Investment analysis and lockheed tristar essay sample

Finance

(A)

The payback is 35, 000/5, 000= 7 years

Computation of the NPV :

NPV= -35, 000 + Σ 5, 000 / (1 + 12%)^ 15

i= 1 NPV = $- 945. 67

Computation of the IRR :

0= -35, 000 + Σ 5, 000 / (1 + IRR)^ 15

i= 12 IRR= 11. 49%

The NPV of this project is negative and the IRR is lower then the Cost of Capital (12%) Rainbow products shouldn’t go for it.

(B)

Based on the perpetuity formula we can compute the PV in this case :

Computation of the PV :

PV= Cash flow per year/ cost of capital)

= 4, 500 / 0. 12

= $37, 500

Computation of the NPV :

NPV= -Initial investment + PV

= -35, 000 + 37, 500

NPV=$2, 500

Rainbow products could buy this machine with the service contract if they intent to use it in the long-run.

(C)

Computation of the PV :

PV= C/ k-g

In this case C (end of year perpetuity payout) = 5, 000-1, 000= $4, 000 k= 12%, discount rate g= 4%, growing rate at perpetuity

PV= 4, 000 / (0. 12-0. 04) = $50, 000

Computation of the NPV :

NPV= -35, 000+ 50, 000 = $15, 000

The rainbow products company should invest in this project because its NPV is largely positive because of the reinvestment of 20% of the annual cost, even though this is in a very long term vision. 2.

•Computation of the IRRs (with financial calculator) :

Project,

-Add a New Window : IRR = 34. 61%

-Update Existing Equipment : IRR = 18. 01%

-Build a new stand : IRR = 31. 20%

-Rent a larger stand: IRR = 1207%

All projects are acceptable because all the IRRs are higher than the discount rate(15%) Looking at the internal rate o return of each project, rent a larger stand Is the project with the highest IRR.

•Computation of the NPVs (with financial calculator) : Project,

-Add a New Window : NPV = $ 25, 461. 9

-Update Existing Equipment : NPV = $ 2, 514. 18

-Build a new stand : NPV = $ 34, 825. 75

-Rent a larger stand: NPV = $ 28, 469. 87

All the projects are acceptable because all the NPVs are positive Looking at the net present value of each project, build a new stand Is the project with the highest NPV •The difference between the IRR and the NPV ranking is made by the scale of the investments, an investment of $1, 000 here gives with an IRR of 1207% which is not enough to have an NPV of the first project with an initial investment of? $75, 000

Even though the IRR of the project number 4 is largely superior to the one of The first project, the rule is to go for the project with the highest NPV. But still we could use $1000 for this project and generate a net present value of $ 28, 469. 87 and use the difference of $74, 000 between the 2 projects and invest it another project that generate at least $ 7, 000.

3.

A. In order to find the subsides for this project we first have to find the amount of yearly cash flow with the initial investment of $1, 000, 000 who will present an IRR of 25% with this formula. 0= -1, 000, 000+ Σ CF/ (1 + 25%)^ 4

i= 1 .....

CF= 1, 000, 000/ 2. 3603

CF= $ 42, 3674. 95

Subsidize= 423674. 95- 371739 (initial cash flow)

=$51, 935. 95

B. in order to have a two-year payback period with an initial investment of $1, 000, 000 we need two annual cash flow of $500000. So, the subsidize= 500000-371739= $ 128, 261

C. to compute the annual cash flows for this project we need to solve :

75000= -1, 000, 000+ Σ CF/ (1 + 20%)^ 4

i= 1 .....

CF= 1075000/ 2. 5849

CF=$ 415, 909

Subsidize= 415909- 371739= $44, 170

D. this project present an ARR of 40% and an initial investment of $1000000, we use the formula of the ARR to compute the annual cash flow of this project.

0. 4= (CF – (1000000/4)) / (1000000/ 2)

CF= $450, 000

Subsidize= 450000-371739= $78, 261

-In order to determine which of the four plans we be the best to subsidy we compute the PV of the subsidies cash flow at the discount rate of 20%, we assume that the one with lower subsidy is the best for the city. -For the first plan,

PV= Σ 51935. 95 / (1 + 20%)^ 4 I= 1

PV= $134, 448. 38

-For the second plan,

PV= Σ 128261 / (1 + 20%)^ 2 i= 1

PV= $19, 5954. 3

-For the third plan,

PV= Σ 44170 / (1 + 20%)^ 4 i= 1

PV= $11, 448. 38

-For the fourth plan,

PV= Σ 78261 / (1 + 20%)^ 4

i= 1

PV= $202, 596. 95

We will recommend to the city the subsidies with the lowest present value, the one of plan number 3. 4. The net present value of this project is 210000-110000= $100000

5. Lockheed Tri Star and Capital Budgeting

At planned (210 units) production levels, what was the true value of the true value of the Tri Star program? 0 1 2 3 4 5 6 7 8 9 10

Fixed Costs: -100 -200 -200 -200 -200

Variable Costs: -490 -490 -490 -490 -490 -490

Revenues: 140 140 560 560 560 560 420 420

TOTAL: -100 -200 -200 -60 -550 70 70 70 70 -70 420

In order to compute the NPV in t= 0 of the Tri Star program for 210 units you have to discount every year’s total Cash Flow with a rate of 10% and compute the sum: ⇒ NPV (210 units) = $ – 584 Million

At a break-even production of 300 units did Lockheed really break even in value terms?

