Deliverable H: Economics Report

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Introduction:

Our product “One Step” is a stimulus for people with parkinsons to help them overcome Gait. In this report we look at the potential of “One Step” if it went to market. The report looks at different types of cost: direct, fixed, variable and estimates the cost it would take for us to manufacture our product on a large scale. The costs are estimated differently depending on their type. Fixed costs are estimated through research depending on how large our company plans to be and says the same throughout the analysis. Variable costs are subject to change over time however, for our purposes we assume that there is no inflation and prices would stay the same. Our indirect costs are harder to calculate as they depend on overall profits and demand. For example the taxes we would pay are dependent on the company's profits and marketing cost depends on how much we are willing to spend to expand our base. Our profits would come from sales of our product through retail. As of today there are over 100 000 parkinson's patients in Canada with approximately 6 600 more every year. The goal for our sales is to produce enough for new parkinson's patients plus a bit more every time. The reason for this is that we would not want to run out of customers right away so trying to make half the amount needed makes no sense if we want to be profitable in the long run. Once we have the profits calculated we can do a net present value analysis to determine the worth of the company right now if we do the balance for the next 3 years. Also we have to look at the break even point to determine how long it would take for the company to be profitable. With these analyses we hope to prove that our company “One Step” can be profitable in the long run without many deficits early on.

Description of cost

Cost #	description	Classification	Cost estimation
1	Materials	Material, variable direct cost	$40-70
2	labor	Labor, fixed cost	$68/h
3	tax	Expense, taxation cost	12.2%-26.5% of profits
4	Rent for work space	Expense, indirect cost	$3000 per month
5	Equipment/depreciation	Expense,indirect cost	$3 000 for 3 years with 25%-50% end life value
6	Financing cost(loan)	Expense,indirect cost	$20 000- 25 000
7	Marketing	Expense indirect cost	1 500 initially + contact when needed.

<u>Description and justifications for the cost.</u>

Cost # 1-Materials

The materials used for a single product cost us around $70 before tax when manufacturing for one individual. If we were to mass produce this we could cut down on the cost for all the material but mostly for the shoe insoles and the microcontrollers. If we were to buy in bulk we could end up cutting down on material cost to around $40 per individual before tax. For this reason the materials are a variable cost as it varies with the number of customers.

Cost #2- Labor

Labor or salary expenses is what we would need to pay employees to manufacture the product. A single person could make the product however, it would be more efficient to hire multiple people and have them specialize. Manufacturing our product consists of three main steps: coding, soldering and assembly. The coding is the least expensive as once the code has been made there is no need to change and therefore there is no need for someone to code. What we do need is someone who inputs the code into the microcontrollers. For the soldering we would need an employee who has some knowledge of electricity in case a problem arises. We would most likely need two people working on soldering. For the assembly it needs to be done manually as the

parts are small and the expenses for producing an assembly line is too expensive. Finally we would need a project manager to oversee any errors.

So we would have 3 minimum wage workers, the two assembly and the coding input and 3 jobs who pay a bit more than minimum, the two soldering and the project manager. The reason for there being so few employees is that the clientele is small and production does not take a long time.

Cost # 3- tax

This just includes the tax we would need to pay for being a company. Today in Canada the business tax is 11.5% in Ontario with a 3.2% deduction on the first $500,000. In Canada the business tax is 15% with it being at 9% for small businesses. This gives us a range from 12.2%-26.5%

Cost #4 - Rent for work space.

We would have to set up a work space in which we could work on our product. This space would not have to be massive as it would have a small number of workers. The rent should not be too much however it must meet worker regulations.

Cost #5- Equipment/ depreciation.

Soldering irons and computers are the main equipment we need to purchase in order to construct our product. Both of them would depreciate over time however, the main concern for depreciation is the computers. We would use both until their economic life ran out but the computers are more important as more can be salvaged after their initial purchase. Use our computers for 3 years and then salvage them. We could end up getting 25%-50% of our original investment back depending on their conditions. The soldering irons would last about 1.5 years if we were using them every day and would have no salvage value at the end. The estimated price of the computer is $1000 each for 2 computers total. The estimated price for the soldering irons are $20 each with 2 needed.

Cost #6- Financial cost(loan)

For us to manufacture our product we need a patent so that a bigger company does not take our product if we are successful in the market. We would hire a lawyer to help us with the process which could cost us up to $15 000. We would need to take a loan form the bank in order to pay

for the lawyers. Also some loans for the equipment would need to be taken as well. This would bring up our total loan to about $25 000.

Cost #7- Marketing

For us to be able to spread information about our product we have to inform our clients about our product. In our business model we said that our sales would come from retail sales. The marketing would not be too big of an expense as many Parkinson's patients are part of support groups and getting the product through those groups can be very easy. Due to the small communities for Parkinson's the marketing can be very targeted and not too general. For this we would have a small marketing sector which would focus exclusively on production. This would cost us about $5 000 initially to set up and then one of us could work on in and do contract hires if help is needed. The contracts would cost us about $10 000 a year

Income statement.

Position #	Description	End of year 1	End of year 2	End of year 3
1	Revenue			
1.1	Sales (24 000 x $110)	$528 000	$1 056 000	$1 056 000
2	Operating expenses			
2.1	Materials	$640 000	$640 000	$640 000
2.2	labor	$136 000	$136 000	$136 000
2.3	Rent for work space	$36 000	$36 000	$36 000
2.4	Equipment	$3 000	$500	$500
2.5	Salvage value of equipment	$0	$0	-$1000
2.6	Financial cost (loan)	$25 000	$0	$0
2.7	marketing	$15 000	$10 000	$10 000
3	Total expenses	$855 000	$822 500	$821 500

4	Operating income	-$327 000	$233 500	$234 500

Assumptions:

1) There is no tax for profits and there is no interest on the loan.
2) The sales are estimated based on the percentage of the canadian population that has parkinsons.
3) The price is determined by what people are willing to pay. In our benchmarking we found the price of a Ustep the main competitor to be at least $200 so we found we could produce our product for half the price.
4) The amount produced is also determined by how much our workers could produce in 1 hour. We assumed that 4 market quality products could be made in 1 hour. With a 40 hour work week for 50 weeks we got 8000 products created.
5) The amount sold increases every year due to increase in consumers as which is hoped to obtain 32 000 clients by the end of the three years(33% of parkinson's patients in canada)
6) The products will still be created in order to make sure that there is no shortage in later years.
7) The sales are split as such 20% first year 40% second year and 40% third year.
8) Assumed there was no inflation for the labor or the rent paid on the work space.

Net present worth of company.

Assuming an interest rate of 1.75% which is the bank of canada interest rate.

NPV= Fv/ (1+r)^n where r is the interest rate,Fv is the future value and n is the number of years

After year	NPV
1	-$232 923.83
2	-7 350.7

3	$215 220.69

Break even point = last year of deficits + absolute value of last deficit cost/ difference in profits when changing signs.

BP= 2 + 7350.7/(215220.96-(-7350.7) = 2.03 years

It would kae us about 2.03 years for us to start making a profit from the company.

Conclusion:

“One Step” would take approximately 2 year before the balance sheet is positive. Although the impact is not immediate the company does have a present day value greater than zero if we estimate its value three years from now. With these cost estimations and analysis we can show that our company is profitable in the long run with a decent clientele.