Objectives in Project Selection

- Value maximization
- Balance
- Strategic direction/fit

Prioritizing and Selecting Projects

- If there is a lack of consensus and understanding of organizational strategy among top and middle-level managers
  - Some projects would not contribute to the main objectives and strategies of the firm.
  - Many projects would not be complete on time or within budget.

Strategy and Project Management

I. Internal environment: strengths & weaknesses
   - Review/revise mission
II. External environment: opportunities & threats
   - New goals & objectives
III. Portfolio of strategic choices
    - Strategy formulation
    - Strategy implementation
IV. Projects

Prioritizing and Selecting Projects

- Power politics in an organization can have a significant influence on whether a project receives funding and high priority.
- Political behaviour is more likely to occur when:
  - Decision-making procedures are uncertain.
  - Performance measures are uncertain.
  - Competition among people for scarce resources is high.
- So, politics might have a role in project selection.

Prioritizing and Selecting Projects

- A project sponsor is typically a high-ranking manager who endorses and lends political support for the completion of a specific project.
- A typical result of a survey of projects in process and proposed projects accepted:
  1) Repetitive operations that are not projects (e.g. quarterly financial reports) ………………………………………………... ..... 90
  2) Projects less than $40,000 or less than 500 labor hours …..50
  3) “real” projects ………………………………………………25
    Total …..165

Prioritizing and Selecting Projects

- There are potentially a large variety of models for prioritizing and selecting projects.
- In the past these were exclusively financial models, but now multi-objective models are widely used as well.
  - Some factors/objectives
    - new technology
    - core competencies
    - public image
    - improving customer loyalty
Prioritizing and Selecting Projects

Some financial models:
- IRR (internal rate of return) model
- The net present value model
- Real options approach.

A project priority team (or project office) selects and prioritizes projects.
- Priority must be published and the process must be open and free of power politics.
- An internet web site could publish priority, current status and issues relating to projects.

A very important question with no universal answer:
- How many projects can an organization undertake at any one time?
- From queuing theory we know that if we push for more utilization the waiting time in queues increases exponentially!

Prioritizing and Selecting Projects

Vertical axis: Nbr of projects
Horizontal axis: Time
- a: preliminary evaluation
- b: design & economic analysis
- c: development & test
- d: final planning
- e: production
- f: survival in the market
- g: success

Mortality of New Product Development Project: (Vonderembose & White p. 175)

Funnels not Tunnels

Companies use a “gate” system, where projects are allowed to pass, delayed, revised or killed.
In many companies, people tend not to kill projects, although they are going nowhere!
Prioritizing and Selecting Projects

• Use of project scoring matrix:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
<th>Project 4</th>
<th>Project n</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROI &gt;= 15%</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Improve customer loyalty</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Stay within core competencies</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Achieve six-sigma quality</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Urgency</td>
<td></td>
<td>7</td>
<td>6</td>
<td>9</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Strategic fit</td>
<td></td>
<td>5</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Total score</td>
<td></td>
<td>50</td>
<td>64</td>
<td>83</td>
<td>71</td>
<td>70</td>
</tr>
</tbody>
</table>

A Project Prioritizing Example

• Determining weights of objectives

1. Seriousness - What is the current impact of the results of the objective on the organization?
   - 0 Small impact
   - 1 Large impact
2. Urgency - Time factor. What will be the relative consequences of not taking action over the next 12 months?
   - 0 Can defer
   - 1 Must take action
3. Future seriousness - What is the chance of the objectives seriousness changing over time?
   - 0 Decrease or remain same
   - 1 Dramatically increase

Improve external customer service
Seriousness: 5
Urgency: 4
Future seriousness: 6
Total weighted score: 15

Create $5 million in new sales
Seriousness: 8
Urgency: 4
Future seriousness: 6
Total weighted score: 18

A Project Prioritizing Example

Project Proposal

Problem definition:

- General Support
- Quality
- Legal
- Cost reduction
- Replacement
- Capacity
- Non-product

Resources available? Yes

Current project status:

Start date
Estimated finish date
Status: Active On-hold
Update:
Priority team action: Accepted Returned
Discovery -- project not defined
Duplicate to:
Operational--proposal not a project
Project #
Need more information -- to prioritize project
Completed project

Risk

Risk 1 above
Risk 2 above
Risk 3 above

What is the probability of the above risks occurring?
0 to 1.0

What is the impact on project success if these risks do occur?
0 to 1.0

Resources available? Yes

Project title:
Responsible Manager
Project manager

Need more information -- to prioritize project
Completed project

Project Proposal

What are the three major risks for this project?

- Risk 1 above
- Risk 2 above
- Risk 3 above

What is the probability of the above risks occurring?

- Risk 1 above
- Risk 2 above
- Risk 3 above

What is the impact on project success if these risks do occur?

- Risk 1 above
- Risk 2 above
- Risk 3 above

Resources available? Yes

Performance: Identify the strong/weaknesses you expect from the project.

- Cost
- Labor hours
- Materials
- Methods
- Equipment

Schedule:

- Start date
- Estimated finish date
- Status:
- Active On-hold
- Discovery -- project not defined
- Duplicate to:
- Operational--proposal not a project
- Project #
- Need more information -- to prioritize project
- Completed project
Managing New Product Development Project Portfolios

- Idea similar to business portfolio planning.
- It is about:
  - Resource allocation
  - Which project will get funding?
  - Corporate strategy
    - Future products/markets depend on current projects
  - Balance
    - Risk vs return, maintenance vs growth, short-term vs long-term.

Balanced Portfolio

- Most common tool:
  - Risk-reward bubble diagram
  - One axis: a measure of reward
    - Qualitative or quantitative
  - The other axis: a measure of risk
    - E.g. Probability of success (technical and/or commercial).
  - Size of the bubble: annual resources spent on each project
    - E.g. Dollars, person-hours etc.
  - Shading: product line
  - Color: timing (hot red: imminent launch; dark blue: an early-stage project)

Risk-Reward Bubble Diagram

- Pearls: Potential star products
- Oysters: Long-shot projects; technical breakthroughs will give solid payoffs.
- Bread and Butter: small, “no-brainer” project
- White Elephants: difficult to kill

Risk-Reward Bubble Diagram

- In the previous example, the business risk is accounted for by using risk-adjusted discount rates in calculating NPV.
- What if reward is just evaluated qualitatively as excellent, modest, low etc?

Risk-Reward Bubble Diagram

- 3M uses a variation of the diagram where ellipses are used instead of circles:
  - Each project as low, likely and high estimates are given for NPV and technical success probability.

\[
\text{P(success)} \quad \text{NPV}
\]
Other Portfolio Balancing Approaches

• P&G uses Monte Carlo simulation and a three dimensional model where the axes are
  – NPV
  – Time-to-launch
  – Probability of success
• Simulation gives a distribution of NPVs, showing projects as spheres in this three dimensional graph.