

# Essendon Manufacturing Company Limited

## Project Evaluation of New Die Casting Machine

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Dedicated to,  
Prof.

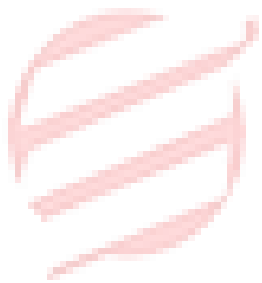
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Name of the student  
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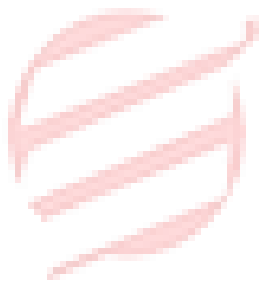
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## Executive Summary

The business report has been written keeping in mind the New Die Casting Machine to be purchased by Essendon Manufacturing Company Ltd. The business report begins with the brief overview of the capital structure of the company and the importance of Weighted Average Cost of Capital.

The report moves to the crux of the matter – the Capital Budgeting Method used for decision making process. The method used are the Net Present Value Method, IRR Method and the Payback Period Method. The report later on moves to the importance of each capital budgeting method , Pros and cons of using these technique. After stating the importance of the techniques, the decision is taken on the basis of it.

The last few pages of the project goes with the decision of buying the New Die Casting Machine is feasible or not.



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## Methodology:

Weighted Average Cost of Capital:-

Weighted Average Cost of Capital is an important financial tool for the companies and financial analyst. It helps companies make important investment decisions and compare the projects with similar risks. It is used as cost of capital by the company to evaluate the project. If the project offers less return than its WACC, then it is not feasible for the company to invest in the project.

IMPORTANCE OF WEIGHTED AVERAGE COST OF CAPITAL (WACC) FOR CAPITAL BUDGETING DECISIONS:

WACC is mainly used to make investment decisions for a project. While calculating Net Present Value (NPV), WACC is used as a discount rate or the hurdle rate. All free cash flows and the terminal cash flows are discounted at the WACC to get appropriate decision. Weighted Average Cost of Capital (WACC) includes all sources of capital that is Debt, Preferred Stock and the Common Stock. The WACC thus considers all types of capital structure according to their weight in the company. Weighted Average Cost of capital uses the market value of all the funds. This helps the companies to take appropriate Investment Decision.

Weighted Average Cost of Capital is used mostly as a discount rate for the projects whose cash flows which have risk almost same as that of the company's overall risk.

The WACC is calculated as the sum of the cost of each capital multiplied by the weights of each capital in the capital structure.

$$WACC = W_d * R_d + W_p * R_p + W_s * R_s$$

Where:

$W_d$  = Weight of Debt

$R_d$  = After Tax cost of debt

$W_p$  = Weight of Preferred Stock

$R_p$  = Cost of Preferred Stock

$W_s$  = Weight of Common Equity

$R_s$  = Cost of Common Equity

1.

<b>Cost of Debt (Bonds):</b>	
Face Value	\$1,700,000
Number of Years to Maturity	8
Coupon Amount	\$12,750
Frequency	\$4
Eight Year Risk Free Rate	1.76%
Credit Spread	0.65%
Tax Rate	30%
Yield	2.41%
<b>After Tax Yield</b>	<b>1.69%</b>
Market Price of bond	\$1,772,780.31
<b>Weight of Bond</b>	<b>6.75%</b>

2.

<b>Cost of Preferred Stock:</b>	
Number of Shares	800,000
Annual Dividend	\$1.46
Price of shares	\$9.64
Cost of Preferred Stock	Dividend Per share
	Price Per share
<b>Cost of Preferred Stock</b>	<b>15.15%</b>
<b>Value of Preferred Stock</b>	<b>\$7,712,000.00</b>
<b>Weight of the Preferred Stock</b>	<b>29.35%</b>

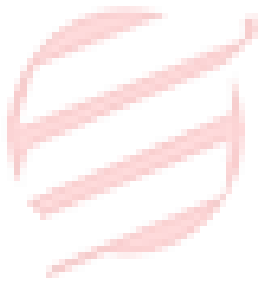
3.

