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AYR Co.: Capital Investment Appraisal Report

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Abstract

Based on the three appraisal techniques; Project Aspire narrowly edged over Project Wolf in the bid of increasing AYR Co. market share. Recommendation will therefore be to proceed in the selection of Project Aspire. Nevertheless, if any future investments should arise, Project Wolf showed great prospects as well and this should be re-evaluated at the particular time. Sourcing of finance for the capital investment should be a combination of both Equity and Debt. Analysis that brought about all these conclusions are detailed in the following pages of this report.

Keywords: Capital investment appraisal; Net Present Value (NPV); Internal Rate of Return (IRR); Payback Period; Equity financing; Debt financing

1. Introduction

The continuous thrive to financial probability is key to the growth of AYR Co. In other to achieve this, an increase in market share is an important aspect to be consideration. To do so, capital investments are required. A capital investment can be viewed as money invested into a business venture with an expectation of income that is recovered over the life span of the business which is usually in years. It gives life and growth to the business (Peavler, 2019). Like AYR Co., every organisation will have to evaluate the project for sustainability and its return on the investment. There are various checks and metrics that determine whether the project is viable or not.

This report will focus on the two separate projects (Aspire and Wolf) for which AYR Co. will have to select one or none as it intends to increase the company market share. Emphasis will be based on the Net Present Value (NPV), Internal Rate of Return (IRR) and Payback Period of both projects and also the sources of financing the proposed investment.

2. Proposed Project Information

The consideration of Project Aspire and Wolf will be based using the attributes, assumptions and parameters contained by both projects. This financial information is needed to correctly calculate the techniques to be used for the appraisal. A brief summary of both projects will be beneficial before analysing the appraisal techniques.

2.1. Project Aspire

The total expected capital investment for the plant and machinery will be $2.25 million. The project will run for 5 years with cash inflows expected to be $0.65 million in the first year and have a rising rate of 7.5% per annum for years 2 to 5. It also has a scrap value of $0.38 million in value with immediate inclusion of working capital of $0.14 million. More details in appendix 7.1.

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2.2. Project Wolf

The total expected capital investment for the plant and machinery will also be $2.25 million. The project will run for 5 years with annual cash inflows expected to be $0.96 million constantly throughout the life of the project. More details in appendix 7.1.

2.3. Assumptions and Interpretations

The discount rate equals the cost of capital which is 10%. Also, there is no consideration of depreciation of non-assets as only real cash outflows are considered in the calculation of free cash flow. The working capital equivalent of $140,000 in the Project Aspire is ignored as no clear information on how this will be treated.

3. Investment Appraisal Techniques

Potential capital investments always have to be vetted to ensure they meet the minimum required returns on them. AYR Co. is considering two projects (Aspire and Wolf) which different attributes, parameters that somewhat make them a good option to increase the company market share. To be able to check for how good these options may be, different appraisal techniques can be used. In this report the use of NPV, IRR and Payback Period will provide more insights to which project to choose.

3.1. Net Present Value (NPV)

Net present value (NPV) is viewed as the value of all future cash flows (positive or negative) over the entire life of an investment to the present (CFI, 2018). NPV is a robust technique in the evaluation of project as it takes into account all the revenues, expenses and cost of capital associated with the investments and most importantly the discounted cash flow of the investment. This is to account for the time value of money and also the risk of the investment opportunity.

The two proposed investments by AYR Co. have been vetted using the NPV technique. Summary of results are below with the full detailed calculations in appendices 7.2 and 7.3.

Table 1 NPV for Project Aspire & Wolf

Project	Net Present Value
Aspire	$424,845
Wolf	$379,802

Source: appendices 7.2 and 7.3

3.2. Internal Rate of Return (IRR)

Internal Rate of Return (IRR) can be viewed as the expected compound annual rate of return that will be earned on an investment or project (CFI, 2018). IRR is calculated when assuming NPV equals to zero. It is the discount rate used in capital budgeting that makes NPV of all expected cash flows for the project equal to zero (Cousins, 2018).

The results from the calculation of the IRR for the two considered projects are summarized below.

