

GNG2101 Deliverable G

Business Model and Economics Report

Submitted by

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1 Introduction

For this deliverable, our group identified a potential business model to suit the commercialization of our product and develop a business model canvas. We decided the Razor Blade business model suited our product the best. For the business model canvas, we answered the following: “Who?”, “How?”, “What?”, and “How much?”. The “who” refers to who the product is intended for, the relationship between the customer and the product, and how the product will be delivered. The “how” is the information related to how the product functions. The “what” explains the problem our product is solving. Finally, the “how much” refers to the cost and revenue.

Furthermore, we also developed a 3-year income statement based on the Razor Blade business model. This will allow us to visualize the sales revenue and costs of units sold for each year, gross profit, operating expenses and operating income. We will also be considering an NPV analysis to help us determine the break even point.

2 Business model

The Razor Blade business model is the viable and the most successful business model for our group's walker brake system product. The brake system will be sold at a relatively inexpensive price to customers for use on their existing walkers. After the customers purchase the brake system, the installation and repairs can be priced higher. This business model was chosen because it helps in generating more profits for the company. The key characteristic of the razor blade business model is that it allows the customer to try the brake system product without a substantial upfront cost. A large number of consumers will be attracted to the product of a brake system as it's being offered at a very low price point for the functionality that the system provides to the customer. The consumers will get a thorough review of the product as to how the brake system will help in activating the rear brakes simultaneously. They will also learn about additional features of the brake system product, including ,but not limited to, the ergonomics, the simple universal design, the one hand interaction point, the gradual stopping, the minimal gripping strength as well as the minimal applied force required. All of these features get introduced to the customers at the time of purchase before they make an official decision to install the brake system on their walkers. The higher prices of repairs and installation are what will make the majority of the company's revenue.

2.1 Business Model Canvas

Table 1: Business Model Canvas

<p>Key Parameters</p> <ul style="list-style-type: none"> ● Cable supplier ● Steel supplier ● Distributor partners 	<p>Key activities</p> <ul style="list-style-type: none"> ● Manufacturing ● Installation of brake system conversion on site ● Advertising 	<p>Value proposition</p> <ul style="list-style-type: none"> ● Converting walkers for arm and hand disabilities ● In-person installation of product ● Customers will love the customizability of their old walker 	<p>Customer Relationship</p> <ul style="list-style-type: none"> ● Dedicated personal assistance ● Tailored to the individual customer ● Automated online website 	<p>Customer Segments</p> <ul style="list-style-type: none"> ● Stroke victims ● People with low grip strength ● People with disabilities
<p>Key resources</p> <ul style="list-style-type: none"> ● Material suppliers ● Manufacturing employees ● Advertising outlets ● Installation technicians 			<p>Channels</p> <ul style="list-style-type: none"> ● Websites ● Retail stores ● Newspapers ● Field Sales 	
<p>Cost Structure</p> <ul style="list-style-type: none"> ● Marketing and sales costs ● Product development costs ● General administrative costs ● Material costs ● Labour costs 			<p>Revenue Streams</p> <ul style="list-style-type: none"> ● Product purchases ● Installation of product fee ● Repairs ● Sellings parts 	

2.2 Core Assumptions

- The Razor blade business model is assumed.
- The brake system product is a conversion kit for an existing walker.
- The clients are people in Canada with physical disabilities, strokes, low grip strength, or of an aging population.
- The system itself is priced relatively low. The installation of the brake system and the repairs will have a higher price.
- Installations of the walker brake system can be performed on site by a service technician.
- Based on volume, it is assumed that the cost to produce the product will be lower than the cost of the prototype.

For the feasibility of this product on the market, research was performed on the number of potential clients that could benefit from our one-hand activated walker brake product. Currently there are more than 1.9 million Canadians with mobility limitations and approximately 300,000 Canadians living with the effects of stroke that could potentially benefit from the use of our product [1]. As of 2012, over 465,000 people with mobility limitations use walkers [2] and the rate has increased by 2% from 2004 to 2012. Based on the population statistics from Statistics Canada, it is predicted that the number of people aged 65 and older will steadily increase (by 34% from 2021 to 2040), which means that there will also be a steady increase in the need of assistive devices from 2021 to 2040 [10] .

