

COST BENEFIT ANALYSIS

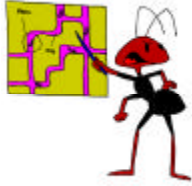
Year	Cost	Benefit
1	33,900	49,000
2	28,930	49,000
3	28,930	49,000
4	28,930	49,000
5	28,930	44,500
TOTAL	149,620	240,500



Purpose

Cost benefit analysis is a process used to estimate economic factors (costs and benefits) over the life cycle of the process or solution. It attempts to include all costs and benefits associated with the process or solution. Comparison of the total costs and benefits of various solutions helps determine the most cost effective of the options considered.

Cost benefit analysis is used to make informed comparisons of possible solutions. It induces the team to discover all the known costs and benefits associated and helps in a decision to implement or not implement a possible solution.



Process

1. Team may use the brainstorming process to decide on both the direct and indirect costs associated with each of the proposed solutions.

2. The team determines the cost of each factor being considered. For indirect costs try to use a percentage of “utilization” or use a best guess/estimate.

3. Determine which of the listed costs are recurring and which are one-time only costs. From this listing a new list of costs for the second and later years is developed.



Example

1. Team decides on both direct and indirect costs for proposed solutions:

- a. new equipment
- b. added personnel
- c. additional office space
- d. added supervision

2. Cost of each factor:

- a. equipment
 - telephone 300
 - computer 3,000
 - desk 1,200
 - chair 500
- b. added personnel
 - 1 clerical @ 18,000
 - + benefits 6,000
- c. additional office space
 - 100sf@12.00 1,200
- d. additional supervision
 - 10% of 28,000=2,800
 - + benefits 900

3. Cost of each factor (2-5th year):

- a. equipment
 - telephone 30
- b. added personnel
 - 1 clerical @ 18,000
 - + benefits 6,000
- c. additional office space
 - 100sf@12.00 1,200
- d. additional supervision
 - 10% of 28,000=2,800
 - + benefits 900



Process

4. Team determines the benefits associated with the solution in question.

5. Team calculates and records benefit data. For indirect or intangible benefits try to use a percentage or best estimate.

6. Determine which of the listed costs are recurring and which are one time only costs. From this listing a new list of costs for the second and later years is developed.



Example

4. Benefits associated with solution:

- a. reduced overtime
- b. improved customer service
- c. reduced on-the-job stress

5. Calculation of benefits:

- a. reduced overtime
2000 hours at \$15 per hour excluding benefits
= 30,000
+ benefits @ 33% =
10,000
- b. improved customer service
purely intangible = 0
- c. reduced on-the-job-stress
10% improved productivity of 5 employees affected
18,000x5x 10% =
9,000

6. Team determined that all benefits occur in years 2 thru 5 except that productivity gains might be reduced by 1/2 by the fifth year:

$$\begin{aligned} &\text{productivity } 9,000/2 \\ &= 4,500 \end{aligned}$$



Process

7. Build a chart to track first thru five years costs and benefits. Compare costs and benefits for each year and compare the five year totals.

8. Perform analysis of data displayed in chart developed in step 7. Questions to be asked include:

- a. How soon will benefits exceed costs?
- b. How much can be saved in five years?
- c. What is the associated benefit/cost ratio?
- d. Based on data recorded, should this solution be further considered?



Example

7. Chart Comparing Costs & Benefits:

	Cost	Benefit
Year 1	33,900	49,000
Year 2	28,930	49,000
Year 3	28,930	49,000
Year 4	28,930	49,000
Year 5	28,930	44,500
Total	149,620	240,500

8. Perform Analysis:

- a. Benefits exceed costs the first year and each year thereafter.
- b. Solution can save $240,500 - 149,620 = 90,880$.
- c. Benefit/cost ratio is $240,500 / 149,620 = 1.61$.
- b. Based on data recorded, solution should be further considered.



Key Points

- A common question asked when proposing solutions that have associated costs is “What is the payback period?” **Cost benefit analysis** can answer that question.
- The example presented was for a five-year period. When proposing machinery, equipment, facilities, or other items with a limited life, calculations should be made for the entire life of the equipment. Hence the phrase “life cycle costs.”

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