1. **Company XYZ wants to purchase a new IT, which will cost $120,000. The company will lease the equipment to a customer who has agreed to pay a leasing fee at the end of each of the next four years of $50,000. If the discount rate is 20 percent, is this a good investment for the Company XYZ? Use NPV analysis to prove your point.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Flow** | **Present Value** | **Computation** |
| 0 | -120000 | -120000 | - |
| 1 | 50000 | 41666.66 | (50000)/(1.2)^1 |
| 2 | 50000 | 34722.22 | (50000)/(1.2)^2 |
| 3 | 50000 | 28935.18 | (50000)/(1.2)^3 |
| 4 | 50000 | 24112.65 | (50000)/(1.2)^4 |
| **Net Present Value** |  | **129436.71** | - |

* From the table above, we can see that the Net Present Value is well above the investment value, therefore, this is a good investment that Company XYZ should persuade.

1. **Assume in Problem 1, the discount rate changes to 30 percent. Is this a good investment for Company XYZ? Use NPV analysis to prove your point.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Flow** | **Present Value** | **Computation** |
| 0 | -120000 | -120000 | - |
| 1 | 50000 | 38461.54 | (50000)/(1.3)^1 |
| 2 | 50000 | 29585.8 | (50000)/(1.3)^2 |
| 3 | 50000 | 22758.31 | (50000)/(1.3)^3 |
| 4 | 50000 | 17506.4 | (50000)/(1.3)^4 |
| **Net Present Value** |  | **108312.05** | - |

* From the table above, we can see that the Net Present Value is below the investment value, therefore, this is an investment that Company XYZ should not persuade.

1. **The ABC Company bases its IT decisions on ROI. They have two mutually exclusive computer systems (i.e., System A and System B) from which one must be chosen. Assume System A costs $1.5 million and System B costs $1.3 million. System A permits a contract worth $2 million the first year of its use. System B permits two contracts worth $750,000 and $1 million the first year of their use. Which system should ABC Company purchase? Use ROI to justify your answer.**

* Rate of Investment (ROI) is based on: profit/investment cost
* **System A:** (2 – 1.5) / (1.5) = ~0.33 or ~33%
* **System B:** (1+0.75 – 1.3) / (1.3) = ~0.35 or 35%
* **Based on the above calculation, it would make sense to invest on option B.**

1. There are three choices that you could make, and they are all mutually exclusive. The company will use the discount rate of 6% to calculate the PV of cost and revenues. Examine the data that is available. Consider NPV, and Payback, to rank the choices from best to worst.

**Costs**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Alternatives | Initial Inv. | Additional annual costs Yr1 | Additional annual costs Yr2 | Additional annual costs Yr3 |
| A | $185, 000 | $30,000 | $40,000 | $10,000 |
| B | $203,000 | $110,000 | $20,000 | 10 |
| C | $114,000 | 0 | $20,000 | $90,000 |
| D | $220,000 | $1000 | $100,000 | 0 |

**Revenues**

|  |  |  |  |
| --- | --- | --- | --- |
| Alternatives | Rev Yr1 | Rev Yr2 | Rev Yr3 |
| A | $130,000 | $120,000 | $120,000 |
| B | $200,000 | $80,000 | $30,000 |
| C | $120,000 | $110,000 | $100,000 |
| D | $10,000 | $25,000 | $500,000 |

**Alternative A**

* PV Cost = 185000 + 30000/1.06+40000/1.06\*1.06 +10000/1.06\*1.06\*1.06 = **257404**
* PV Rev = 130000/1.06+120000/1.06\*1.06 +120000/1.06\*1.06\*1.06 = **329785**
* PV Cost + PV Rev = **72381** 🡺 Yes

**Alternative B**

* PV Cost = 203000 + 110000/1.06+20000/1.06\*1.06 +10000/1.06\*1.06\*1.06 = 333034
* PV Rev = 200000/1.06+80000/1.06\*1.06 +30000/1.06\*1.06\*1.06 = 285318
* PV Cost + PV Rev = -47716 🡺 No

**Alternative C**

* PV Cost = 114000 + 0/1.06+20000/1.06\*1.06 +90000/1.06\*1.06\*1.06 = 207487
* PV Rev = 120000/1.06+110000/1.06\*1.06 +100000/1.06\*1.06\*1.06 = 295455
* PV Cost + PV Rev = 87968 🡺 Yes