<b>Cost of Equity</b>			
Number of Shares	1,700,000		
Expected Dividend (D1)	\$0.81		
g1 (For next four years)	7%		
g2 (Constant growth rate)	3%		
Beta	1.2		
Market Risk Premium	8.70%		
Risk Free Rate	1.85%		
Cost of Common Equity as per CAPM Model,			
<b>Cost of Common Equity</b>	<b>12.29%</b>		
Price of Common Stock:-			
<b>Year</b>	<b>Dividend</b>	<b>PV Factor</b>	<b>Present Value</b>
D1	\$0.81	0.8906	\$0.72
D2	\$0.87	0.7931	\$0.69
D3	\$0.93	0.7063	\$0.65
D4	\$0.99	0.6290	\$0.62
D5	\$1.06	0.5601	\$0.59
P5	\$11.77	0.5601	\$6.59
Price at the end of Five Years	\$11.77		
Price of the stock (P0)	\$9.88		
<b>Total Market Value</b>	<b>\$16,789,791.33</b>		
<b>Weight of Equity</b>	<b>63.90%</b>		

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Weighted Average Cost of Capital:-

Weighted Average Cost of Capital	
<b>Total Capital</b>	<b>\$26,274,571.64</b>
Weight of Debt (Wd)	6.75%
After Tax Cost of Debt (Rd)	1.69%
Weight of Preferred Stock (Wp)	29.35%
Cost of Preferred Stock (Rp)	15.15%
Weight of Common Stock (Ws)	63.90%
Cost of Common Stock (Rs)	12.29%
<b>Weighted Average Cost of Capital</b>	<b>12.41%</b>



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## Capital Budgeting Techniques:-

Essendon Manufacturing Company Ltd is in the process of deciding whether or not to purchase a new die casting machine. On behalf of the company, the report show the capital budgeting techniques:-

### 1. Net Present Value :-

Net Present Value (NPV) is the difference of the discounted cash inflow and the initial cash outflow. Higher NPV of the project, the more the project is preferred . A positive NPV is viable for the project.

### 2. Internal Rate of Return:-

It is the discount rate at which the net present value of project is zero. A higher IRR is always preferred.

### 3. Payback Period:-

It measures the time in which the project recovers its initial investment of the project. The company wants to recover the initial investment within three years of the project time. The lower the payback period, more it is preferred.

### 4. Discounted Payback Period:-

It is the same as the payback period, the only difference is the cash flows are discounted to its present value and then the payback period is calculated.

All the above techniques are based on the comparison of discounted cash inflows and outflows of the project with a substantial difference in each technique.



Capital Budgeting Techniques:-

1. Net Present Value:-

Project Details	
Cost	\$15,000
Cost of Capital after tax (See Sheet WACC)	12.41%
Life	4
Salvage Value end of year four	\$2,100
Straight Line Depreciation	\$3,750
Gain or Loss on Sale	\$2,100
Book Value end year four	0
Working Capital Invested year zero	\$1,000
Working capital Recovered year four	\$1,000
Taxation rate	30%
Maintenance Cost	\$1,100
Annual Sales	-
Annual Operating Expenditure	\$2,700
Opportunity Cost	\$1,400
Feasibility Study	\$5,000

1. Taxable Income	0	1	2	3	4
Revenue		\$13,100	\$12,707	\$12,326	\$11,956
Operating Expenditure		(\$2,700)	(\$2,700)	(\$2,700)	(\$2,700)
Gain or Loss on Sale					\$2,100
Opportunity Cost		(\$1,400)	(\$1,400)	(\$1,400)	(\$1,400)
Depreciation		(\$3,750)	(\$3,750)	(\$3,750)	(\$3,750)
Maintenance Cost		(\$1,100)	(\$800)	(\$500)	(\$200)
Total		\$4,150	\$4,057	\$3,976	\$6,006
Tax at 30%		(\$1,245)	(\$1,217)	(\$1,193)	(\$1,802)
Taxable Income		\$2,905	\$2,840	\$2,783	\$4,204

