

CHAPTER 6

FINANCIAL ANALYSIS

Financial feasibility is the study of the amount of expenses required in the project investment, source of fund and especially, the minimum return from the investment that should be identified in this process. Then cash flow, NPV of the project and internal rate of return is keys for financial feasibility study. The sensitivity study can identify the variation of NPV due to the decreasing of demands and the increasing of expenditures.

6.1 Source of Fund and Cost of Capital

Source of fund of this project will be categorized into 2 part that is shareholder equity and loan. For initial investment, source of funds 10.4 million baht will come from the shareholder equity. The other will come from the Bank loan. In addition, the loan might be come from the international Commercial Bank, Thai Commercial Bank or Finance.

$$\begin{aligned} \text{Cost of Capital} &= \frac{(10.4 * 5\%) + (10 * 7.5\%)}{10.4 + 10} \\ &= 6.23 \\ \text{Discount rate} &= 10\% \end{aligned}$$

6.2 Assumption

Assumption of this project investment is as follow;

- 1) Time Estimate: 10 years
- 2) Working Capital: 3 month
- 3) Wages: Constant
- 4) Depreciation
 - Constructor and pond 10% per year
 - Factory and building 5% per year

- Electrical line and water supplied pipe cost 20% per year
- Perimeter Fence, road way, and parking area 10% per year
- Machine and equipment 10% per year
- Vehicular expenses 10% per year
- Office equipment 10% per year

6.3 Initial Investment

Initial investment consists of following items.

- Operating cost and management
- Pre operation cost
- Land and land improvement
- Construction and office building
- Electrical line and water supplied pipe cost
- Perimeter Fence, road way, and parking area
- Machine and equipment
- Vehicular expenses
- Office equipment

6.4 Estimated Revenues

Estimated revenues of ABC Company consists of industrials and local hospital, which is shown, in the Table 6.1

Table 6.1: Estimate Revenue

	1	2	3	4	5	6	7	8	9	10
Inflow										
1. Sale										
1.1 Industrial	10,000,000	10,000,000	10,000,000	12,000,000	15,000,000	15,000,000	15,000,000	16,000,000	16,000,000	16,000,000
1.2 Hospital(less than 100)	8,110,080	8,648,640	9,218,880	9,123,840	8,712,000	9,250,560	9,789,120	9,789,120	9,789,120	9,789,120
1.3 Hospital(100-200 km)								295,680	924,000	1,552,320
Sum	18,110,080	18,648,640	19,218,880	21,123,840	23,712,000	24,250,560	24,789,120	26,084,800	26,713,120	30,691,440

2. Factory and building	175,000	175,000	175,000	175,000	175,000	175,000	175,000	175,000	175,000	175,000
3. Electrical line and water supplied pipe	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
4. Fence, road way, and parking area	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000
5. Machine and equipment	797,500	797,500	797,500	797,500	797,500	797,500	797,500	797,500	797,500	797,500
6. Vehicular expenses	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
7. Office equipment	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000
Total	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500

6.5.2 Variable Cost

Variable Cost of ABC Company consists of diesel and electrical supply as shown in the following table.

Table 6.7: Variable Cost

Year	1	2	3	4	5	6	7	8	9	10
Production capacity	71.2	74.6	78.2	81.6	85	88.4	91.8	95.4	98.8	100
Direct raw material	157,329	164,842	172,797	180,310	187,823	195,336	202,849	210,803	218,316	220,968
Electrical	40,656	42,597	44,653	46,594	48,536	50,477	52,419	54,474	56,416	57,101
Total	197,985	207,439	217,450	226,904	236,359	245,813	255,267	265,278	274,732	278,069

Fix cost and variable costs, and cash flow are shown in Table 6.8, 6.9, 6.10.

