Homework

CSC 424 Software Project Management

Table Project cash flow projections

Year	Project 1	Project 2	Project 3	Project 4
0	-100000	-1000000	-100000	-120000
1	10000	200000	30000	30000
2	10000	200000	30000	30000
3	10000	200000	30000	30000
4	20000	200000	30000	30000
5	100000	300000	30000	75000
Net profit	50000	100000	50000	75000

Net profit

Project 1 : 100000 + (10000 + 10000 + 10000 + 20000 + 100000)

= 50000

Project 2 : 1000000 + (200000 + 200000 + 200000 + 20000 + 300000)

= 100000

Project 3 : 100000 + (30000 + 30000 + 30000 + 30000 + 30000)

= 50000

Project 4 : 120000 + (30000 + 30000 + 30000 + 30000 + 75000)

= 75000

Payback Period

Payback Period of Project 1: Year 5

Payback Period of Project 2: Year 5

Payback Period of Project 3: Year 4

Payback Period of Project 4: Year 4

Return on investment : ROI

$$\text{ROI} = \frac{\text{Average annual profit}}{\text{Total investment}} \times 100$$

ROI of Project 1 $= \frac{10{,}000}{100{,}000} \times 100 = 10\%$

ROI of Project 2 $= \frac{20{,}000}{1{,}000{,}000} \times 100 = 2\%$

ROI of Project 3 $= \frac{10{,}000}{100{,}000} \times 100 = 10\%$

ROI of Project 4 $= \frac{15{,}000}{120{,}000} \times 100 = 12.5\%$

Net present value

$$\text{Present value} = \frac{\text{Value in year t}}{(1+r)^t}$$

Net present value for project 1

Year	Project cash flow	r = 10%	Discount factor	Discounted cash flow
0	-100,000	$(1.1)^o$	1	-100,000
1	10,000	$(1.1)^{-1}$	0.9091	9,091
2	10,000	$(1.1)^{-2}$	0.8264	8,264
3	10,000	$(1.1)^{-3}$	0.7513	7,513
4	20,000	$(1.1)^{-4}$	0.6830	13,660
5	100,000	$(1.1)^{-5}$	0.6209	62,092

Net Profit	50,000	NPV :	621

Net present value for project 2

Year	Project cash flow	r = 10%	Discount factor	Discounted cash flow
0	-1,000,000	$(1.1)^o$	1	-1,000,000
1	200,000	$(1.1)^{-1}$	0.9091	181,820
2	200,000	$(1.1)^{-2}$	0.8264	165,280
3	200,000	$(1.1)^{-3}$	0.7513	150,260
4	200,000	$(1.1)^{-4}$	0.6830	136,600
5	300,000	$(1.1)^{-5}$	0.6209	186,270
Net Profit	100,000		NPV :	-179,770

Net present value for project 3

Year	Project cash flow	r = 10%	Discount factor	Discounted cash flow
0	-100,000	$(1.1)^o$	1	-100,000
1	30,000	$(1.1)^{-1}$	0.9091	27,273
2	30,000	$(1.1)^{-2}$	0.8264	24,792
3	30,000	$(1.1)^{-3}$	0.7513	22,539
4	30,000	$(1.1)^{-4}$	0.6830	20,490
5	30,000	$(1.1)^{-5}$	0.6209	18,627
Net Profit	50,000		NPV :	13,721

Net present value for project 4

Year	Project cash flow	r = 10%	Discount factor	Discounted cash flow
0	-120,000	$(1.1)^o$	1	-120,000
1	30,000	$(1.1)^{-1}$	0.9091	27,273
2	30,000	$(1.1)^{-2}$	0.8264	24,792
3	30,000	$(1.1)^{-3}$	0.7513	22,539
4	30,000	$(1.1)^{-4}$	0.6830	20,490
5	75,000	$(1.1)^{-5}$	0.6209	46,567.5
Net Profit	75,000		NPV :	21,661.5

Internal rate of return: IRR

Project 1 = 10% Project 2 = 3%

Project 3 = 15% Project 4 = 16%

From all factor, Project 4 is the best because for Internal rate IRR project 4 and project 3 have IRR more than other project but if you focus on Net present value, you will see that project 4 is also have value more than other project. Moreover, Project 4 also has payback period less than other project (same project 3) , also have high net profit and have highest value of return of investment . These reasons that make project 4 is the best of other project.