Table 2 IRR for Project Aspire & Wolf

Project	Internal Rate of Return
Aspire	17%
Wolf	17%

Source: appendices 7.2 and 7.3

3.3. Payback Period

Payback period shows how long it takes for a business to recoup its capital invested (CFI, 2018). The payback periods for project Aspire and Wolf have been calculated with the summary of results shown below.

Table 3 Payback Period for Project Aspire & Wolf

Project	Payback Period
Aspire	3.42 years
Wolf	3.07 years

Source: appendices 7.2 and 7.3

4. Evaluation and Recommendation of Investment Project Options

Project Aspire and Wolf have shown good results after calculation of NPV, IRR and payback periods. Nevertheless, based on further analysis; a project will have to be picked. Firstly, below is the summary of all the results.

Table 4 Overall Appraisal Techniques

Project	Net Present Value	Internal Rate of Return	Payback Period
Aspire	$424,845	17%	3.42 years
Wolf	$379,802	17%	3.07 years

Source: appendices 7.2 and 7.3

A positive NPV means the investment makes more financial sense while a negative NPV implies the opposite. When comparing two or more projects together (in this case two projects; Aspire and Wolf), the project with the higher NPV is more profitable and therefore should be the ideal pick. Since Project Aspire provides a higher NPV to Project Wolf, it is a better choice from an NPV perspective. Considering the IRR calculation; both Aspire and Wolf projects is expected to have the same IRR of 17%, implying the growth rate for both projects are similar. Based on the IRR value, both projects cannot be separated from each other. Furthermore, based on the calculations of the payback period in the evaluation of both projects.; Project Wolf is lower than that of Project Aspire by 0.35 years.

Although, the payback period of Project Aspire is higher than that of Project Wolf, Project Aspire will still be a preferred option due to the fact that the NPV shows an 11% greater value when compared to Project Wolf. I will therefore recommend Project Aspire and still highlight the fact that Project Wolf is also a viable project and can be considered for subsequent projects or investments.

4.1. Other Factors to be Considered in Making Investment Decisions

Investment decisions go beyond just financial data and analysis. Decisions are also based on non-financial factors which are critical in the overall due diligence and vetting of any proposed project. Some of these factors are briefly explained below.

4.1.1. Economic and Environmental Risk

As cited in Pettinger (2019) article on factors affecting investments, Accelerator theory states that investments depend on the rate of change of economic growth. This is a critical factor as the increase in economic growth will increase the investment spending.

4.1.2. Country Risk and Political Stability

Projects involving going across the borders of the primary location of the business are required to undergo an analysis on the country risk so as to identify any potential challenges and ensure mitigations processes are in order. Also, political stability in the location of the business venture plays a major role on the success of the investment.

4.1.3. Competition and Technology Change

The competitor's strategy also affects the investment decisions taken by organisation (Money Matters, 2019). The rival decision of policies regarding capital investments are to be considered in future decisions by businesses. New technology could present re-evaluation of existing capital investment in a business organisation.

4.1.4. Business Culture

The intended capital investment should be aligned to the company culture to avoid incompatibility with mission and vision statement. For example, AYR Co. declaring its commitment to green and clean energy but getting involved into a project that aids air pollution.

4.1.5. Source of Financing

How the financing of the project will be sourced is vital. Decision on the debt-equity ratio will be key to the success of the investment. Further discussion on this in the next chapter.

5. Source of Financing

Business organisations considering undertaking large project will require huge amount of money. This capital investment will have to be financed through long-term loans (debt) or the business own resources (equity) (Gordon, 2013).

5.1. Equity versus Debt Financing

The two types of financing as stated earlier are equity and debt financing. AYR Co. is currently financed with equity at 53% which amounts to $20 million and debt financing takes the remaining 47% ($18 million). These financing are relatively equal and can provide the necessary securities and benefits both sources possess. Cremades (2018) stated in his article on Forbes, that it is vital for organisations and businesses not to blindly follow others just because everyone is doing it, discover what is the best fit for your business.

