feasibility analysis scenarios.
- Exercise yourself to put weight on components of feasibility analysis (technical, economical, organizational, etc) → some techniques could be used, e.g., MCDM (Multi Criteria Decision Making)
- Make your best intellectual judgment which scenario you would strongly recommend to your client.
- Elaborate the advantages and the disadvantages of the scenarios.

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