3 Economics report

3.1 Costs Associated with Our Business

Below are the detailed costs in regards to our product and their classification.

Table 2: Detailed Costs and Classification

Table of Detailed Costs and Classification	
Salaries	Labour, fixed direct cost
Production materials	Material, variable direct cost
Electricity	Semi-variable cost
Marketing	Fixed indirect cost
Building rent	Fixed indirect cost
Liability Insurance Payment	Fixed indirect cost
Equipment and Tool expenses	Fixed Indirect cost
Patent costs	Fixed Indirect cost
Income Taxes	Taxation, indirect cost

Price and Cost can vary depending on the volume of manufacturing. If the product is manufactured in high volume, the cost to make each unit is lower. If a product is manufactured in low volume, the cost to make each unit will be higher.

3.2 3-year Income Statement

Below is the income statement of the company developed over the course of 3 years.

Table 3: 3-year Income Statement

3 Year Revenue:		
Sales at the end of Year 1 (based on 500 units sold at \$300/unit and 100 service related charges at \$150 per occurrence)		\$165,000
Sales at the end of Year 2 (based on 1000 units sold at \$300/unit and 300 service related charges at \$150 per occurrence)		\$345,000
Sales at the end of Year 3 (based on 2000 units sold at \$300/unit 750 service related charges at \$150 per occurrence)		\$712,500
3 Year Operating Expenses:		
Marketing Campaign Year 1 (based on 2% of Yearly Revenue) [3]	\$3,300	
Marketing Campaign Year 2 (based on 2.5% of Yearly Revenue) [3]	\$8,625	
Marketing Campaign Year 3 (based on 3% of Yearly Revenue) [3]	\$21,375	
Electricity Consumption Year 1 (based on 55.1 KWh of electricity per square foot/year [4] x 3200 ft ² building [5] at 14.15 ¢/kWh [6].)	\$24,949.28	
Electricity Consumption Year 2 (based on 75.1 KWh of electricity per square foot/year [4] x 3200 ft ² building [5] at 14.15 ¢/kWh [6].)	\$34,005	
Electricity Consumption Year 3 (based on 95.1 KWh of electricity per square foot/year [4] x 3200 ft ² building [5] at 14.15 ¢/kWh [6].)	\$43,061.28	
Salaries Year 1 (based on 2 salary at \$30 per hour and 2 hourly workers at \$15 per hour , 25hrs/week and 52 weeks a year)	\$117,000	

Salaries Year 2 (based on 2 Salary at \$30.25 per hour and 2 hourly workers at \$15.20 per hour, 32hrs/week and 52 weeks a year)	\$151,257.60	
Salaries Year 3 (based on 2 salary at \$30.50 per hour and 2 hourly workers at \$15.45 per hour, 40hrs/week and 52 weeks a year)	\$191,152	
Production Material Year 1 (based on \$75/unit at 500 produced per year)	\$37,500	
Production Material Year 2 (based on \$75/ unit to make at 1,000 produced per year)	\$75,000	
Production Material Year 3 (based on \$75/unit to make at 2,000 produced per year)	\$150,000	
Liability Insurance @ \$57 per month for 3 years [8]	\$2,052	
Building Rent Year 1	\$51,312	
Building Rent Year 2	\$51,312	
Building Rent Year 3	\$51,312	
Tool and Equipment Expense Initial Start-up Cost Year 1 [9]	\$8890.32	
Patent Cost [7] Year 1 only	\$10,000	
Total Operating Expenses: (End of Year 3)		\$1,032,103.48
Total Operating Income: (End of Year 3)		\$1,222,500.00
Earnings Before Tax: (End of Year 3)		\$190,396.52
Income Tax: (25%)		\$47,599.13
Net Income: (End of Year 3)		\$142,797.39

3.3 NPV Analysis

The Net Present Value was calculated using the values from the 3-year income statement given above and a 3% interest rate is assumed.