Table 6.8: Production Cost

Year	1	2	3	4	5	6	7	8	9	10
Production program	71.20	74.60	78.20	81.60	85.00	88.40	91.80	95.40	98.80	100.00
. Direct material	157,329	164,842	172,797	180,310	187,823	195,336	202,849	210,803	218,316	220,968
. Direct labor and In direct labor	11,064,000	11,064,000	11,064,000	11,064,000	11,064,000	11,064,000	11,064,000	11,064,000	11,064,000	11,064,000
. Maintenance cost	262,000	262,000	262,000	262,000	262,000	262,000	262,000	262,000	262,000	262,000
. Management cost	56,089	58,031	60,086	62,028	63,969	65,911	67,852	69,908	71,849	72,535
. Interest 7.5%	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000
. Depreciation	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500	1,662,500
Total	13,951,990	13,961,448	13,971,462	13,980,919	13,990,377	13,999,835	14,009,293	14,019,307	14,028,764	14,032,103

Table 6.9 : Cash Flow of financial Planning

Year	0	1	2	3	4	5	6	7	8	9	10
Inflow		18,110,080	18,648,640	19,218,880	21,123,840	23,712,000	24,250,560	24,789,120	26,084,800	26,713,120	30,041,440
Loan	10,000,000										
shareholder	10,728,000										
Out Flow											
1.Operation and management cost		12,939,918	12,949,372	12,959,268	12,968,837	12,978,292	12,987,746	12,997,200	12,997,200	13,016,722	13,020,002
2.Pre operation cost	10,000										
3. Land and land improvement	3,143,000										
4.Construction office building and laboratory	3,500,000										
5.Electrical line and water supplied pipe cost ,and parking area	300,000										
6.Exteria Fence, road way, and parking area	300,000										
7. Machine and equipment	7,975,000										
8. Vehicalular expense	5,000,000										
9. Office equipment	500,000										
Cash Flow	20,728,000	5,170,162	5,699,268	6,259,612	8,155,003	10,733,708	11,262,814	11,791,920	13,087,600	13,696,398	17,021,438

Table 6.10: Cash Flow for ROI Analysis

Year	0	1	2	3	4	5	6	7	8	9	10
Inflow		18,110,080	18,648,640	19,218,880	21,123,840	23,712,000	24,250,560	24,789,120	26,084,800	26,713,120	27,341,440
Loan shareholder	-	-	-	-	-	-	-	-	-	-	-
Out Flow	18,028,000	12,839,918	12,949,372	12,959,288	12,968,837	12,978,292	12,987,746	12,997,200	12,997,200	13,016,722	13,020,002
Net Cash Flow	(18,028,000)	5,170,162	5,699,268	6,259,612	8,155,003	10,733,708	11,262,814	11,791,920	13,087,600	13,696,398	14,321,438
Present Worth Factor at 10% discount rate											
Present Value	(18,028,000)	4,700,148	4,710,137	4,702,940	5,569,973	6,664,785	6,357,566	6,051,118	6,105,457	5,808,615	5,521,530

NPV 38,164,269

Pay back period about 4 y

ROI .39 %

6.6 Analysis Return on Investment

NPV = 38,164,269

Pay back period = about 4 years

ROI = more than 39%

B/C = 1.388

6.7 Sensitivity Analysis

The thesis also studies the sensitivity of the changing inflow to identify how much the NPV was change due to the changing inflow and outflow. In addition, the minimum demand that will make the project feasible will be shown in the Table 6.11- Table 6.16.

Table 6.11 : Sensitivity at reduce inflow 40%

Year	0	1	2	3	4	5	6	7	8	9	10
Inflow		10,866,048	11,189,184	11,531,328	12,674,304	14,227,200	14,550,336	14,873,472	15,650,880	16,027,872	16,404,864
Loan shareholder	-	-	-	-	-	-	-	-	-	-	-
Out Flow	18,028,000	12,939,918	12,949,372	12,959,268	12,968,837	12,978,292	12,987,746	12,997,200	12,997,200	13,016,722	13,020,002
Net Cash Flow	(18,028,000)	(2,073,870)	(1,760,188)	(1,427,940)	(294,533)	1,248,908	1,562,590	1,876,272	2,653,680	3,011,150	3,384,862
Present Worth Factor at 10% discount rate											
Present Value	(18,028,000)	(1,885,337)	(1,454,700)	(1,072,833)	(201,170)	775,473	882,041	962,824	1,237,960	1,277,023	1,305,010
NPV	(16,201,708)										

Table 6.12: Sensitivity at reduce inflow 25%

Year	0	1	2	3	4	5	6	7	8	9	10
Inflow		13,582,560	13,986,480	14,414,160	15,842,880	17,784,000	18,187,920	18,591,840	19,563,600	20,034,840	20,506,080
Loan shareholder	-										
Out Flow	18,028,000	12,939,918	12,949,372	12,959,268	12,968,837	12,978,292	12,987,746	12,997,200	12,997,200	13,016,722	13,020,002
Net Cash Flow	(18,028,000)	642,642	1,037,108	1,454,892	2,874,043	4,805,708	5,200,174	5,594,640	6,566,400	7,018,118	7,486,078
Present Worth Factor at 10% discount rate											
Present Value	(18,028,000)	584,220	857,114	1,093,082	1,963,009	2,983,965	2,935,363	2,870,934	3,063,272	2,976,370	2,886,205

