

SFMA IA Mock Paper 2*

CraftCo Ltd. is a private limited company that manufactures furniture from a base on Co. Galway. The company is owned by the Gallagher family and the current managing director, Emily Gallagher, is the fourth generation to run the business. CraftCo have expanded over the past two decades and operate at a significantly larger scale in comparison to the early days of the company when each piece of furniture was hand crafted and painted. Automation of the production process along with increased scale are two key elements of the CraftCo business model as they look to increase their efficiencies and economies of scale to compete with the larger international players in the market. A recent valuation of the company, for tax purposes, put the equity value at €3 million which represents a P/E multiple of 6 times.

The Gallaghers have always been quite conservative with regards funding the business and have never brought in any outside equity funding. The company is also cash rich as the shareholders like to limit the dividends they take out each year due to the associated tax expense. The shareholding is currently split between four members of the fourth generation (Emily and her cousins) with all four working in the business. The current debt in CraftCo is €400,000 with an interest rate of 5%.

Investment Opportunity

CraftCo are looking at investing in a new modern piece of machinery to increase their production efficiency even further. This machine would allow them make a new type of furniture to sell in the European market, which is a key strategic objective of Emily for 2019. Emily continues, *“This is a big investment for us and I want to make sure we get it right. Our intern in the finance department did an initial NPV analysis but the answer seems a bit off to me. You might take a look again and see what you think. I told him to assume we finance it all with a 6% loan with annual repayments but there is a debate internally about whether we should go and look for some venture capital funding instead to fund the up-front cost of the machine.”*

NPV Investment Analysis Report - December 2018

Year	0	1	2	3	4
Machine Purchase (N1)	(1,000,000)				
Machine Sale					460,000
Revenue		1,150,000	1,173,000	1,196,460	1,220,389
Variable Costs		(550,000)	(566,500)	(583,495)	(601,000)
Fixed Costs (N3)		(350,000)	(360,500)	(371,315)	(382,454)
Interest Expense		(60,000)	(42,000)	(16,800)	(6,720)
Cashflows	(1,000,000)	190,000	204,000	224,850	690,215
Discount Factor (N2)	1	0.893	0.797	0.712	0.636
Present Value	(1,000,000)	169,643	162,628	160,044	438,644
Net Present Value	(69,042)				

N1: Taxation of 20% applies to the profits of this project, payable in the year incurred. Capital allowances can be claimed at a rate of 20% per annum straight line.

N2: All cashflows presented are nominal cashflows. The relevant inflation rate is 3%. A real discount rate for the firm is used in the above calculation.

N3: Depreciation is included in fixed costs. The new machine is estimated to have a four year life and a residual value of €460,000.

Proma Table Performance

CraftCo have also recently launched a new product, the Proma table, on the Irish market in July 2018. This represented a significant investment in terms of production line adaption, marketing and management time so Emily is conscious to make sure things are going well. She was the main driver behind the launch while some of the other key shareholders were sceptical about its attractiveness to the Irish customer base.

Emily continues, "Overall the high level results for the six months to 31 Dec 2018 do not look good as actual profitability seems to be way off the initial budget we set at the start of July for the six months in 2018. I want you to dig deeper into this and see what is driving it. Actual selling price was 20% less than expected."

1 July 2018 - Proma Table - Budget Information			July- Dec 2018 - Proma Table - Actual Results		
			€	€	
Unit Sales (July - Dec)		2,500	Sales		264,000
Selling Price		150			
<u>Cost Card</u>			Materials (N1)	188,760	
Materials	(20kg x €4 per kg)	80	Labour (N2)	34,500	
Labour	(1hr * €15 per hr)	15	Var. O/H	20,700	243,960
Var. O/H	(€10 per labour hr)	10	Contribution		20,040

N1: Average materials actually used per finished unit for July-Dec was 22kg.

N2: A total of 2,300 labour hours were worked between July-Dec.

