



Financial Management and Planning

Assessment 2 – Capital Project Appraisal Business Report

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1 Executive Summary

Eakin Healthcare is a family-owned business based in Northern Ireland manufacturing and supplying medical devices for ostomy, wound, respiratory and surgical needs. All the manufacturing of the products take place in the UK with three core sites in Comber, N. Ireland, Coleraine, N. Ireland and Cardiff, Wales (Eakin Healthcare Group, 2023). This report outlines a project appraisal relating to the ostomy side of the business which has identified a possibility to improve the performance of its existing urostomy bag components. The project also outlines the proposal to consider utilising internal capabilities which in turn can provide reduction in overall component costs.

2 Introduction

Investment to develop the next generation Eakin urostomy components has the potential to grow the market share of the business, consequently expanding the company's range in turn increases its market brand awareness. The proposed project will deliver an improved redesign of the urostomy bag bung and tap with aims to enhance the performance of the components which will allow for a greater product competition with existing competitors. Investment in the project will also aim to promote internal skillset development and collaboration especially with consideration in transferring the production of the components internally via the Coleraine, N. Ireland sites injection moulding capabilities.

The current market perception of urostomy bung and tap components are generally low-cost parts which drains urine from a pouch. The proposed project will aim to provide new outlet components to satisfy the unmet user needs of both ostomates and healthcare professionals, therefore enabling greater/better acceptance of such urostomy components to grow product presence in the relevant markets.

3 Urostomy Bung and Tap Development Project

Investment involves making an outlay of something of economic value which is expected to yield economic benefits to the business (Atrill & McLaney, 2017), the proposed project will require the business to invest money as part of the budget of the project as well as any Capital Expenditure "CAPEX" that may need to be considered as part of the project. At present the Urostomy side of the business has sold 8500 units in 2022 which total to £390,000, the proposed project aims to increase the marketability of Eakin's urostomy products by focusing in developing the bung and tap components of their urostomy bags. Capital project appraisal should seek to assess whether the investment is expected to be 'profitable' (Pike, et al., 2018), the investment proposed for this project will aim to provide significant profit to the business as it highlights the scope of manufacturing the product internally which has outlined some considerable cost reduction in the production of the components. As underlined by (Pike, et al., 2018) there are two classifications regarding projects that required capital investment (Cost Reduction, and Expansion and Improvement Proposal) this project is aimed at targeting both classification with the opportunities that it can present the business.

3.1 Project Timeframes

The capital investment projects of an organisation represent major commitments of resources (Weetman, 2006), the proposed project would require the effort of the internal R&D teams of the business. The development of the bung and tap components will require a 24-month timeframe, the project will plan to follow the internal R&D processes of the business and the activities are planned as follows:

- Stage A – Project Strategy and Identification (5 Months)
- Stage B – Design and Development Inputs (4 Months)
- Stage C – Design and Development Outputs (6 Months)
- Stage D – Design and Process V&V (4 Months)
- Stage E – Product Launch (5 Months)

3.2 Project Costs

The project will require a total R&D investment of £525,011 for the development of the bung and tap components. The costs are separated with the external development cost which involves prototyping and tool trials costing £41,087, there are also considerable consideration with the expected injection mould tool and machine CAPEX. An estimated £192,500 will be required for the development of new tools for the proposed new component designs, an additional machine will also be required to be integrated to the existing production line which will costs £74,782. The internal R&D costs of the project team involve in the project as well as their time for the duration of the 24month project will cost £141,937.

Since the project involves an aspect of the components being redesigned and improving their performance, possible R&D grants can be consideration for possible funding for the project. R&D grants through UK Research and Innovation consist of seven disciplinary councils consisting of Research England, Innovate UK which are organisation which offers grants to cover a proportion of the costs of the project (British Business Bank, 2023). Such grants can be considered for this project as it will meet the requirements of the grant application and in turn help the business secure a grant that can cover a proportion of the total R&D cost calculated for the project.

