

Supply chain management



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SBX Construction Company Investment analysis - Horizontal Boring Machine:

EATCF Stream: Year Year 2 Year 3 Year 4 Year 5 NOI 20000 20000 20000

20000

20000

-Depr. Exp.

-10000

-10000

-10000

-10000

-10000

Net Income (BT)

10000

10000

10000

10000

10000

-Inc. Tax

-4000

-4000

-4000

-4000

-4000

= Net Income (AT)

6000

6000

6000

6000

6000

Adjusting Accrual to Reflect Cash Flow

-Cap. Impr. Exp. s

0

0

0

0

0

+ Depr. Exp.

10000

10000

10000

10000

10000

+ Tax Claim

2000

2000

2000

2000

2000

EATCF

\$18000

\$18000

\$18000

\$18000

\$18000

NPV @ 10% for the Equipment Investment:

Capital Expenditure (Year 0)= \$50000

Cash Flow (Year 1 to 5) = Net Operating Income - Income Tax + Tax Claim

= (\$30000 - \$10000) - (\$4000) + (\$2000)

= \$18000

Discounted Cash Flow= \$18000 * (1/1. 1 + 1/1. 12... +1/1. 15)

= \$18000 * (3. 790)

= \$68220

NPV @ 10%= -\$50000 + \$68220

= \$18220

Year

EATCF

Discount Factor

PV

0

-50000

1

-50000

1

18000

0.909

16362

2

18000

0.826

14868

3

18000

0.751

13518

4

18000

0.683

12294

5

18000

0.621

11178

NPV

18220

IRR for the Investment:

NPV @ 10% = \$18220

NPV @ 20% = $-\$50000 + (\$18000 * 2.989)$

= $-\$50000 + \53802

= \$3802

NPV @ 22% = $-\$50000 + (\$18000 * 2.8636)$

= $-\$50000 + \51552

= \$1552

NPV @ 24% = $-\$50000 + (\$18000 * 2.7454)$

= $-\$50000 + \49392

= -\$608

∴ IRR = 23.5%

Discount Rate

NPV

10%

18220

20%

3802

21%

2668

22%

1552

23%

454

24%

-608

Memo to the Project Manager:

Though the initial investment is high (\$50000), the cash flow (EATCF) stream indicates that the payback period is approximately, 2 years and 10 months.

Also, the cash flow stream is steady (after the payback period as well).

Hence the payback period suggests that the investment is profitable.

However, this value alone cannot be relied upon to make the final decision, as the cash flows are not discounted.

The NPV calculations at 10% discount rate, indicates that the current value of the investment is \$18220 (positive value). Hence NPV suggests that it is a profitable investment. However, this conclusion entirely depends on the method used to compute the discount rate and it has not been clearly specified whether inflation and other economical changes have been accommodated in this discount rate.

The required IRR for the investment is 15%. But the actual IRR for the investment turns out to be 23.5%, which is higher than the required rate.

This indicates that the investment is preferable, when the required and actual IRR values are concerned. IRR indicates the discount or interest rate at which NPV equates to zero, i. e., a 'no gain - no loss' situation. Higher this rate, higher is the margin of safety. As the actual IRR is higher than the required IRR for the investment, it is clear that the investment is profitable and SBX has a safety margin of about 5.5%, in case any of the estimations go wrong.

All these discussions indicate that the investment on the horizontal boring machine is profitable and should be taken up by SBX Construction Company.

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Assumptions and controversies:

Depreciation is straight line and the salvage value is zero - Straight line depreciation is not a valid measure and it is highly unlikely for the salvage value to be zero (at least equals to scrap value in real case)

No increase in working capital requirements and no tax credits - Again, highly unlikely in real case scenarios

Operating costs and revenues to be consistent - Unlikely