Requirement:

Prepare a report for Emily Gallagher that deals with the following issues;

- (a) For the proposed machine investment;
 - i) Prepare an updated NPV calculation based on the information provided by the FD and recommend whether CraftCo should proceed.
 - ii) Calculate by how much the discount rate would have to change before the project would cease to be worthwhile.
 - iii) Calculate by how much the residual value would have to change before the project would cease to be worthwhile. (Ignore any impact on depreciation and tax for the purposes of this calculation).

(45 marks)

- (b) For the six months ending 31 December 2018, prepare an operating statement that reconciles budget and actual profit for the Proma table in as much detail as possible.

(30 marks)

- (c) Discuss the key factors Emily should consider when deciding on the appropriate source of finance for the new proposed investment.

(20 marks)

Presentation (5 marks)

(100 marks)

* Prepared by lecturer, not a CAI official mock/sample paper.

SFMA IA Mock Paper 2 - Suggested Solution

(a)

NPV Investment Analysis Report - December 2018

Year	0	1	2	3	4
Machine Purchase	(1,000,000)				
Machine Sale					460,000
Revenue		1,150,000	1,173,000	1,196,460	1,220,389
Variable Costs		(550,000)	(566,500)	(583,495)	(601,000)
Fixed Costs (W1)		(215,000)	(225,500)	(236,315)	(247,454)
Tax (W3)		(37,000)	(36,200)	(35,330)	(86,387)
Cashflows	(1,000,000)	348,000	344,800	341,320	745,548
Present Value (15.36%)	(1,000,000)	301,664	259,094	222,329	420,973
Net Present Value	204,060				

W1 Fixed Costs

Cost	1,000,000
Residual Value	460,000
Depreciable Amount	<u>540,000</u>

Useful Life	4
Depreciation	135,000

	1	2	3	4
Per Question	(350,000)	(360,500)	(371,315)	(382,454)
Depreciation	135,000	135,000	135,000	135,000
Updated Fixed Costs (Cash)	<u>(215,000)</u>	<u>(225,500)</u>	<u>(236,315)</u>	<u>(247,454)</u>

W2 Capital Allowances

Cost	1,000,000
Capital Allowances	20%

	1	2	3	4
Capital Allowances	200,000	200,000	200,000	0

Note you only claim capital allowances in year you own the asset at end of year - balancing allowance/charge in year 4

Balancing Allowance/Charge

Disposal Value	460,000
TWDV Year 4	<u>400,000</u>
Balancing Charge	60,000

1,000,000 - 200,000*6

W3 Taxation

	1	2	3	4
Revenue (per Q)	1,150,000	1,173,000	1,196,460	1,220,389
Variable Costs (per Q)	(550,000)	(566,500)	(583,495)	(601,000)
Fixed Costs (W1)	(215,000)	(225,500)	(236,315)	(247,454)
Profits	385,000	381,000	376,650	371,935
Capital Allowances	(200,000)	(200,000)	(200,000)	0
Balancing Charge				60,000
Taxable Profits	185,000	181,000	176,650	431,935
Tax (20%)	37,000	36,200	35,330	86,387

* Interest is not included in NPV analysis at all - included in cost of capital instead

W4 Discount Rate

Real Discount Rate	12%	* Needed to work back from tables to see what discount rate was used
Inflation Rate	3%	
Nominal Discount Rate	15.36%	$(1+\text{nominal}) = (1+\text{real}) \times (1+\text{inflation})$

(ii)

Need a negative NPV so try 25% discount rate

Year	0	1	2	3	4
Cashflows	(1,000,000)	348,000	344,800	341,320	745,548
Present Value (25%)	(1,000,000)	278,400	220,672	174,756	305,376
Net Present Value	(20,796)				

Now apply the 15.36% and 25% results to the IRR interpolation formula to find the IRR

$$\text{IRR} = 0.1536 + (204,060 \times (0.25 - 0.1536)) / (204,060 + 20,796)$$

$$\text{IRR} = 0.1536 + .0875$$

$$\text{IRR} = 24.11\%$$

Thus the discount rate can move by 8.75% before the project ceases to be worthwhile.