	Details	Costs
External Costs	Prototyping, Testing, Soft Tool Development, Tool Trials,	£41,087.25
Capex		
	Injection Mold Tooling Capex	£192,500.00
	Machine Extensions CAPEX	£74,782.61
Internal R&D Costs	Team Resource	£141,937.00
Non - R&D Costs		£74,704.00

Total R&D Project Investment Cost	£525,011.46
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Figure 1 Project Cost Breakdown Table

3.3 Parts Costs Breakdown Costs

A breakdown of the existing components against the estimated costs of the new component designs have been developed to provide a clear indication of cost savings regarding the project. (Atrill, 2020) has highlighted that new investment may seek to achieve long-term savings by acquiring new pieces of equipment to reduce existing costs, the proposed project has identified clear benefits in the reduction of such parts costs with the consideration of moving the production of the components internally. The breakdown of the costs is as follows:

Part	New Parts Costs (External)	New Parts Costs (Internal)	Tooling CAPEX (Internal) Tooling
Bung	£0.1550	£0.0730	£53,500.00
Tap Assembly	£0.5700	£0.0193	-
Weldable Part	£0.1100	£0.0500	£42,500.00
Rotatable Part	£0.1100	£0.0550	£46,000.00
Cap	£0.1050	£0.0830	£27,500.00
Adaptor	£0.1300	£0.0900	£23,000.00
Total Tooling Investment			£192,500.00

Figure 2 Parts Costs Reduction Breakdown

The proposed fabrication of the bung and tap moving internally within the capabilities of the business can considerably reduce the costs of the components, the bung is expected to reduce its parts costs by £0.082p whilst the tap is expected to save £0.551p compared to the current costs of the existing components. The impact of such cost's reduction can be beneficial for the product since a reduction of costs of good will in turn provide the business an increase in gross profit whilst being able to provide an improved functioning bung and tap urostomy components.

3.4 Project Appraisal

		Years									
	Investment	1	2	3	4	5	6	7	8	9	10
Present Value	-£ 525,011	£ 121,000	£ 121,000	£ 121,000	£ 121,000	£ 121,000	£ 121,000	£ 121,000	£ 121,000	£ 121,000	£ 121,000
Net Benefits	-£ 525,011	-£ 404,011	-£ 283,011	-£ 162,011	-£ 41,011	£ 79,989	£ 200,989	£ 321,989	£ 442,989	£ 563,989	£ 684,989
Payback Period	4.3										
Discount Rate (WACC)	11%										
Denominator	1.000	0.901	0.812	0.731	0.659	0.593	0.535	0.482	0.434	0.391	0.352
Future Value	-£ 525,011	£ 109,009	£ 98,206	£ 88,474	£ 79,706	£ 71,807	£ 64,691	£ 58,281	£ 52,506	£ 47,301	£ 42,614

	5 years	10 Years
Net Present Value (NPV)	-£ 77,808	£ 187,585
Net Present Value (NPV) - Excel	-£ 77,807	£ 187,586
Internal Rate of Return (IRR)	4.92%	19.00%
Profitability Index (PI)	1.15	0.64
Benefit Cost Ratio (BCR)	0.85	1.36
Accounting Rate of Return (ARR)	46%	46%

Figure 3 Project Appraisal Calculation

3.4.1 Payback Period

A project's payback period is the time needed for the initial investment to be recovered or repaid out of the next cash inflows from a project (Atrill & McLaney, 2017), the shorter the payback period the better since the longer the period for the project to be repaid, the riskier it becomes due to the time value of money. For the proposed projector the proposed project, a payback period of 4 years and 3 months was calculated from the initial investment and present value of the business within 10 years (See Figure 3). The payback period for the project is short which make the investment appealing, the improvements to the bung and taps also provides a long-term product enhancement to the users plus the addition of customer appeal with the redesigned components.

