Capstone Project Summary

MS Finance 2022

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Title - Financial Forecasting and Valuation for a seed stage startup

Introduction

The company I am covering in the project is LynXes Corporation started by two scientists Dr. Zoltan Nemeth and Dr. Gyorgy Vanko, who are working in the research department of the Wigner Research Centre for Physics. The founders have developed a newly designed version of X-Ray Diffractometer equipment which helps, including but not limited to, big automobile and cell phone manufacturing companies in assessing and studying atoms to its smallest details and then use that detail in manufacturing products like batteries. The product would give detailed result about the atom which can be then used in industrial and scientific purposes.

The challenge they were facing is that they are from science community and does not know in detail about the financial and business aspects of launching their business with the product they have developed in full scale. That's where the company required consultation on the financials side to develop a forecasting model of how their numbers would look like going ahead 3 years in the business considering many aspects of the business.

Preparation and Analysis of Financial Statements for Valuation

As part of the project there is basic financial statements like Profit and Loss statement, Balance Sheet statement, Cash Flow statement including operating cash flow, financing cash flow and investing cash flow. The numbers in the statements is based on realistic market assumptions and is for 4 years considering the very first year as the base year when they receive first round of investment. The PnL, Balance Sheet, the Cash Flow statement, Optimal Capital Structure,

Ammortization and Depreciation Schedule are the base statements for our forecasting, based on which, further statements are made which gives us better clarity of the numbers and valuation methods like Free Cash Flow based on Discounted Cash Flow approach, Valuation approach based on multiples like Price to Value multiple, Enterprise Value to EBITDA multiple, Enterprise Value to EBIT multiple, Enterprise Value to Sales multiple, Price to Sales multiple and Price to Earnings multiple are also done.

After having done the valuation, we have had different valuation figures using different techniques as expected. The figures are as follows :-

		BOOK Value		2022	2023	2024	2025
				Construction	peration	peration	Operation 3
		EUR					
			IRR				
BOOK Value			125%	-500000	0	0	5678992.31
EBITDA Multiple			230%	-500000	0	0	18008424.4
EBIT Multiple			247%	-500000	0	0	20827541.6
EV/Sales			152%	-500000	0	0	7968151.24
Price/Sales			137%	-500000	0	0	6658500
PE (Price/Earnings)			298%	-500000	0	0	31457438.5
Perpetuity Method			146%	-500000	0	0	7421232.39
		Average	191%			Average	14002897.2
		Median	152%			Median	7968151.24
		Max	298%			Max	31457438.5
		Min	125%			Min	5678992.31

The above figure shows the valuation in terms of terminal value and where the company is valued based on the assumptions implied in the multiples which are taken from the blog of professor of Finance Dr. Ashwath Damodaran – “Damodaran Online”.

One more valuation method is followed which is the FCFF method and a terminal valuation is done based on that method as well. According to that method, the NPV of the project is at 4.7 million Euros with WACC of 30% as the discounting factor. The company is assumed to have no debt investment and only the equity investment. This technique is more reliable as it accounts for the cash flows based on the in-ground research of the founders regarding cost and pricing of the

product. If the founders decide to follow this method, then their investment requirement of 500,000 Euros would require them to give up equity of 12-15% to investors.

For the investors, it would mean that if they invest for that much equity, they would have gained 47% IRR at the end of 3 years when or if they want to take exist.

In the final part, a sensitivity analysis is done where the Internal Rate of Return's sensitivity is measured based on the fluctuation in costs of Labor and Material costs taking the 1st year labor and material costs as the benchmark costs.

Cross reference tables - IRR vs. Material Costs and Annual Labour Costs

Investor's IRR

Sale at Yr. 4

	Material Cost								
	EUR				Base Case				
Annual Labour Cost	171000	181687.5	192375	203062.5	213750	224437.5	235125	245812.5	256500
47.0%	80.0%	85.0%	90.0%	95.0%	100.0%	105.0%	110.0%	115.0%	120.0%
80.0%	58.77%	56.21%	53.93%	51.90%	50.06%	48.40%	46.90%	45.52%	44.26%
85.0%	57.88%	55.31%	53.04%	51.00%	49.17%	47.51%	46.00%	44.62%	43.36%
90.0%	57.08%	54.52%	52.24%	50.20%	48.37%	46.71%	45.20%	43.83%	42.56%
95.0%	56.37%	53.81%	51.53%	49.49%	47.66%	46.00%	44.49%	43.11%	41.85%
100.0%	55.73%	53.16%	50.89%	48.85%	**47.02%**	45.36%	43.85%	42.47%	41.21%
105.0%	55.15%	52.58%	50.31%	48.27%	46.44%	44.78%	43.27%	41.89%	40.63%
110.0%	54.62%	52.06%	49.78%	47.74%	45.91%	44.25%	42.74%	41.37%	40.10%
115.0%	54.14%	51.58%	49.30%	47.26%	45.43%	43.77%	42.26%	40.88%	39.62%
120.0%	53.70%	51.13%	48.86%	46.82%	44.99%	43.33%	41.82%	40.44%	39.18%

							Labor Cost	Material Cost	
Base Case									
Material Costs		100.0%					74,750	213750	288,500
Annual Labor Costs		100.0%							
						Weight	0.259098787	0.74090121	1

In the above table, sensitivity in IRR is shown with 47% as the base case IRR. The IRR reflects the investors' return on their investment of ownership of 12% in the company. The analysis states that if the costs of material and labor goes up by 20% then the affect on IRR would be that of approx 8% that is it may fall to about 39%. If the prices goes down by 20%, which increases the profitability and increases the IRR, the IRR could shoot up to about 58%.