– At first, we need to discount fixed costs of production which are the preproduction costs of the project. We do not treat them as sunk costs because they are so central in this project. We need to discount the preproduction costs to the end of year 1967:

NPV = 100 + 200/1. 11 + 200/1. 12 + 200/1. 13 + 200/1. 14 = 733, 9730893

When the production level is 300, each plane produced contributes 3, 5 million to Lockheed. This can be calculated as 16 – 12, 5 = 3, 5. 16 is the sales price of one plane and 12, 5 is the production cost, yielding a contribution margin of 3, 5 million dollars. Thus, the break-even point can be found from the following equation: Fixed costs / contribution margin = 733, 9730893 / 3, 5 = 209, 706… ~ 210 planes

However, if the production level was only 210 planes, Lockheed would not have a contribution margin of 3, 5. Instead, the contribution margin would be just 2 because below the production level of 300 the production cost per unit is 14 million dollars. The correct break-even point would be 733, 9730893 / 2 = 366, 98… ~ 367 planes.

Therefore, Lockheed did not break even in value terms at a ” break-even” production of 300 units. We can verify this by comparing the net present values at the end of 1967 of both cash outflows and cash inflows. Revenues total 800 million in a year (16 X 50) out of which one-quarter is received two

years early as deposits toward future deliveries. Production costs total 625 million in a year (12, 5 million X 50)

Revenues (received normally):

NPV = 600/1. 15 + 600/1. 16 + 600/1. 17 + 600/1. 18 + 600/1. 19 + 600/1. 110 = 1784, 820996

Revenues (received two years early)

NPV = 200/1. 13 + 200/1. 14 + 200/1. 15 + 200/1. 16 + 200/1. 17 + 200/1. 18 =

719, 8778016

Production costs

NPV = 625/1. 14 + 625/1. 15 + 625/1. 16 + 625/1. 17 + 625/1. 18 + 625/1. 19 = 2045, 107391

Preproduction costs

We already know from above that the net present value of preproduction costs is 733, 9730893

Now, having the discounted cash inflows and outflows, we can calculate the net present value of the project when production is roughly 300 units:

NPV = discounted revenues – discounted costs

NPV = 1784, 820996 + 719, 8778016 – 2045, 107391 – 733, 9730893 NPV = – 274, 3816827 We can see that the net present value of the project is negative when the level of production is 300. This proves that Lockheed did not break even in value terms when the production level was 300.

At what sales volume did the Tri Star program reach true economic break-even?

When the level of production is 210, each plane contributes 2 million to Lockheed. That is the difference (= contribution margin) between sales price (16 million) and production costs per plane (14 million). Therefore, we can find the break-even point with the following equation:

Fixed costs / contribution margin = 733, 9730893 / 2 = 366, 986... ~ 367 planes

In the above equation, fixed costs are the preproduction costs that are discounted to the end of year 1967. We use 2 million as contribution margin because we do not know what the production cost per plane is going to be because that depends on the final yearly output. We do not know that in this case. Therefore, we play safe and select 2 million as our contribution margin to calculate the break-even point.

Was the decision to pursue the Tri Star program a reasonable one? What were the effects of these projects on Lockheed’s shareholders?

In terms of the businesses strategy it might have been a reasonable decision, since it represents an order which might generate following orders, provided the project turns out to be successful for the customer.

However, from the shareholders’ perspective this project had a negative effect, since the Shareholder Value Add (SVA) which is determined by the formula:

is going to be negative, since the Net Operating Profit for 210 units represents $ -480 Million. Therefore the SVA can only be negative if you deduct as well (Capital x WACC).

□□□□□:

1> A. Payback, NPV, IRR, Should purchase or not?

Payback: $35, 000/5000= 7 year

NPV: = Co+ C1….. n/(1+i)^1…. n

Co=-3, 5000

CF1-CF15= 5, 000; I= 12

Computing result is $-945. 67

IRR: 11. 49%

NPV is negative and IRR is lower 12% so reject the proposal.

B.

NPV: = Co+ C1….. n/(1+i)^1…. n

NPV= -35000+(4500/. 12)

= 2500

NPV is positive so should purchase the machine.

C. NPV: = Co+ C1….. n/(1+i)^1…. n

= -35, 000(4000/(0. 12-0. 04))

=-35, 000+50, 000

= 15, 000

NPV is positive so rainbow should reinvest the cost saving into the machine annually.

2.

Cash Flow:

Investment Y1 Y2 Y3 IRR%

1. -75k44k44k44k34. 63% 25, 461. 91

2. -50k23k23k23k18. 01% 2, 514. 18

3. -125k70k70k 70k 31. 21%34, 825. 76

4. – 1k12k13k14k1207. 06%28, 469. 88

5. -125k67k67k 67k28. 10% 27, 976. 08

1, Using IRR I recommend the (4)

2, Using NPV I recommend the proposal (3)

3, NPV is better!

The NPV method is better because it shows the most cash flow as the highest. Because the discount rate is 15%, it is building a new both is prioritized higher.

4.

1, NPV= PV-Investment

= 210k-110k= 100k

2. Assuming issue N shares when price is P.

N*P= 110, 000(1)

P= 1, 210, 000/(10, 000+N) (2)

Then computing the result

So N= 1000 P=$110

3, Stock price rises up $10 Stock holder make the profit.

Out cash flow in cash flownet cash flow

1967-100-100

1968-200-200

1969-200-200

1970-200140 -60

1971-200-490140-550

1972-490560 70

1973 -490560 70

1974-490560 70

1975-490560 70

1976-490420-70

1977420420

In total -584. 05

Acc profit -480

Cost: 14 $mm

Units Per Year: 35

Revenue 16

Quantity: 210

NPV=-584. 05mm

Out cash flow in cash flownet cash flow 1967...