1. Define cost benefit analysis?

Cost Benefit Analysis is a systematic method of calculating the benefits and costs of a course of action in a given situation. It gives the best option that returns optimal ratio of benefits to costs, thereby solving the issue regarding opportunity cost.

1. How is risk-benefit ration different from cost benefit analysis?

While, Cost Benefit Analysis is a systematic method of calculating the benefits and costs of a course of action in a given situation, Risk benefit ratio is the ratio of the risk of an action to its potential benefits.

Use the provided Excel Spreadsheet to answer problems 3-6.

1. Assume a discount rate of 15%. What is the overall net present value for the project? When will the project break-even? Should EMB move forward with the project and proceed with implementing SAP? Explain your answer.

The Net Present value with 15.0% discount rate and project period of 20 years is $-965,157.38

Total sum of present value of costs is $1,627,426.17

Total sum of present value of costs is $-4,037,268.80

In a year of 360 days, the project will break even in 145.12 days

EMB may implement the project as it has less than one year break-even, and revenues over the project life of 20 years are found.

If the project is continued for an infinite time, break-even period is at the end of 93rd for the period.

However, if considered the initial project cost of $3,375,000, project will never be able to generate any positive NPV.

1. Assume a discount rate of 30%. What is the overall net present value for the project? When will the project break-even? Should EMB move forward with the project and proceed with implementing SAP? Explain your answer.

The Net Present value with 30.0% discount rate and project period of 20 years is $-2,098,419.29

Total sum of present value of costs is $862,106.45

Total sum of present value of costs is $-2,138,687.19

In a year of 360 days, the project will break even in 145.12 days

Therefore, EMB may implement the project as it has less than one year break even.

If the project is continued for an infinite period of time, break-even period is at the end of the 50th year of the project.

However, if considered the initial project investment of $3,375,000, project will never generate any positive NPV.

1. Assume the recurring value of benefits due to increased sales was overly optimistic and net income due to increased sales is only $375,000 instead of $750,000. In addition, assume the benefits due to a reduction in inventory holding costs are only $50,000 instead of $250,000. Assuming a discount rate of 15%, what is the overall net present value for the project? When will the project break-even? Should EMB move forward with the project and proceed with implementing SAP? Explain your answer.

The Net present value at 15% discount rate and project period of 20 years is -$2,389,155.29

Total sum of present value of costs is $1,627,426.17

Total sum of present value of costs is $-2,613,270.90

In a year of 360 days, the project will break even in 224.19 days

Therefore, EMB may implement the project as it has less than one year break even.

If the project is continued for an infinite period of time, break-even period is at the end of the 91st year of the project.

However, if considered the initial project investment of $3,375,000, project will never generate any positive NPV.

1. Assume the recurring value of benefits due to increased sales was overly optimistic and net income due to increased sales is only $375,000 instead of $750,000. In addition, assume the benefits due to a reduction in inventory holding costs are only $50,000 instead of $250,000. At what discount rate is the project economically feasible? (Please note that the discount rate you calculate must include four decimal places of accuracy e.g. 12.3456%). Should EMB move forward with the project and proceed with implementing SAP? What are the implications of the changes to the economic feasibility of the project? Explain your answer.

The Present value of Investment is: $3,375,000

The Present value of Recurring cost is: $1,627,426.18 ($260000 \* PVIFA(15%,20years))

PV Total = $5,002,426.18

PV of Inflows = $2,613,270.89 ($4175000\*PVIFA(15%,20years))

Required = $5,002,426

Current at 15% = $2,613,270.89

Trial at 5%,

PVIFA(5%,20years) = 12.46

Trial PV = $5,202,972.81

The Economically feasible discount rate is:

15 – (15-5)((5202972-5002426)/(5202972-2613270)) = **14.23%**

**Any rate below 14.23% is economically feasible**