(iii)

Sensitivity = NPV/ PV of Variable

PV of disposal value = $460,000/(1.1536)^4 = 259,738$

Sensitivity = $204,060/259,738 = 78.56\%$

Thus the disposal value can fall by 78.56% (i.e. fall to 98,624) before the project ceases to be worthwhile.

(b)

Reconciliation of Budgeted and Actual Contribution - CraftCo July-Dec 2018

Budgeted Contribution (W1)		112,500
Sales Volume (W2)	(13,500)	
Sales Price (W2)	(66,000)	
Materials Price (W3)	4,840	
Materials Usage (W3)	(17,600)	
Labour Rate (W4)	0	
Labour Efficiency (W4)	(1,500)	
Variable OH Rate (W5)	2,300	
Variable OH Efficiency (W5)	(1,000)	(92,460)
Actual Contribution (Given)		20,040

W1 Budgeted Contribution

Sales	(2,500*150)	375,000
Materials	(2,500*80)	(200,000)
Labour	(2,500*15)	(37,500)
Variable OH	(2,500*10)	(25,000)
Contribution		112,500

W2 Sales Variances

Sales
Volume

Budgeted Sales 2,500 units

Actual Sales (€) 264,000

Actual Sales Price	120	(Told it was 20% less than budget)
Actual Sales Volume	2,200	units
Difference	300	adverse
Budgeted CPU	45	(150-80-15-10)
Sales Volume	13,500	Adv

Sales Price

Budget	150	
Actual	120	
Difference	30	Adv
Actual Volume	2,200	
Sales Price	66,000	Adv

W3 Materials Variances

AQ*AP	AQ*SP	SQ*SP
48,400kg * €3.90	48,400kg * €4	2,200*20KG * €4
188,760	193,600	176,000
4,840	17,600	
Fav	Adv	
Price	Usage	

* 2,200 actual units * 22kg = 48,400 kg actually used

W4 Labour Variances

AH*AR	AH*SR	SH*SR
2,300 HRS * €15	2,300 HRS * €15	2,200 HRS * €15
34,500	34,500	33,000
-	1,500	
Fav	Adv	
Rate	Efficiency	

W5 Variable OH Variances

AH*AR	AH*SR	SH*SR
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2,300 HRS * €9	2,300 HRS * €10	2,200 HRS * €10
20,700	23,000	22,000
2,300 Fav Rate	1,000 Adv Efficiency	

(c)

In deciding the appropriate source of finance to fund the required €1m for the new investment there are a number of key considerations, including;

- CraftCo currently have a gearing ratio of $(400,000 / (3,000,000 + 400,000)) = 11.7\%$ and this would increase to $(1,400,000 / (1,400,000 + 3,000,000)) = 31.8\%$ should the investment be raised solely by debt. This would still be relatively lowly geared and not a major concern.
- The company is also cash rich thus providing an option to fund the investment (either fully or at least partially) with internal funds (i.e. using the surplus cash). This would likely be attractive to the family as they may want to limit the level of debt given their conservative approach to funding to date. Interest rates on deposits are also currently at very low (or sometimes even negative levels) thus meaning the cash surplus is generating little value.
- Venture capital funding would be a big change to the current funding structures in CraftCo. The closed family ownership currently in situ would be diluted and significant external influence in the form of venture capital nominated directors etc would come into play for any ongoing business decisions in the future. Furthermore, venture capital firms are typically only interested in companies with a significant growth strategy and will likely be interested in exiting their investment in 5-7 years. This may not suit the plans of the Gallagher family who may have no interest in rapid growth and/or the future full sale of the investment.
- CraftCo should look at a combination of debt and internal (cash) funding to fund the new investment. Current gearing levels are low and the company is making good profits $(3,000,000 / 6 = 500,000)$ relatively to the size of the debt being considered.