SCS 3108 - Software Project Management

Lesson 2: Management and Evaluation

What is Management?

1. Planning – what is to be done
2. Organizing – making arrangements
3. Directing – giving instructions
4. Monitoring – checking on progress
5. Controlling – taking actions to remedy hold-ups
6. Innovating – coming up with new solutions
7. Representing – liaising with users

Problems with IT Projects

- Manager's point of view
  - Poor estimates and plans
  - Lack of quality standards and measures
  - Lack of guidance about making organizational decisions
  - Lack of techniques to make progress visible
  - Poor role definition – who does what
  - Incorrect success criteria

Problems with IT Projects …contd.

- Project staff's point of view
  - Inadequate specification of work
  - Management ignorance of IT
  - Lack of knowledge of application area
  - Lack of standards
  - Lack of up-to-date documentation
  - Preceding activities not completed on time
  - Lack of communication between users
  - Lack of communication leading to duplication of work

Problems with IT Projects …contd.

Project staff's point of view

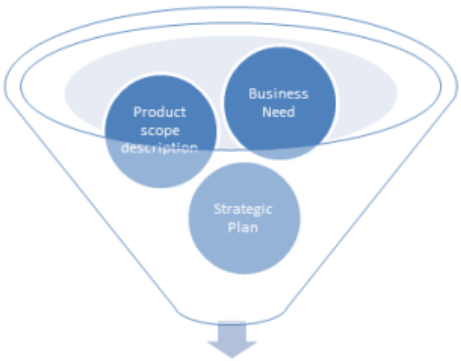
- Lack of commitment
- Narrow scope of technical experience
- Changing requirements
- Changing software environment
- Deadline pressure
- Lack of quality control
- Remote management
- Lack of training

Project Initiation

- High level scope is determined, deliverables set and budgets estimated.
- Define a new project or a new phase of an existing project by obtaining authorization to start the project or phase
- Major activities:
  - Develop a Business Case
  - Undertake a feasibility study
  - Create a Project Initiation Document (PID) – Top-level project planning document /or a Project Charter
  - Project announcement- press release
  - Appoint the project team & establish a project office
  - Prepare a communication plan
  - Conduct the phase review

Objectives of the Initiation phase

- Align the stakeholders' expectations with the project's purpose
- Provide visibility about the scope and objectives, ensuring that project will achieve the expectations
- Set the vision of the project—what is needed to be accomplished.
- Create a shared understanding of success criteria
- Reduce the overhead of involvement
- Improve deliverable acceptance, customer satisfaction, and other stakeholder satisfaction.



Business Case Document

- Justifies the start-up of a project
- Includes a description of the business problem or opportunity
- Provides the costs and benefits of each alternative solution and the recommended solution for approval.
- Justifies expenditure on the project
- Requires Sponsor's approval
- is referred to frequently during the project, to determine whether it is currently on track
- at the end of the project, success is measured against the ability to meet the objectives defined in the Business Case
- completion of a Business Case is critical to the success of the project.

Business Case Document

1. Introduction and background to the proposal
2. The proposed project
3. The market
4. Organizational and operational infrastructure
5. The benefits
6. Outline implementation plan
7. Costs
8. The financial case
9. Risks
10. Management plan

Feasibility study

- An exercise that involves documenting each of the potential solutions to a particular business problem or opportunity.
- **Purpose:** identify the likelihood of one or more solutions meeting the stated business requirements – to decide whether the solution will deliver the expected outcome
- **Outcome:** a confirmed solution for implementation.

Project Charter

- Defines the purpose (goal and objectives) of the project -high-level requirements may be documented
- Decides the project duration
- Identifies the project scope and deliverables
- Identifies financial and other resource requirements
- Identifies the stakeholders and defines their roles and responsibilities.
- Presents by the senior management to the sponsor

Project Charter includes

- Project vision and objectives
- Scope of the project
- Project deliverables
- The list of project stakeholders and their roles and responsibilities
- Organizational structure for the project
- Project plan
- Any risks, issues and assumptions

- What is the difference between Project Charter and Project Initiation Document (PID)?

Project Announcement

- Publicly announce the start of the project
  - Do a press release or a press conference
- Publish sponsor ownership
- Formally delegate authority to the project manager
- Commit resources to initiate the project

Project Evaluation

- A high level assessment of the project to see whether it is worthwhile to proceed with the project.