2. Relevant Net Cash Flows	0	1	2	3	4
Taxable Income		\$2,905	\$2,840	\$2,783	\$4,204
Depreciation		\$3,750	\$3,750	\$3,750	\$3,750
Outlay	(\$15,000)				
Working Capital	(\$1,000)				\$1,000
NCFAT	(\$16,000)	\$6,655	\$6,590	\$6,533	\$8,954

<b>Net Present Value (NPV)</b>	<b>\$</b>	<b>5,343</b>
<b>IRR</b>		<b>26.85%</b>

The Net Present Value of the project (NPV) is \$5,343. As the Net Present Value of the Project is positive, the project should be accepted.

### 3. Payback Period:-

**Payback (normal)**

Year	0	1	2	3	4
Cash Flows	-\$16,000	\$6,655	\$6,590	\$6,533	\$8,954
Cumulative Owing	-\$16,000	-\$9,345	-\$2,755	\$3,778	\$12,732

Using payback we can scan across the row of cumulative cash flows to see that the amount recovered exceeds \$2,755 (\$16,000 - \$13,245) between two and three years. To work out the fraction of the year  $(\$16,000 - \$13,245) / \$6,533 = .422$ , so payback is 2.422 years.

The company requires a pay back period of maximum of 3 years and as the payback period is less than 3 years. The project should be accepted as per payback period.

### 4. Discounted Payback Period:-

**Discounted Payback Period**

Year	0	1	2	3	4
Cash Flows	-\$16,000	\$6,655	\$6,590	\$6,533	\$8,954
PV of Cash Flow		\$5,920	\$5,215	\$4,599	\$5,608
Cumulative Owing	-\$16,000	-\$10,080	-\$4,865	-\$265	\$5,343

12.41%

Using discounted payback we can scan across the row of cumulative discounted cash flows to see that the amount recovered exceeds \$265 (\$16,000 - \$15,735) between three and four years. To work out the fraction of the year  $(\$16,000 - \$15,735) / \$5,608 = .0473$ , so discounted payback is 3.0473 years.

## Recommendations:

An investment is accepted, if the NPV is positive and rejected if the NPV is negative.

- Decision using Net Present Value (NPV):-

The NPV of purchasing the New Die Casting Machine is \$5,343

**Hence, On the basis of the NPV, the investment in New Die Casting Machine is advisable.**

- The decision on the basis of the IRR:-

An investment is accepted, if the project IRR is more than Weighted Average Cost of Capital and Rejected if the Project IRR is less than the Weighted Average Cost of Capital

Accept the investment = The IRR > Weighted Average Cost of Capital  
= 26.85% > 12.41%

**Hence, On the basis of the IRR, the investment in New Die Casting Machine is advisable.**

- The decision on the basis of the Payback Period:-

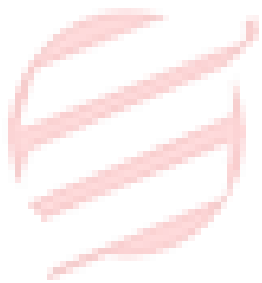
The company says to accept the project if the Payback period is less than three years.

Accept the project = Payback Period < 3 years  
= 2.422 < 3

**Hence, On the basis of Payback period, the investment in New Die Casting Machine is advisable.**

## Conclusion:

The report uses various capital budgeting techniques to analyse the investment decision. The most appropriate technique to be used is Net Present Value as it considers all the relevant cash inflows generated by purchasing a New Die Casting Machine by using discount rate as Weighted Average Cost of Capital (WACC). As the cash flows are discounted, this is the most appropriate technique to be used. The company should consider investing in the New Die Casting Machine.



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