Capital Investment Techniques

Name

Institution

Course

Instructor’s name

Date

Introduction

The underlying concept in the decision making of capital investment cost-benefit analysis (Nijman, and Kampfraath). This process helps to facilitate the determination of a company’s short term and long term investments. Advertising campaigns, equipment, new machinery, new plants, research and development projects are some of some company components that come under this kind of capital investment appraisal. The case studies below demonstrate how different techniques used to determine capital investment appraisal of a business project (Marić, 2018).

Case study 1)

A= 300,000(1+0.04) ^5

A=$ 364,995.87 (amount in the account after five years)

2) Payback Period

90,000+115,000+135,000 =340,000

The inflows will get to $300,000 in year 3. Thus we will recover our initial amount in the third year.

3)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Amnt | Discounting factor | Discounted amount | Accumulative inflow cash |
| One | 90,000.00 | 1.060 | 84,905.66 | 84,905.66 |
| Two | 115,000.00 | 1.124 | 102,313.17 | 187,218.83 |
| Three | 135,000.00 | 1.191016 | 113,348.60 | 187,218.83 |

4)

NPV

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Cash inflow | PVIF$1=1/(1+r)^n | Discounted inflow cash | Accumulative |
| One | 90,000.00 | 0.943400 | 84,905.66 | 84,905.66 |
| Two | 115,000 | 0.8900 | 102,349.59 | 187,255.25 |
| Three | 135,000 | 0.8396 | 113,348.60 | 300,603.85 |
| Four | 110,000 | 0.7921 | 87,130.30 | 387,734.15 |
| Five | 90,000 | 0.7373 | 67,253.24 | 454,987.39 |

present value (pv) of total inflows =$ 454,987.39

Net Present Value =$(454,987.39-300,000.00)

=$154,987.39

5) If I would leave the money for five years in the bank but get $ 364,995.87, ending up short of 85,004.13 but when I undertook a project I would get $ 454,987.39 after 5 years which is $ 154,987.39 more.

Case study 2

A)

NBP

|  |  |  |
| --- | --- | --- |
| Yr | Amnt of Savings | cumulative Savings |
| One | 60,000.00 | 60,000.00 |
| Two | 60,000.00 | 120,000.00 |
| Three | 60,000.00 | 180,000.00 |

PBP =60,000/12 = 5,000

PBP = 2 years and 9 months.

DBP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Amnt | PVIF$1=1/(1+r)^n | Discounted amnt | cumulative |
| One | 60,000.00 | 1.10 | 54,545.45 | 54,545.45 |
| Two | 60,000.00 | 1.21 | 49,586.78 | 104,132.23 |
| Three | 60,000.00 | 1.331 | 45,078.89 | 149,211.12 |

The PBP is 165,000-104,132.23=60,867.77

Assuming the 45,078.89 was evenly accrued 60,867.77/3,756.57=16.2

PBP= 3 years 4.2 months

NPV

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Amount | PVIF$1=1/(1+r)^n | Discounted amnt | cumulative |
| 0 | -165,000.00 | 1.00 | -165,000.00 | -165,000.00 |
| One | 60,000.00 | 1.10 | 54,545.45 | 54,545.45 |
| Two | 60,000.00 | 1.21 | 49,586.78 | 104,132.23 |
| Three | 60,000.00 | 1.331 | 45,078.89 | 149,211.12 |

NPV= -165,000+149,211.12 = -15788.88

IRR=

B)

NBP

|  |  |  |
| --- | --- | --- |
| Yr | Amnt | Accumulated |
| One | 60,000.00 | 60,000.00 |
| Two | 72,600.00 | 132,600.00 |
| Three | 79,860.00 | 212,460.00 |

PBP 79,860/12=6,655

So the PBP is 2 yrs 1 month

DBP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Amnt | PVIF$1=1/(1+r)^n | Discounted amount | Cumulative |
| One | 60,000.00 | 1.0 | 54,545.45 | 54,545.45 |
| Two | 72,600.00 | 1.21 | 60,000 | 114,545.45 |
| Three | 79,860.00 | 1.331 | 60,000 | 174545.45 |

The PBP is60,000/12= 5,000

165,000-114,545.45=50,454.55

50,454.55/5000=10.1

PBP= 10 years and 1 month

Net Present Value

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Amnt | PVIF$1=1/(1+r)^n | Discounted amnt | Cumulative |
| 0 | -165,000.00 | 1.0 | -165,000 | -165,000 |
| One | 60,000.00 | 1.10 | 54,545.45 | 54,545.45 |
| Two | 72,600.00 | 1.21 | 60,000 | 114,545.45 |
| Three | 79,860.00 | 1.331 | 60,000 | 174545.45 |

NPV= -165,000+174,545.45 = $9,545.45

IRR=

C)

NBP

|  |  |  |
| --- | --- | --- |
| Yr | Amount | Cumulated Savings |
| One | 60,000.00 | 60,000.00 |
| Two | 60,000.00 | 120,000.00 |
| Three | 60,000.00 | 180,000.00 |

PBP =60,000/12 = 5,000

PBP = 2 yrs 9 months.

Discounted PBP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Amount | Discounting factor | Discounted amnt | Accumulative |
| One | 60,000.00 | 1.150 | 52,173.91 | 52,173.91 |
| Two | 60,000 | 1.332 | 45,045.05 | 97,218.96 |
| Three | 60,000 | 1.52088 | 39,450.84 | 136,669.80 |

The amount required to attain PBP is not met

NPV

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Amnt | Discounting factor | Discounted amnt | Accumulative |
| 0 | -165,000,oo | 1 | -165,000 | -165,000 |
| 1 | 60,000.00 | 0.869600 | 52,176 | 112,824 |
| 2 | 60,000 | 0.7561 | 45,366 | 97,542 |
| 3 | 60,000 | 0.6575 | 39,450 | 136,992 |

NPV= -165,000+136,992= -28,008

IRR=

D)

NBP

|  |  |  |
| --- | --- | --- |
| Yr | Amount | Accumulated amount |
| One | 60,000.00 | 60,000.00 |
| Two | 60,000.00 | 120,000.00 |
| three | 60,000.00 | 180,000.00 |

PBP =60,000/12 = 5,000

PBP is 2 years and 9 months.