Equity financing is the type of financing that exchanges incoming capital for the ownership rights of the business. This financing has its pros and cons. The major advantage of equity funding is that the investors assumes all the risk. Regardless the outcome of the investment, AYR Co. will not have to pay the money back. Another benefit is the readily availability of free cash. AYR Co. can invest in other projects enabling a faster growth for the company as it is not saddled with debt (Whitley, 2017). One of the major disadvantages of equity financing is the fact that ownership and control will have to be shared with the investors. Decision making will require investors approval and once the business decides to regain full control and ownership, it will have to buy out the investors at probably at a higher amount that was initially provided to the company.

On the other hand, debt financing simply means borrowing of money to finance a capital investment, which will have to be repaid in monthly instalments over a fixed period of time. The major advantage of this type of financing is retainment of full ownership and control of the company (Whitley, 2017). The disadvantage of debt financing is the risk of defaulting repayment instalment. This could lead to extreme consequences, as far as the shutdown of the whole business itself.

The combination of both equity and debt for financing large capital investments is preferred to using a single source of finance. Therefore, a decision to mix both financing puts the company at a better standpoint in terms of risk.

5.2. Cost of Capital: Equity & Debt

The cost of equity is the rate of return a shareholder requires for investing equity into a business (CFI, 2018). Based on the high risk taken by the investors, this results to high compensation of these investors. Therefore, cost of equity becomes higher than the cost of debt financing.

The cost of debt is the return that a company provides to its debtholders and creditors (CFI, 2018). Calculating the cost of debt is quite straight forward, as this cost will be the interest on the capital borrowed from the lenders.

The cost of capital is based on the financing decided by AYR Co. As it is today, this will be a combination of external financing from debt and equity. Debt is relatively cheaper due to two major reasons; fixed interest and tax benefits from interest expense. However, equity financing still brings other forms of benefits to the table.

5.3. Effect of Source of Finance on WACC

AYR Co. weighted average cost of capital (WACC) is the combination of both equity and debt financing. To calculate WACC; the cost of each source of finance is weighted by its the percentage of the total capital and they are added together. Ideally the value of the WACC is lower than just cost of equity as both equity and debt are used in the calculation. One of its major uses is the serving as the discount rate for calculating the Net Present Value of AYR Co.

5.4. Effect of Source of Finance on Current and Potential Shareholders & Lenders

AYR Co. current shareholders are affected by the choice of financing from two angles. Debt financing increases the long-term liabilities and reduces the net income due to the interest expenses to be paid. This therefore has an effect on the dividend payment to shareholders. Equity financing reduces their share of ownership in the company if new shareholders buy into the company. The potential shareholders will review the financial position of the company which is a composition of the ratio of the sources of financing used by AYR Co. among other parameters.

6. Conclusion

The analysis and vetting of Project Aspire and Wolf have provided insights into the strategic growth thinking of AYR Co. Both projects have shown great prospects but Project Aspire has edged over Project Wolf based on its higher NPV.

Sourcing of finance is always an important narrative in the discussion of capital investment. A combination of equity and debt financing is a better solution. It helps reduce the amount of risk on relying of a single source of financing.

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Appendices

Project Aspire and Wolf Information

Project Aspire:

This project will require the acquisition of plant and machinery costing $2,250,000 which is payable immediately. This machinery will have a scrap value of $375,000 at the end of the 5 years. There is also $140,000 working capital to be used immediately. This amount has been taken from the company's retained profits and will be repaid at the end of the project. Cash inflows are expected to be $650,000 in year 1 rising at a rate of 7.5% per annum for years 2 to 5 inclusive. Variable costs in year 1 are expected to be $27,000 per annum and are expected to rise at 6.75% per annum. Capital allowances are available on the plant and machinery as follows:

	$
Year 1	600,000
Year 2	390,000
Year 3	345,000
Year 4	300,000
Year 5	240,000

This project will expand the current product range and will appeal to existing and potential customers.

Project Wolf:

This project will require an immediate outlay of $2,250,000. This expenditure will not attract capital allowances. Annual cash inflows of $955,000 are expected to be constant for the life of the project. Material costs are expected to be $14,400 in the first year, rising at an annual inflation rate of 7.5% per annum. Other expenses are expected to be $18,000 in year 1 and these are expected to fall by 7.5% per annum over the life of the project.