1. Strategic assessment
   - To see whether the project will fit in the strategic planning of the whole organization
2. Technical assessment
   - To determine whether it is desirable to carry out the development and operation of the software system
3. Economic assessment
   - To decide which of the several alternative projects has a better success rate, and a higher turnover

Strategic Assessment

- Used to assess whether a project fits in the long-term goal of the organization
- Evaluates individual projects against the strategic plan or the overall business objectives
- carried out by senior management
- Programme management - suitable for projects developed for use in the organization
- Portfolio management - suitable for project developed for other companies

Technical Assessment

- Identifies functions that the software is expected to perform
- Evaluates whether the required functionality can be achieved with current or affordable technologies
- Considers the organizational policy on providing technical infrastructure
- Prepares the strategic information system plan (SISP) of the organization
- Identifies any constraints imposed by the IS plan

Economic Assessment

- Considers whether the project is the best among other options
- Prioritizes projects – can allocate resources more effectively
- Methods
  - Cost-benefit analysis -NPV and IRR
  - Cash flow forecasting

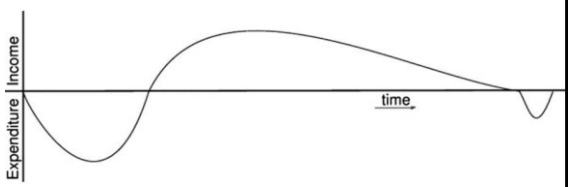
Cost-benefit analysis

- Net benefit = Benefits – Costs
- Costs
  - Development cost – staff payments, infrastructure
  - Set up cost- new infrastructure, staff recruitment and training
  - Operational cost – to operate the system after installation
  - Maintenance cost – for updates or enhancements
- Benefits
  - Quantified and valued – sales income
  - Quantified and but not valued– decrease in # of complains
  - Identified but not easily quantified – public approval of the organization

Cash Flow Forecasting

- What?
  - Estimation of net profit (cash flow) over time
- Why?
  - Estimated net-benefits over the estimated costs is not sufficient
  - Need detailed estimation of benefits and costs versus time

Typical product life cycle cash flow



- Not easy to estimate future cash flows accurately.
- Need to revise the forecast from time to time

Solutions: Cost-benefit Evaluation Techniques

- Net present value
- Internal Rate of Return

Net present value

- Takes into account the profitability of a project and the timing of the cash flows

$$\text{Present Value} = \frac{\text{Value in year } t}{(1+r)^t}$$

r – discount rate expressed as a decimal value

t – number of years into the future that cash flow occurs

Net present value …contd.

- Discount rate is the annual rate by which we discount future earning
- e.g. If discount rate is 10% and the return of an investment in a year is Rs.110, the present value of the investment is Rs.100. (110/1.1)
- Ex1. If discount rate is 20% and the expected return of an investment in a year is Rs.24,000 what would be the present value.

Issues with NPV

- Choosing an appropriate discount rate is difficult
- Ensuring that the rankings of projects are not sensitive to small changes in discount rate
- NPV might not be directly comparable with earnings from other investments or the costs of borrowing capital.

Internal Rate of Return

- A discount rate results in an NPV of zero
- Estimates the profitability of potential investments
- Can be directly comparable with interest rates.
- Use IRR or XIRR functions in Excel
- Disadvantage –
  - does not indicate the absolute size of return
  - In some cases it is possible to find more than one rate of return that will produce a zero NPV.

Exercise

1. What are the differences between NPV and IRR?
2. If findings inform that IRR is greater than the market rate of interest then should we invest?

Other Cost-benefit Evaluation Techniques

- ROI= (profit/investment)100
- Net profit =Total income – Total costs
- **benefit-cost** ratio (BCR) = (benefit/cost)100
- Payback period = Time taken to break even
- Decision trees

Exercise

Calculate the Net Profit, Payback and ROI

Year	Project 1	Project 2	Project 3
0	-100,000	-100,000	-120,000
1	10,000	30,000	30,000
2	10,000	30,000	30,000
3	20,000	30,000	30,000
4	20,000	20,000	25,000
5	100,000	350,000	50,000
Net profit			
Payback			
ROI			