Table 4: NPV Analysis

Year	Cash Flow In	Cash Flow Out	Net Flow	Net Present Value
1	\$165,000	Marketing costs + electricity consumption + Salary + Production Material + liability insurance building rent + tool and equipment cost + patent cost $\$3,300 + \$24,949.28 + \$117,000 + \$37,500$ $+ (\$57 * 12 \text{ months}) + \$51,312 +$ $\$8890.32 + \$10,000$ $= \$253,635.6$	inflow - outfit $\$165,000 -$ $\$253,635.6$ $= -\$88635.6$	$-\$88635.6 / (1+0.03)^1$ $= -\$86,054$
2	\$345,000	$\$8,625 + \$34,005 + \$151,257.60 + \$75,000$ $+ (\$57 * 24 \text{ months}) + \$51,312$ $= \$321,567.6$	$\$345,000 -$ $\$321,567.6$ $= \$23,432.4$	$\$23,432.4 / (1 + 0.03)^2$ $= \$22,087.3$
3	\$712,500	$\$21,375 + \$43,061.28 + \$191,152 +$ $\$150,000 + (\$57 * 36 \text{ months}) + \$51,312$ $= \$458,952.28$	$\$712,500 -$ $\$458,952.28$ $= \$253,547.72$	$\$253,547.72 / (1 + 0.03)^3$ $= \$232,032$

After completing the Company's Net Present Value analysis for a 3 year period, there is a loss in the first year, and a profit in years 2 and 3. Therefore, the break-even point will account for the expenses starting in the second year.

Break-Even point

$$= \text{Fixed Costs} / (\text{sales price per unit} - \text{variable cost per unit})$$

where the selling price per unit is \$300.

Fixed costs

$$\begin{aligned} &= \text{Marketing costs (year 2)} + \text{building rent (year 2)} + \text{tools and equipment expenses} + \\ &\quad \text{patent cost} + \text{salaries (year 2)} + \text{liability insurance (year 2)} \\ &= \$8,625 + \$51,312 + \$8890.32 + \$10,000 + \$151,257.60 + (\$57 * 24 \text{ months}) \\ &= \mathbf{\$231,452.92} \end{aligned}$$

Variable Costs

$$\begin{aligned} &= \text{Production material (year 2)} + \text{electricity consumption (year 2)} \\ &= \$75,000 + \$34,005 \\ &= \mathbf{\$109,005} \end{aligned}$$

Variable cost per unit

$$\begin{aligned} &= \text{variable cost (year 2)} / \text{number of units sold (year 2)} \\ &= \$109,005 / 1000 \\ &= \mathbf{\$109} \end{aligned}$$

Break Even Point

$$\begin{aligned} &= \$231,452.92 / (\$300 - \$109) \\ &= \mathbf{1,212} \end{aligned}$$

Therefore the company must sell 1,212 units of brake system in year 2 to break-even.

4 Project Plan Update

Here is a link to our team's updated wrike plan:

<https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=etmCKz4JHO1sIBmMzxvL9CmRsaJ4FCe6%7CIE2DMNBUGU4DKLSTGE3A>

5 Conclusions and Recommendations for Future Work

In conclusion, the projected business plan chosen displays some degree of efficacy. Assuming the core assumptions of the business model are accurate, the business will break even in year 2, leading to profits afterwards. In addition, the business is projected to be a sustainable one as it profits economically, environmentally and socially. However, there is a wide margin for error on these predictions considering all of the assumptions have not been proven and no field tests have been done to corroborate the values provided. Another consideration that could be made on the business are other supplementary products that could be sold alongside the main product to further the razor blade model. On the other hand, preparation to offset the initial loss will have to be accounted for before the business can take off.

For future work on this business model, we will need to plan methods to test the core assumptions of the business, in order to ensure that the above business plan is valid. In addition, we will need to conduct further research on the target audience, as we plan to be customer-oriented. To actually launch the relevant startup, research will also have to be conducted on the various material sources and methods to increase efficiency on our current unviable production method.

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