To undertake Project Wolf, factory space which is currently generating rental income will need to be used for the project. The rental income, which would not have been expected to change over the five-year period, is $75,000 per annum.

This project will take the company in a new direction appealing to a different type of customer.

Project Aspire Calculations

	Year						
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**

Capital employed	$(2,250,000)						
Salvage value						$375,000	
Cash inflows[1]		$650,000	$698,750	$751,156	$807,493	$868,055	
Variable costs[2]		$(27,000)	$(28,823)	$(30,769)	$(32,846)	$(35,063)	
EBIT		$623,000	$669,927	$720,387	$774,647	$1,207,992	
Tax (20%)		-	$(124,600)	$(133,985)	$(144,077)	$(154,929)	$(241,598)
Tax benefits[3]		-	$120,000	$78,000	$69,000	$60,000	$48,000
Net cash flows	$(2,250,000)	$623,000	$665,327	$664,402	$699,570	$1,113,063	$(193,598)
Cumulative cash flow	$(2,250,000)	$(1,627,000)	$(961,673)	$(297,271)	$402,299	$1,515,362	$1,321,764
Discount factor[4]	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Present value	$(2,250,000)	$566,930	$552,221	$498,302	$475,708	$690,099	$(108,415)
NPV[5]							$424,845
IRR[6]							17%
Payback period[7]							3.42 years

- Cash inflow calculations:

7.5% annual inflation rate increase

Year	**Calculation ($)**	**Amount ($)**
1	650,000	650,000
2	(7.5%*650,000) + 650,000	698,750
3	(7.5%*698,750) + 698,750	751,156
4	(7.5%*751,156) + 751,156	807,493
5	(7.5%*807,493) + 807,493	868,055

- Variable costs calculations:

6.75% annual increase

Year	**Calculation ($)**	**Amount ($)**
1	27,000	27,000
2	(6.75%*27,000) + 27,000	28,823
3	(6.75%*28,823) + 28,823	30,769
4	(6.75%*30,769) + 30,769	32,846
5	(6.75%*32,846) + 32,846	35,063

- Tax benefits calculations:

@20% of capital allowance

Year	1	2	3	4	5	6
Capital allowance	$600,000	$390,000	$345,000	$300,000	$240,000	
Tax benefits	-	$120,000	$78,000	$69,000	$60,000	$48,000

- Discount factor calculations:

Cost of capital @ 10%

Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**
Calculation	$(1 + 10\%)^0$	$(1 + 10\%)^{-1}$	$(1 + 10\%)^{-2}$	$(1 + 10\%)^{-3}$	$(1 + 10\%)^{-4}$	$(1 + 10\%)^{-5}$	$(1 + 10\%)^{-6}$
Discount factor	1.00	0.91	0.83	0.75	0.68	0.62	0.56

- Net Present value (NPV) calculations:

Add up all present values of corresponding years (Yr. 0 + Yr. 1+ Yr. 2 + Yr. 3 + Yr. 4 + Yr. 5 + Yr. 6)

NPV = (2,250,000) + $566,930 + $552,221 + $498,302 + $475,708 + $690,099 + $(108,415)

= $\underline{\$424,845}$

- Internal rate of returns (IRR) calculations:

Using the IRR excel formula after considering initial investment with yearly cash inflows

- Payback period calculations:

Year	**Net cash flow**	**Cumulative cash flow**
0	$(2,250,000)	$(2,250,000)
1	$623,000	$(1,627,000)
2	$665,327	$(961,673)
3	$664,402	$(297,271)
4	$699,570	$402,299
5	$1,113,063	$1,515,362

Calculating payback period for uneven cash flows we have to consider the formula below as explained by Jan (2018).

$$Payback\ period = \frac{\text{Initial investment}}{\text{Net cash flow per period}}$$

$$Payback\ period = \text{A} + \frac{\text{B}}{\text{C}}$$

$$Payback\ period = 3 + \frac{297{,}271}{699{,}570}$$

= 3.42 years

Where,

A is the last period number with a negative cumulative cash flow;

