

CAPITAL PROJECT APPRAISAL: PENDERYN DISTILLERY LPG INVESTMENT.

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Business Report – LPG Investment, Financial Appraisal.

1. Introduction

Penderyn Distillery is acknowledged as an iconic, premium Welsh brand, producing quality spirits which are being exported to more than 45 countries (Phillips, 2022). Trading as The Welsh Whisky Company Limited and founded in 1998, Penderyn Distillery have continuously expanded their presence around the world, with employees based not only in Wales but also England, France, Germany and Taiwan. With their headquarters remaining in Penderyn (a village on the outskirts of the Brecon Beacons), they also have a casking, bottling and packaging warehouse 3 miles away from the headquarters, a second distillery in Llandudno, and a third distillery based in Swansea which is due to open summer 2023. The largest operation in Penderyn (the Brecon Beacons site), produces more than 400,000 litres of pure alcohol per year, running at maximum capacity through a 24/7 operation. Penderyn Distillery has seen a dramatic increase in the costs of the operations due to the recent increase in the mains natural gas supply, which has seen gas prices rise from 2.2p/kwh to 27p/kwh. Due to the recent price increase, a new project is on the horizon to convert the boiler supply from natural gas mains supply to LPG due to the significantly lower cost of LPG supply. The following project appraisal utilises financial appraisal tools to model the project and formulate a plan for implementation and funding as well as providing a series of recommendations for consideration by the organisation.

2. Investment Decisions

An investment is an asset or item acquired with the goal of generating income or appreciation (Hayes, 2023). The physical assets acquired by a company usually involves an outlay of cash at one or more points in time, which aims to further the company's long-term business goals and objectives. This business report outlines the various financial appraisal tools that are used within businesses to assist with investment decisions. Penderyn's rationale is a payback period of less than 3 years for smaller projects and the decision to invest is made by the major shareholder and the board of directors.

3. Appraisal Tools

3.1 Payback Period (PP)

Payback Period = Cost of Investment ÷ Average Annual Cash Flow

According to Atrill and McLaney (2013), the payback period is the 'time taken for an initial investment to be repaid out of the net cash inflows from that investment'. Essentially, it is the amount of time it takes to recover the cost of an investment or the length of time an investment reaches a breakeven point. As this method takes time into account, it overcomes one of the key weaknesses of the accounting rate of return (ARR) appraisal method which is covered within this document. When people or corporations invest money into projects or businesses, their main objective is to get paid back. Therefore, investments with shorter payback periods become more attractive to investors, with longer payback periods being less desirable.

The main goal for this project was to reduce overheads and operational costs following the gas price hike. Penderyn's headquarters' gas usage is 4 million kwh per annum and is required to power the steam boiler in order to produce the new make spirit ready for maturation. With their current

contract ending which cost a total of 2.2p/kwh, the new contract had risen to a total of 27p/kwh and was the best contract available to them at the time. This resulted in them spending a total of £90,000 per month on gas equating to £1.08 million per annum, becoming the driving force for the LPG project. The projected annual benefits/savings has been used to calculate the payback period.

The payback period for the LPG project has been calculated using the below information.

* Penderyn Annual Gas Consumption 4 million kwh				Project Costs	
Gas Type	Price/kwh	Cost/Month	Cost/Annum		
Current Natural Gas Contract	27p kwh	£90,000	£1,080,000	Modifications to Boiler (LPG Conversion kit)	£7,000.00
LPG Contract	7p kwh	£23,000	£276,000	Modifications to fence line (external ground works)	£12,000.00
	Annual Benefit		£804,000	Purchase of LPG Tanks and pipework	£26,000.00
				Investment	£45,000.00

Payback Period = £45,000 ÷ £804,000

= 0.06 (22 days)

3.2 Net Present Value (NPV)

$NPV = (Cash\ flow \div (1+i)^t) - Initial\ Investment$

$t = Number\ of\ time\ periods$

$i = Required\ return\ or\ discount$

In order to make sensible investment decisions, it is important to use tools that consider all of the costs and benefits of each investment opportunity and also make logical allowances for the timings of the costs and benefits (Atrill and McLaney, 2013). Net Present Value (NPV) is an appraisal method which considers both aspects and is the difference between the present value of cash inflows and the present value of cash outflows over a period of time. NPV is used in capital budgeting and investment planning when analysing the profitability of a projected investment or project. A project with a positive NPV will have a rate of return above the discount rate. As NPV discounts the various cash flows associated with the project according to when they are expected to arise, it considers the time value of money. The discounting process incorporates the opportunity cost of capital and the net benefit after financing costs have been met, as well as taking into account the cash flows according to their date of occurrence. Thus, making it the only appraisal method to have a direct bearing on the wealth of the owners of the business (Atrill and McLaney, 2013).

The NPV for the LPG project has been calculated using a dicounted rate of 8% using the present value table over a period of 5 years (see appendix for full results).

