

Analysing Costs: Past Exam Paper Questions

Summer Examination 2010 – Q3

A cost benefit analysis is to be performed as part of the feasibility study for a proposed system. The cost of developing the proposed system is €27,500. The benefits have been determined to be €9,000 in year 1, with a 10% reduction in annual benefit per year thereafter. Assuming an annual interest rate of 4.5% over a five year investment period:

- (a) Show the table of benefits & present values
- (b) Determine the Pay Back Period
- (c) Determine the NPV
- (d) Is the project a good investment? Justify your answer

Summer Examination 2006 – Q5

A project has an initial development cost of £22,500. Annual benefits are estimated to be £8,500. Given a five year investment period with current interest rate of 10.5%, show the following:

- (a) The table of benefits and present values
- (b) The Payback Period of the investment
- (c) The Net Present Value of the investment
- (d) Is this a good investment? Explain your answer.

Autumn Examination 2005 – Q5

The proposed changes to a system are estimated to cost €5000. Annual benefits are estimated to be €2500. Given an investment period of 5 years and a current interest rate of 12%:

- (a) Show the table of benefits and present values.
- (b) Determine the Pay Back Period of the investment.
- (c) What is the Net Present value of the Investment?
- (d) Is this a good investment? Explain your answer.

Autumn Examination 2003 – Q2

A project has an initial development cost of €36,000. Annual benefits are estimated to be €3,500. Given a five year investment period and a current interest rate of 9%:

- (a) Show the table of benefits and future values.
- (b) Determine the Net present Value of the investment.
- (c) Determine the payback period of the investment.
- (d) Is this a good investment? Justify your answer.

Summer 2010

Development Cost	27,500
Interest Rate	4.5%

Year	Benefit	$(1+i)^{**n}$	PV	Cumm PV
1	9000.00	1.05	8612.44	8612.44
2	8100.00	1.09	7417.41	16029.85
3	7290.00	1.14	6388.20	22418.06
4	6561.00	1.19	5501.80	27919.86
5	5904.90	1.25	4738.39	32658.25

Pay back Period:	At end of year 3 need	27,500 -	22418.06	=	5081.94	
					5081.94 /	
	As a fraction of Year 4 benefits			=	5501.80	
				=		0.92
	Pay back period is therefore:	3.92	Years			

$$\begin{aligned}\text{NPV} &= \text{Dev Cost} - \text{Cumm PV} \\ &= \text{Cumm PV} - \text{Dev Cost} \\ &= 32658.25 - 27500 \\ &= 5158.25\end{aligned}$$

Summer 2006

Dev Cost	22500
Benefits	8500
Interest Rate	10.5

Table of Benefits & Present Values

Year	Benefit	(1+i) ⁿ	PV	Cumm PV
1	8500.00	1.11	7692.31	7692.31
2	8500.00	1.22	6961.36	14653.67
3	8500.00	1.35	6299.88	20953.55
4	8500.00	1.49	5701.25	26654.80
5	8500.00	1.65	5159.50	31814.29
	42500.00			

Pay Back Period

Dev Cost	22,500.00
At end of year 3 have	20,953.55
Need	1,546.45

As fraction of Year 4 PV	0.271248
--------------------------	----------

PBP = 3.27years

NPV

9314.29

SAD - Cost Benefit Analysis

Dev Cost	5000
Benefits	2500
Interest Rate	12

Table of Benefits & Present Values

Year	Benefit	(1+i) ⁿ	PV	Cumm PV
1	2500.00	1.12	2232.14	2232.14
2	2500.00	1.25	1992.98	4225.13
3	2500.00	1.40	1779.45	6004.58
4	2500.00	1.57	1588.80	7593.37
5	2500.00	1.76	1418.57	9011.94
	12500.00			

Pay Back Period

Dev Cost	5,000.00
At end of year 2 have	4,225.13
Need	774.87

As fraction of Year 3 PV	0.435456
--------------------------	----------

PBP = 3.44 years

NPV

4011.94

Year	Benefit	(1+i)n	PV	Cumm PV
1	3500.00	1.09	3211.01	3211.01
2	3500.00	1.19	2945.88	6156.89
3	3500.00	1.30	2702.64	8859.53
4	3500.00	1.41	2479.49	11339.02
5	3500.00	1.54	2274.76	13613.78
6	3500.00	1.68	2086.94	15700.72
7	3500.00	1.83	1914.62	17615.33
8	3500.00	1.99	1756.53	19371.87
9	3500.00	2.17	1611.50	20983.36
10	3500.00	2.37	1478.44	22461.80
	17500.00			

Pay Back Period

Dev Cost 36,000.00
At end of year 10 have not returned the investment
Therefore this is obviously a bad investment

NPV

ACC PV - Dev Cost
After 5 years this is $13613.78 - 36000.00 = -22386.22$

Negative NPV indicates a poor investment