B is the absolute value (i.e. value without negative sign) of cumulative net cash flow at the end of the period A; and

C is the total cash inflow during the period following period A

Project Wolf Calculations

	Year						
	Year 0	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Capital employed	$(2,250,000)						
Salvage value						-	
Cash inflows		$955,000	$955,000	$955,000	$955,000	$955,000	
Material costs[1]		$(14,400)	$(15,480)	$(16,641)	$(17,889)	$(19,231)	
Other expenses[2]		$(18,000)	$(16,650)	$(15,401)	$(14,246)	$(13,178)	
Rental Income lost		$(75,000)	$(75,000)	$(75,000)	$(75,000)	$(75,000)	
EBIT		$847,600	$847,870	$847,958	$847,865	$847,591	
Tax (20%)		-	$(169,520)	$(169,574)	$(169,592)	$(169,573)	$(169,518)
Net cash flows	$(2,250,000)	$847,600	$678,350	$678,384	$678,273	$678,018	$(169,518)
Cumulative cash flow	$(2,250,000)	$(1,402,400)	$(724,050)	$(45,666)	$632,607	$1,310,625	$1,141,107
Discount factor[3]	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Present value	$(2,250,000)	$771,316	$563,031	$508,788	$461,226	$420,371	$(94,930)
NPV[4]							$379,802
IRR[5]							17%
Payback period[6]							3.07 years

- Material costs calculations:

7.5% annual inflation rate increase

Year	**Calculation ($)**	**Amount ($)**
1	14,400	14,400
2	(7.5%*14,400) + 14,400	15,480
3	(7.5%*15,480) + 15,480	16,641
4	(7.5%*16,641) + 16,641	17,889

5	(7.5%*17,889) + 17,889	19,231

- Other expenses calculations:

7.5% annual decrease

Year	**Calculation ($)**	**Amount ($)**
1	18,000	18,000
2	18,000 - (7.5%*18,000)	16,650
3	16,650 - (7.5%*16,650)	15,401
4	15,401 - (7.5%*15,401)	14,246
5	14,246 - (7.5%*14,246)	13,178

- Discount factor calculations:

Cost of capital @ 10%

Year	**0**	**1**	**2**	**3**	**4**	**5**	**6**
Calculation	$(1 + 10\%)^{0}$	$(1 + 10\%)^{-1}$	$(1 + 10\%)^{-2}$	$(1 + 10\%)^{-3}$	$(1 + 10\%)^{-4}$	$(1 + 10\%)^{-5}$	$(1 + 10\%)^{-6}$
Discount factor	1.00	0.91	0.83	0.75	0.68	0.62	0.56

- Net Present value (NPV) calculations:

Add up all present values of corresponding years (Yr. 0 + Yr. 1+ Yr. 2 + Yr. 3 + Yr. 4 + Yr. 5 + Yr. 6)

NPV = (2,250,000) + $771,316 + $563,031 + $508,788 + $461,226 + $420,371 + $(94,930)

= $379,802

- Internal rate of returns (IRR) calculations:

Using the IRR excel formula after considering initial investment with yearly cash inflows

- Payback period calculations:

Year	**Net cash flow**	**Cumulative cash flow**
0	$(2,250,000)	$(2,250,000)
1	$847,600	$(1,402,400)
2	$678,350	$(724,050)
3	$678,384	$(45,666)
4	$678,273	$632,607
5	$678,018	$1,310,625

Calculating payback period for uneven cash flows we have to consider the formula below as explained by Jan (2018).

$$Payback\ period = \frac{\text{Initial investment}}{\text{Net cash flow per period}}$$

$$Payback\ period = \text{A} + \frac{\text{B}}{\text{C}}$$

$$Payback\ period = 3 + \frac{45{,}666}{678{,}273}$$

= 3.07 years

Where,

A is the last period number with a negative cumulative cash flow;

B is the absolute value (i.e. value without negative sign) of cumulative net cash flow at the end of the period A; and

C is the total cash inflow during the period following period A