3.4.2 Net Present Value (NPV)

The NPV determines the profitability of a project or investment between the present value of cash inflows and the present value of cash outflows over a period (Fernando, 2022). It shows the return a business is expecting to earn from its initial investment taking in the positive revenues into account as well as the initial investment needed to undertake the investment. The NPV in 5 years shows a negative result which means if the business wants to push for the return to be within 5 years, the project will need to be rejected. But within a 10-year period a positive NPV is calculated, if the business is able to accept such period.

3.4.3 Internal Rate of Return (IRR)

The IRR is a metric used to estimate the profitability of potential investments (Fernando, 2022). The higher the discount rate the more desirable an investment is to be undertaken by the business (Atrill & McLaney, 2017). Since IRR is the rate of return that would make the NPV 0 considering that all the business cash inflows and outflows, a lower IRR is expected within a 5-year period with a rate of return of 4.92%. Since the IRR after 5-years is lower than 11%, the project will need to be rejected. If the duration of 10-year is to be considered, a rate of return of 19% is expected which is higher than what is expected which will allow for the acceptance for the project with the only disadvantage being the 10-year duration for the rate of return to be acquired to the desirable quantity.

3.4.4 Profitability Index (PI)

The PI is a measure of a project's attractiveness to the business (Chen, 2023), it essentially a method used to see if an investment should be expected by looking at the cash inflows relative to the initial investment. A PI higher than 1.0 is deemed as a good investment. The project has a PI of 1.15 within the 5-year period but a 0.64 within a 10-year period, the project shows that it is projected to have a higher PI above 1 when considering a 5-year period.

3.4.5 Benefit Cost Ratio (BCR)

The BCR is a ratio used to summarise the overall relationship between the relative cost and benefits of a proposed project. If a project has a BCR greater than 1.0 then the project is expected to deliver a positive NPV for the business (Hayes, 2022). The proposed project shows a BCR of 0.85 when calculated in a 5-year period and a 1.36 within a 10-year period. When analysing the results, a 10-year period shows to be more positive for the project compared to a shorter 5-year period for its return.

3.4.6 Accounting Rate of Return (ARR)

ARR assesses the potential performance of a particular investment before it has performed, this method takes the average operating profit that the investment will generate and expresses it as a percentage (Atrill & McLaney, 2017). Since there aren't any other project to compare the ARR for the proposed bung and tap development, the result of 46% for the project can be taken as a value for consideration if there are similar project that will involve the same processes as the proposed.

4 Project Rationale

The proposed project's aim is to redesign and develop the urostomy bung and tap components. A typical person with a urostomy needs to empty its bag contents 2-6 times a day (Burch, 2022). The proposed project will provide a big impact in improving the day to day lives of urostomates especially with the components being the main component that they interact with as part of their day to day lives. Aside from the improvement in the component's designs, the project also considers a reduction in the overall parts costs by proposing moving the production of the components internally.

The project appraisal conducted illustrates an attractive investment opportunity for the company because of its overall impact on the end users as well as the reduction of parts cost of goods, an initial investment of £525,011 is required for the project with an overall timeframe of 24 months.

Project appraisal summary results:

- **Payback Period** – 4 Years and 3 Months
- **Net Present Value (NPV)** – £77,808 (5 Years) / £187,585 (10 Years)
- **Internal Rate of Return (IRR)** – 4.92% (5 Years) / 19.00 (10 Years)
- **Accounting Rate of Return (ARR)** – 46%
- **Profitability Index (PI)** – 1.15 (5 Years) / 0.64 (10 Years)

5 Conclusion and Recommendations

The appraisal method conducted and calculated for the proposed projects shows a breakdown of results between a 5 year and a 10-year period of return on investment for the project. The report has highlighted significant benefits for the project at both the customer level and the business level which makes the project an attractive investment for the company to consider. Looking into the appraisal results, the project is expected to have a payback period of 4 years and 3 months, the quick payback period shows an attractive investment to the company especially if higher volumes of sales will be generated based on the newly design components which will in turn increase the present value during the release of the product. The results of the NPV displays that the investment can be recovered at a 4-year period but a negative NPV is still seen during a 5 year period for the project, this is due to the higher discount rate used for the appraisal calculation to cover any risk for the project, if a lower discount rate was considered, a positive NPV will be generated as a result.

