Cost Benefit Analysis
- Cost Benefit Analysis

Project Selection Methods:
- Mathematical/decision models.
- Comparative approaches:
  - Cost-Benefit Analysis.
  - Scoring Models.
- Benefit contribution methods:
  - Payback Period.
  - Discounted Cash Flows.
  - Net Present Value (NPV).
  - Internal Rate of Return (IRR).
  - Economic value among the projects.
Cost Benefit Analysis:
- Compares the cost to the benefit as a result of executing a project.
- Used to confirm that the project is worth doing.
- Outlines the economic feasibility of the project.
- It compares between expected costs and anticipated benefits.
- Allows comparisons among alternative projects.
- The most beneficial solution is the one that gives the most benefits for the lowest cost.
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- This can be then reviewed and updated at regular intervals throughout the project.
- Remember to update the project charter with this information.
- Every organization uses different categorizations and different rules for cost benefit calculation.
- It's recommended to get the finance department involvement in the analysis.
- The goal of this analysis is to derive the “Return on Investment" index.
Cost Benefit Analysis

Costs
- Implementation costs
- On-going costs

Benefits
- Hard savings
- Soft savings
- One-time savings
- Cost Benefit Analysis

Implementation Costs (One time costs):

- **Examples:**
  - **Capital costs:** All equipment, materials, hardware, software, land, buildings, etc.
  - **Outside professionals.**
  - **Internal labor:** Total hours estimated to complete activities by internal resources.
  - **Lost of productivity** during implementation and training.
  - Planning, training, travel and living expenses.

Costs Benefits

<table>
<thead>
<tr>
<th>Costs</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation</td>
<td>Hard</td>
</tr>
<tr>
<td>On-going</td>
<td>Soft</td>
</tr>
<tr>
<td>One-time</td>
<td>One-time</td>
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</tbody>
</table>
- Cost Benefit Analysis

On-going Costs:

- **Examples:**
  - **Maintenance cost:** Any on-going costs paid to outside party to maintain the project.
  - **Operational Cost:** All expected operational costs including:
    - Internal labor.
    - Materials.
    - Expendables.
    - Expected upgrades, supplies and services.
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Hard Savings:
- A direct benefit that affects bottom line.
- Will be seen in the accounts reports.
- **Examples:**
  - Sales increase.
  - Price increase.
  - Cost reduction as of a reduction in material, labor or overhead costs.
  - Productivity savings result from increases in productivity.
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Soft Savings:

- Difficult to quantify. But should be quantified and shown whenever possible.

- **Examples:**
  - Increased customer/employee satisfaction.
  - Elimination of waste in business processes.
  - Lower cycle times.
  - Quality cost reduction (e.g. reduced testing).
  - Improved yields and lower scrap and rework rates.
  - Improved capacity to increase sales (production rates projects).
  - Increased safety in the workplace.
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One-time Savings:

- **Examples:**
  - Sale of unneeded assets (equipment, vehicle, etc.).
  - Value of inventory reduction.

<table>
<thead>
<tr>
<th>Costs Implementations</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard</td>
<td>One-time</td>
</tr>
<tr>
<td>Soft</td>
<td>On-going</td>
</tr>
<tr>
<td>One-time</td>
<td></td>
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</tbody>
</table>
# Cost Benefit Analysis

<table>
<thead>
<tr>
<th>Cost/Benefit</th>
<th>Unit</th>
<th>Entry</th>
<th>Extended</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation costs (one time)</td>
<td></td>
<td>$0</td>
<td></td>
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<tr>
<td>Ongoing costs (monthly)</td>
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<td>$0</td>
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<tr>
<td>Hard savings / direct benefits (monthly)</td>
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<td>$0</td>
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<tr>
<td>Soft savings / indirect benefits (monthly)</td>
<td></td>
<td>$0</td>
<td></td>
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<tr>
<td>One-time savings (one time)</td>
<td></td>
<td>$0</td>
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</tbody>
</table>

## Assumptions:

## Comments:

## Payback (months):

<table>
<thead>
<tr>
<th>Monthly Gains</th>
<th>Monthly ROI</th>
<th>Net Gains</th>
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## ROI:

Continuous Improvement Toolkit . www.citoolkit.com
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Scoring Models:

- A scoring model is a relatively an easy and quick way to identify the best decision alternative from a multi-criteria decision problem.
- It is a decision-making techniques that will help selecting the options that will have the most impact.
- It identifies criteria and assigns weight depending on its importance.
- Used to assess, prioritize and select improvement projects.
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Examples of Criteria:
- Sponsorship.
- Benefits.
- Scope.
- Probability of success.
- Time to complete.
- Availability of resources.

More important criteria should carry a higher weight than less important criteria.
# Cost Benefit Analysis

<table>
<thead>
<tr>
<th>Project Title</th>
<th>Sponsorship</th>
<th>Benefits</th>
<th>Resources Availability</th>
<th>Scope</th>
<th>Deliverables</th>
<th>Time of Completion</th>
<th>Team Members</th>
<th>Project Charter</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>0.23</td>
<td>0.19</td>
<td>0.16</td>
<td>0.12</td>
<td>0.09</td>
<td>0.09</td>
<td>0.07</td>
<td>0.03</td>
<td>0.98</td>
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</table>
- Cost Benefit Analysis

Pareto Priority Index:

- A simple scoring models is the Pareto Priority Index (PPI).
- The PPI is calculated as follows:
  \[
  PPI = \frac{\text{Savings} \times \text{probability of success}}{\text{Cost} \times \text{time to completion}}
  \]
- The PPI values allow comparison of various projects.
- The resulting number is an index value for a given project.
- The result is totally dependent on the accuracy of the inputs.
## Cost Benefit Analysis

<table>
<thead>
<tr>
<th>Pareto Priority Index (PPI)</th>
<th>Project title</th>
<th>Costs$</th>
<th>Savings$</th>
<th>Probability of Success</th>
<th>Time to Completion</th>
<th>PPI</th>
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