Cost-benefit analysis

1. Enter the information in the spreadsheet below. Be sure that the information is entered in the same cells as given, or the formulas will not work. The information is the stream of costs and benefits (in millions) estimated for a proposed city baseball stadium. Year 0 represents the initial investment while costs for years 1-10 are the maintenance costs incurred at the end of each year. The benefits are the revenues from sport team contracts and revenues at the end of each year.

	A	B	C	D	E	F
1	Cost-Benefit Analysis: City Stadium					
2				Total	Discount	Present
3	Year	Costs	Benefits	Benefits	Factor	Value
4	0	60	0			
5	1	1	3			
6	2	1	3			
7	3	1	10			
8	4	1	10			
9	5	1.5	12.5			
10	6	1.5	12.5			
11	7	1.5	12.5			
12	8	1.5	15			
13	9	2	15			
14	10	2	15			
15						
16					NPV =	
17	Discount					
18	Rate =					

2. Highlight the cell range B4:D14. Open the FORMAT menu, select CELLS... Select the category CURRENCY, select the format $1,234.10. Repeat this procedure for the cell range F4:F16.

3. Highlight cell B18. Open the FORMAT menu, select CELLS... Select the category PERCENT, select two decimal places.

4. To determine the desirability of the project from an efficiency criteria, first calculate the Total Benefit for each year of the project. To do this, enter the following formula.
   D4: =c4-b4

5. Copy the formula in cell D4 to the cell range D5:D14.

6. We must next discount future costs and benefits to put them into today's value (i.e., find the present value). First, enter the following value for the discount rate (a 10% discount rate).
   B18: 0.1

7. Second, calculate the discount factor for each year. Enter the following formula.
   E4: =1/(1+b18)^a4
8. Copy the formula in cell E4 to the cell range E5:E14.
9. Third, multiply the total benefit for each year by the discount factor for each year. Enter the following formula.
   F4: =d4*e4
10. Copy the formula in cell F4 to the cell range F5:F14.
11. Find the Net Present Value. Add together the Present Values for each year. Enter the following formula.
    F16: =sum(f4:f14)

	A	B	C	D	E	F
1	Cost-Benefit Analysis: City Stadium					
2				Total	Discount	Present
3	Year	Costs	Benefits	Benefits	Factor	Value
4	0	$60.00	$0.00	($60.00)	1.00	($60.00)
5	1	$1.00	$3.00	$2.00	0.91	$1.82
6	2	$1.00	$3.00	$2.00	0.83	$1.65
7	3	$1.00	$10.00	$9.00	0.75	$6.76
8	4	$1.00	$10.00	$9.00	0.68	$6.15
9	5	$1.50	$12.50	$11.00	0.62	$6.83
10	6	$1.50	$12.50	$11.00	0.56	$6.21
11	7	$1.50	$12.50	$11.00	0.51	$5.64
12	8	$1.50	$15.00	$13.50	0.47	$6.30
13	9	$2.00	$15.00	$13.00	0.42	$5.51
14	10	$2.00	$15.00	$13.00	0.39	$5.01
15						
16					NPV =	($8.11)

12. Calculate Return on Investments (ROI) to a new column by integrating the profits (total benefits).
13. Create a graph / diagram about cumulative profit (~ROI), which should consist the followings:
    cumulative profit, costs, benefits
14. The name of the chart should be “Financial Outlook”.
15. Calculate Return on Investments (ROI) to a new column by integrating the profits (total benefits) considering Discount.
16. Create a graph / diagram about cumulative profit (~ROI), which should consist the followings:
    cumulative profit

17. The name of the chart should be “ROI with discount”.

Sources

1. http://web.utk.edu/~dhouston/excel/exercise.html
2. https://www.wiseowl.co.uk/excel/exercises

Course

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