The project IRR for the project within a 5-year period is 4.92%, despite the lower result the project can still expect a positive investment consideration due to the impact it can provide the company at a customer and internal business level. The PI within the 5-year period is 1.15 which is showing a positive value for the investment of the project, the BCR for the project is 0.85 with the rule of thumb being a BCR higher than 1.0 is expected to deliver positive net present, the results are not too far off what is required, and the project can still yield a positive net present value for the business.

The recommendation based on both the qualitative and quantitative information gathered for the project is to accept the project proposal. The results of the appraisal does not show any negativity to the initial project investment, and the investment is still expected to be paid back within 4 years. Despite the negative NPV results at the initial 5-year period, the project is still expected to see a positive NPV within a 10 period, but the initial release of the product can still provide increase sales as well as the reduction of parts costs to acquire higher net benefits in the coming years. The project is still an attractive investment since it is improving on an existing product that is commonly used by its users, the project also shows benefits in moving the production of the components to be internally which will in turn provide a lower parts cost for the newly designed components developed as part of the project. The project could also pave the way for increase customer demand for the product and provide a competitive advantage in the market especially within the targeted therapeutic market area of the business.

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7 Appendix

Capital Appraisal Calculation Formula

Net Benefits

$$\text{Net Benefits} = \text{Initial Investment} - \text{Present Value}$$

$$\text{Yearly Net Benefits} = \text{Previous Year Net Benefits} - \text{Current Year Present Value}$$

Payback Period Calculation A

$$\text{Payback Period (Years)} = \text{Years Before Break Even} + \frac{\text{Unrecovered Amount}}{\text{Cash Flow in Recovery Year}}$$

Payback Period Calculation B

$$\text{Payback Period (Years)} = y + (i - Pv \times y) \div Pv$$

Where:

i = Initial Investment

Pv = Present Value

y = Years Before Break Even

Future Value

$$\text{Future Value} = \text{Present Value} \times \text{Denominator}$$

Net Present Value (NPV) Calculation A

$$NPV = \text{Future Value Year 1} + \text{Future Value Year 10}$$

Net Present Value (NPV) Calculation B

$$NPV = (\text{Discount Rate, Present Value Year 1 : Present Value Year 10}) + \text{Initial Investment}$$

Net Present Value (NPV) Calculation C

$$NPV = \frac{\text{Cash Flow}}{(1 + i)^t} - \text{Initial Investment}$$

Where:

i = Required Return or Discount Rate

t = Number of Time Periods

Internal Rate of Return (IRR) Calculation A

$$IRR = (\text{Initial Investment : Present Value Year 10})$$

Internal Rate of Return (IRR) Calculation B

$$0 = NPV = \sum_{t=1}^T \frac{C_t}{(1 + IRR)^t} - C_0$$

Where:

C_t = Net cash inflow during the period t

C_0 = Total initial investment costs

IRR = The internal rate of return

t = The number of time periods

Internal Rate of Return (IRR) Calculation A

$$\text{Profitability Index} = (\text{NPV} + \text{Initial Investment}) \div \text{Initial Investment}$$

Internal Rate of Return (IRR) Calculation B

$$\text{Profitability Index} = \frac{\text{Present Value of Future Cash Flows}}{\text{Initial Investments}}$$

Benefit Cost Ratio (BCR) Calculation

$$\text{Profitability Index} = \frac{\text{Present Value of Future Cash Flows}}{\text{Initial Investments}}$$

Accounting Rate of Return (ARR) Calculation

$$\text{Average Annual Profit} = \frac{\text{Total Profit}}{\text{Years}}$$

$$\text{Average Investment} = \frac{\text{Investment Value}}{\text{Residual Value (i. e. Expected Value of Asset or Scrap Value)}}$$

$$\text{ARR} = \frac{\text{Average Annual Profit}}{\text{Average Investment}} \times 100\%$$