DBP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Amnt | Discounting factor | Discounted amnt | Accumulative |
| 0 | 165,000 | 1 | -165,000 | -165,000 |
| 1 | 60,000 | 0.909091 | 54,545.46 | 54,545.46 |
| 2 | 60,000 | 0.826446 | 49,586.76 | 104,132.22 |
| 3 | 60,000 | 0.751315 | 45,078.9 | 149,211.12 |
| 4 | 60,000 | 0.683013 | 40,980.78 | 190,191.9 |
| 5 | 60,000 | 0.620921 | 37,255.26 | 227,447.16 |

The PBP is 165,000-104,132.22=60,868

Assuming the 37,255.26 was evenly accrued 60,868/3,104.61=19.6

The PBP= 3 years and 6.6 months

NPV

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Amnt | Discounting factor | Discounted amnt | Cumulative |
| 0 | 165,000.00 | 1 | -165,000 | -165,000 |
| One | 60,000.00 | 0.909091 | 54,545.46 | 54,545.46 |
| Two | 60,000.00 | 0.826446 | 49,586.76 | 104,132.22 |
| Three | 60,000.00 | 0.751315 | 45,078.9 | 149,211.12 |
| Four | 60,000.00 | 0.683013 | 40,980.78 | 190,191.9 |
| Five | 60,000.00 | 0.620921 | 37,255.26 | 227,447.16 |

NPV= -165,000+227,447.16 = 62,447.16

IRR=

Discussion

1) Recommend is scenario D, because of its short PBP, top NPV and great IRR.

2) aggressive scenario is B. cash flows from both year 2 and 3 have to be compounded re-invested immediately after being realized.

3) the value of management in the discussed scenarios is to understand the difference between option A and B as well as get to know part B earnings are higher than those in A.

4) What to consider before making a recommendation (Nguyen)

* Present economic conditions
* Technology
* Government laws and policies

5) I would approve this proposal because of the high returns I would gain.

|  |  |  |
| --- | --- | --- |
| Yr | Amount | Cumulative amnt |
| 0 | -585,000.00 | -585,000.00 |
| Five | -20,000.00 | -605,000.00 |
| One | -85,000.00 | -85,000.00 |
| Two | 15,000.00 | -70,000.00 |
| Three | 48,600.00 | -21,000.00 |
| Four | 72,200.00 | 50,800.00 |
| Five | 95,550.00 | 146,000.00 |
| Six | 101,300.00 | 247,650.00 |
| Seven | 125,200.00 | 372,850.00 |
| Eight | 140,000.00 | 513,050.00 |

We lack a PBP

513,050 is less than 605,000

DBP

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Yr | Amnt | 1/(1+r)^n | Discounted amnt | Cumulative amnt |
| 0 | 585,000.00 | 1 | 585,000 | 585,000 |
| 5 | 20,000.00 | 0.567427 | 11,348.54 | 596,348.54 |
| 1 | 85,000.00 | 0.892857 | 75,892.86 | 75,892.86 |
| 2 | 15,000.00 | 0.797194 | 11,957.91 | 63,934.95 |
| 3 | 48,600.00 | 0.71178 | 34,592.52 | 29,342 .43 |
| 4 | 72,200.00 | 0.635518 | 45,884.41 | 16,541.98 |
| 5 | 95,500.00 | 0.5657427 | 54,189.26 | 70,731.24 |
| 6 | 101,300.00 | 0.506631 | 51,321.73 | 122,052.97 |
| 7 | 125,200.00 | 0.452349 | 56,634.12 | 178,687.10 |
| 8 | 140,200.00 | 0.403883 | 56,624.43 | 235,311.52 |
| 9 | 300,000.00 | 0.403883 | 121,164.97 | 356,,476.49 |

Discounted PBP is not achieved by operations cash inflow.

|  |  |  |  |
| --- | --- | --- | --- |
| Amount | Discounting factor 1/(1+r)^n | Discounted amount | Cumulative amount |
| 585,000 | 1 | 585,000 | 585,000 |
| 20,000 | 0.567427 | 11,348.54 | 596,348.54 |
| 85,000 | 0.892857 | 75,892.86 | 75,892.86 |
| 15,000 | 0.797194 | 11,957.91 | 63,934.95 |
| 48,600 | 0.71178 | 34,592.52 | 29,342 .43 |
| 72,200 | 0.635518 | 45,884.41 | 16,541.98 |
| 95,500 | 0.5657427 | 54,189.26 | 70,731.24 |
| 101,300 | 0.506631 | 51,321.73 | 122,052.97 |
| 125,200 | 0.452349 | 56,634.12 | 178,687.10 |
| 140,200 | 0.403883 | 56,624.43 | 235,311.52 |
| 300,000 | 0.403883 | 121,164.97 | 356,,476.49 |
|  |  |  |  |

NPV= -370,717.47

IRR=4%

Discussion

:1) I would not recommend this purchase because NPV is negative, IRR is low and the absence of PBP it seems very much not viable.

2) -The period of to accomplish the project

-Dynamic economic conditions

-extra tax benefits

1. -NPV below zero

-Low return rate

-The PBP is not achieved

References

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