NPV

4,185,533

Table 6.13 Sensitivity at reduce inflow 28%

Year	0	1	2	3	4	5	6	7	8	9	10
Inflow		13,039,258	13,427,021	13,837,594	15,209,165	17,072,640	17,460,403	17,848,166	18,781,056	19,233,446	19,685,837
Loan shareholder	- -										
Out Flow	18,028,000	12,939,918	12,949,372	12,959,268	12,968,837	12,978,292	12,987,746	12,997,200	12,997,200	13,016,722	13,020,002
Net Cash Flow	(18,028,000)	99,340	477,649	878,326	2,240,328	4,094,348	4,472,657	4,850,966	5,783,856	6,216,724	6,665,835
Present Worth Factor at 10% discount rate											
Present Value	(18,028,000)	90,309	394,751	659,899	1,530,173	2,542,267	2,524,699	2,489,312	2,698,209	2,636,500	2,569,966

NPV

108,085

Table 6.14 Sensitivity at increase out flow 35%

Year	0	1	2	3	4	5	6	7	8	9	10
Inflow		18,110,080	18,648,640	19,218,880	21,123,840	23,712,000	24,250,560	24,789,120	26,084,800	26,713,120	27,341,440
Loan shareholder	- -										
Out Flow	24,337,800	17,468,889	17,481,652	17,495,012	17,507,930	17,520,694	17,533,457	17,546,220	17,546,220	17,572,575	17,577,003
Net Cash Flow	(24,337,800)	641,191	1,166,988	1,723,868	3,615,910	6,191,306	6,717,103	7,242,900	8,538,580	9,140,545	9,764,437
Present Worth Factor at 10% discount rate											
Present Value	(24,337,800)	582,901	964,452	1,295,168	2,469,714	3,844,312	3,791,630	3,716,752	3,983,307	3,876,487	3,764,610

NPV

3,951,533

Table 6.15 Sensitivity at increase out flow 40%

Year	0	1	2	3	4	5	6	7	8	9	10
Inflow		18,110,080	18,648,640	19,218,880	21,123,840	23,712,000	24,250,560	24,789,120	26,084,800	26,713,120	27,341,440
Loan shareholder	-	-									
Out Flow	25,239,200	18,115,885	18,129,121	18,142,975	18,156,372	18,169,609	18,182,844	18,196,080	18,196,080	18,223,411	18,228,003
Net Cash Flow	(25,239,200)	(5,805)	519,519	1,075,905	2,967,468	5,542,391	6,067,716	6,593,040	7,888,720	8,489,709	9,113,437
Present Worth Factor at 10% discount rate											
Present Value	(25,239,200)	(5,277)	429,355	808,343	2,026,819	3,441,387	3,425,068	3,383,271	3,680,143	3,600,469	3,513,622

NPV

(936,000)

Table 6.16 Sensitivity at increase out flow 39%

Year	0	1	2	3	4	5	6	7	8	9	10
Inflow		18,110,080	18,648,640	19,218,880	21,123,840	23,712,000	24,250,560	24,789,120	26,084,800	26,713,120	27,341,440
Loan shareholder	-	-	-	-	-	-	-	-	-	-	-
Out Flow	25,058,920	17,986,486	17,999,627	18,013,383	18,026,683	18,039,826	18,052,967	18,066,108	18,066,108	18,093,244	18,097,803
Net Cash Flow	(25,058,920)	123,594	649,013	1,205,497	3,097,157	5,672,174	6,197,593	6,723,012	8,018,692	8,619,876	9,243,637
Present Worth Factor at 10% discount rate											
Present Value	(25,058,920)	112,358	536,374	905,708	2,115,398	3,521,972	3,498,380	3,449,967	3,740,776	3,655,672	3,563,820

NPV

41,506

The sensitivity analysis found that the minimum inflow that make the project feasible are 28% and the maximum outflow which make project feasible is 39% so the project is a safe investment because it is not sensitive to change.