

Project Deliverable H: **Economics Report and 1 Minute Video Pitch**
GNG 2101 – Intro. to Product Dev. and Mgmt. for Engineers
Faculty of Engineering – University of Ottawa

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Group number: Group 10

Group members: Andre Fernet, Anbo Xu, George Abou-Hamad, Kate Ford, Lucas Hubert

Introduction

In this deliverable we will develop a forecasted income statement for our company based on the business model we previously developed for our team's product. To achieve this, we will classify the various costs associated with our business, develop a 3-year income statement, determine our break-even point using an NPV analysis and finally provide arguments justifying the assumptions made in developing our economics report.

Finally, we will create a short video introducing our brand, explaining the problem we are solving and discuss the competitive advantages our solution has to offer. Our video pitch will be directed towards potential clients and investors.

H.1 Economics report:

1. Include a list of: variable, fixed, direct and indirect costs associated with your business, based on the manufacturing and sale of your product. Make sure that you distinguish between price and cost and realize that prototyping and higher-volume manufacturing costs will probably differ.

Cost	Classification
Material	Variable, Direct Cost
Production	Variable, Direct Cost
Salary	Fixed, Indirect Cost
Depreciation	Variable, Direct Cost
Overhead	Fixed, Indirect Cost
Electricity	Variable, Indirect Cost

Rent	Fixed, Direct Cost
Financing	Variable, Indirect Cost

Cost of Labour	\$18/hour
Material Costs	Injection molding - 1kg at \$1/kg Servos - 3 servos at \$10/servo Arduino - 1 arduino uno at \$10/arduino Arduino Shield - 1 Shield at \$5/shield External Battery - 1 battery at \$5/battery
Total Material Costs	\$51

2. Develop a 3-year income statement, which includes: sales revenue and costs of goods sold for each year, gross profit, operating expenses and operating income (no need to include interest and taxes).

Rotating Toothbrush		Income Statement								
Revenue		2020	2021	2022						
Units Sold		600	1300	2000						
Sales revenue (based at price of \$114.99/unit)		69,000	149,500	230,000						
Total Revenues		69,000	149,500	230,000						
Cost of Goods Sold										
Labour costs (1 hour labour per unit at \$18/hour)		10,800	23,400	36,000						
Materials cost (\$51/unit in material costs)		30,600	66,300	102,000						
Shipping and other fees (\$10/unit)		6,000	13,000	20,000						
Total Cost of Goods solds		47,400	102,700	158,000						
Gross Profit (Loss)		21,600	46,800	72,000	Revenue - (cost of goods sold)					

Expenses				
Advertising	2,000	3,000	4,000	Primarily online advertising
Depreciation	500	500	500	Estimated lifetime of 10 years, with depreciation of 500/year
Furniture and equipment	8,000	1,000	1,000	
Insurance	2,000	2,000	2,000	
Office supplies	500	500	500	
Rent	10,000	10,000	15,000	factory/warehouse building rent
Salaries and wages	10,000	10,000	15,000	1 Full time employee
Utilities	2,000	3,000	4,000	
Web hosting and domains	100	100	100	Cost of a website
Other	500	750	1,000	
Total Expenses	35,600	30,850	43,100	
Net Income Before Taxes	-14,000	15,950	28,900	using ontario income tax as of 2019
Income tax expense		805.475	1,459	
Income after taxes	-14,000	15,145	27,441	
Net Income	-14,000	15,145	27,441	Loss during the first year, and a profit during the following two

3. Using a NPV analysis, determine the break-even point (it is highly unlikely that your operating income will be positive in the first year because of fixed costs).

Break-Even Point = (Fixed Cost) / (Sales Price Per Unit - Variable Cost Per Unit)

Break-Even Point = (35,600) / (115 - 79)

Break-Even Point = 988.8 units

Break-Even Point = 989 units

4. Describe and justify all assumptions that you have made in developing your economics report.

Assumption	Justification
Supply/Demand analysis	According to Statistics Canada, there are 60,000 people with cerebral palsy living in Canada. Assuming 1% of those people would benefit and purchase our product that is 600 people. This is where the number of unit sales in the first year originated from. Since our product is not targeted solely to people with cerebral palsy, the 600 units will consist of other various demographics sharing similar issues.
Tax	As our company will operate locally, the income tax was calculated using the

	current Ontario income tax stating that \$10,582 - \$43,902 has a tax of 5.05%.
Unit pricing stability	It is unlikely that the prices of our units will fluctuate as the raw materials used are relatively inexpensive and abundant in the market. As our wages are set significantly above the average minimum wage in Canada, it is also unlikely that we would have to wages.
Product market	The market for this product exists as it has been set with a price of \$115. Upon researching our market, we noticed many other less advanced options being priced at around \$100-\$150. Since our targeted client demographic are individuals with disabilities, the price will most likely be covered by insurance, preventing any potential difficulties accessing our products due to financial Reasons. For those reasons we believe our product is priced fairly and competitively given its functionality.
Research and development	The product will remain current and will not require updates within the next 3 years. By keeping overall costs low, we are able to maximize our profits while also collecting data from our users. Once our company has more leeway after the first 3 years, we will analyze the feedback and if need be, design a second version of our product.

H.2 1-minute video pitch. Create a video, approximately 1 minute in length.

<https://makerepo.com/GeorgeA/ergobrush-the-leading-adaptive-toothbrush>

Conclusion

Upon classifying our various costs associated with our business, we were able to complete our income statement. For the first three years of operation, our net income was calculated to be -\$14,000, \$15,145 and \$27,441 respectively. We then conducted a NPV analysis, determining a break-even point of 989 units. Concluding our economics report, we analyzed and justified the various assumptions we had made in developing our economics report.

Preceding the report, we created a short video pitch with the purpose of shedding light on our problem statement while also displaying the effectiveness of our proposed solution. We decided on naming our product Ergobrush as we believe it properly encapsulates the ergonomic design and function of our device. We also created a product website which will be used to provide further information to potential clients and investors.