NPV = £3,165,372 (manually calculated)

NPV = £3,165,139 (Excel Calculation)

The project has a positive NPV with the discount rate of 8% for the 5 year period.

3.3 Internal Rate of Return (IRR)

Similar to NPV, the internal rate of return (IRR) method also involves discounting future cash flows. IRR is a discount rate that makes the net present value (NPV) of all cash flows equal to zero in a discounted cash flow analysis (Fernando, 2023), essentially determining the yield from an investment opportunity. IRR is a useful tool to compare investment opportunities, where there are competing projects, the project with the higher IRR should be selected. However, IRR does not recognise the scale of investments, meaning it does not directly address the question of wealth generation, meaning the wrong decision can occasionally be made (Atrill and McLaney, 2013). It may also be inconsistent when used in businesses with fluctuating cash flows leading to there being more than one IRR or no IRR at all, proving to be difficult to use. Although this is rare in practice, it is never a problem with NPV.

Due to the laborious nature of the manual IRR calculation, the IRR in this project has been calculated using Excel.

IRR = 1786.66%

The extremely high IRR in this case reflects the high rate of return and its desirability as a project.

3.4 Profitability Index (PI)

Profitability Index = PV of Future Cashflows ÷ Initial Investment

Profitability index (PI) can be used to measure the attractiveness of a project. It is often utilised as a ranking tool when analysing competing projects as it quantifies the value created per each investment unit. A PI of 1 is logically the lowest acceptable measure on the index, as any value lower than 1 would suggest that the project's present value (PV) is less than the initial investment (Chen, 2023). Projects with a higher PI are more attractive to investors as they indicate a higher return. PI considers the time value of money as well as allowing comparison of projects with different lifespans, making it a more accurate measure of investment attractiveness as well as a prioritisation tool. However, this method also has some disadvantages as it only considers the initial investment and ignores any future or ongoing investments, it doesn't consider the scale of the project/investment and it also relies on accurate forecasting of future cash flows and discount rates. Therefore, assumptions may make the analysis unreliable.

PI is not used as a method by Penderyn as part of their project appraisal process.

PI = 71.34

The high PI of 71.34 for the LPG project indicates an attractive investment as the project's PV is much higher than the initial investment.

3.5 Benefit-Cost Ratio (BCR)

Benefit-Cost Ratio = PV of Benefit Expected from Project ÷ PV of the cost of the project

The benefit-cost ratio (BCR) is an indicator showing the relationship between the relative costs and benefits of a proposed project. Projects with a BCR higher than 1 are expected to deliver a positive

NPV to the business. Projects with a BCR below 1, suggest the project's costs outweigh the benefits and should not be considered (Hayes, 2022). BCR is widely used within businesses in cost-benefit analysis to describe the connection between the costs and benefits of a potential project. To summarise the benefits, BCR considers the time value of money as well as being a successful tool for comparison of projects. However, it must be used in conjunction with other methods to be successful as it reduces a project to a simple number when the success or failure of an investment or expansion relies on many factors and can be undermined by unforeseen events (Hayes, 2022), limiting its reliability. Penderyn do not typically conduct BCR analysis on their proposed projects. The BCR of the LPG project has been calculated below.

BCR = 70.34

Similar to the PI, the BCR confirms that the project will deliver a positive NPV to the business.

3.6 Accounting Rate of Return (ARR)

ARR = (Average Annual Operating Profit ÷ Average Investment to Earn that Profit) x 100%

ARR is a useful capital budgeting tool used to calculate the profitability of an investment quickly. It is primarily used by businesses to compare multiple projects and determine the expected rate of return for each project, assisting with decisions of investments or acquisitions (Murphy, 2022). Although the ARR method is quick and simple to calculate, the problem with ARR is that it ignores the time factor and can be problematic when considering competing investments of different size (Atrill and McLaney, 2013).

Penderyn do not currently use the ARR method for project appraisals. The ARR of the LPG project has been calculated below.

ARR = 3573%

The ARR indicates that the LPG project will be extremely profitable.

4.0 Financing Options

Being a Welsh SME, there are a range of funding options available to Penderyn through Business Wales. Smart partnerships are available for Welsh businesses to improve their competitiveness and productivity through the better use of knowledge, technology and skills that reside within Welsh Research Organisations (Crawley, 2023). When opting for a smart partnership, the project remains business led but encourages collaboration between the business and research organisations who will deploy a suitably qualified person to the project. However, there is a 50/50 contribution between the business and the Welsh Government (WG) and a duration of 6-12 months. Although this funding opportunity for Welsh businesses is appealing, the LPG project is expected to have a 10 week turnaround and is a straight forward project which does not require collaboration with researchers. Penderyn have received grants through Welsh and European funding in the past for a range of projects such as expansions, improvements to building infrastructure and increased capacity such as a new bottling line. For larger scale projects, external funding options such as WG funding would be explored, but with such a small investment required for the LPG project, the project would be funded by the major shareholder or a short term loan.

7.0 Bibliography

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