GNG2101 Deliverable H

Portable Ramp - Group 11

Submitted by

[Team 11]

[ROHIT NATH, 300073329]

[STUART GERUS, 300057344]

[BRIANNA LECAVALIER, 300062339]

[MOSTAFA KHAFAGY, 0300053603]

[JASMEET MANDER, 300065525]

[ANDREAS TAUBER JAKOBSEN, 300150779]

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University of Ottawa

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Introduction

This deliverable outlines a theoretical economics report based on our business model from previous deliverables. This report takes into account projected costs for running a warehouse to produce multiple ramps at high volumes. Using this data, the feasibility of our business can be determined and used to make business decisions to maximize profit. In order to promote our product and secure more investments for our company, we came up with a video pitch to showcase our design.

1.0 Costs

1.1 BOM

Prototype Bill of Materials and Parts (BOM)

Part Name	**Description (Identify Prototype #)**	**Quantity**	**Unit Costs ($CAD)/unit**	**Extended Cost (Qty x $)**
Final Prototype				
Metal Sheets	Diamond Aluminum sheets (3x2.5 ft.)	2/ramp (Purchased in bulk for manufacturing)	30 (Discounted to account for bulk pricing)	60
Friction Tape [1]	394644 Friction Tape, 3/4-Inch by 30 Feet, Single Roll, Black	⅓ (Each roll provides enough tape for 3 ramps)	3.06	1.02
Hinges	3-inch Iron Black Door Hinge for 1 3/4-inch Thick Door	4	3.27	13.08
Rebar	Steelworks Steel Rebar (½” x 6’)	1	13.49	13.49
Eye Bolt	1/2 Inch x6 Inch Zinc Eye Bolt	4	3.22	12.88
			Total	$100.47

The price of one portable ramp will be $250 direct to consumer. This price allows us to make 60% margins on a single unit. The price is comparable to existing portable ramps on the market because with our versatile design, our product has an advantage when compared to competitors.

1.2 Table of Costs

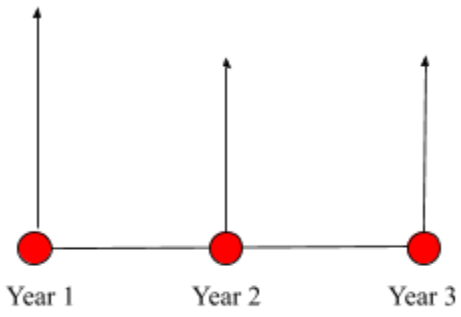
Description	Fixed/Variable	Direct/Indirect	Cost ($)	Justification
Marketing campaigns	Fixed	Indirect	20,000	For the 3 years marketing is a key component to make customers aware of our product
Electricity	Variable	Indirect	60,000	The average cost for powering a manufacturing warehouse in our area
Salaries	Variable	Direct	3,150,000	30k/year/employeeand 35 employees
Production materials (COGs)	Variable	Direct	3,014,100	Selling 30,000 units over 3 years
Overhead	Variable	Indirect	60,000	-
Machinery	Fixed	Direct	500,000	Average cost of a CNC machine is $30,000 x 10 + any additional equipment needed
Rent	Fixed	Indirect	100,000	Warehouse approx. 10000 ft^2

2.0 Income Statement

Revenue (Unit Price x Units Sold)		7,500,000
Cost of Goods Sold		3,014,100
Gross Profit on Sales		$4,485,900
Operating Expenses:		
Marketing campaign	20,000	
Electricity	60,000	
Machinery (1st year)	500,000	
Salaries	3,150,000	
Overhead	60,000	
Rent	100,000	
Total Operating Expenses		$3,890,000
Operating Income		595,900
Net Income		**$595,900**

3.0 NPV Analysis

$$PV = \frac{FV}{1+0.002N}$$



Expenses (1st year) = $1,630,000

Expenses = $1,130,000/year

Assume simple interest on bank account of 0.20%

PV = 1,630,000 + 1,130,000/(1+0.002) + 1,130,000/(1+0.002(2))

PV = $3,883,220

Break-even point

3,883,220 + 100.47 x N = 250 x N

3,883,220 = N x $149.53

N = 25,969.50 ≈25,970 units

4.0 Assumptions

1. Assume an interest rate of 0.20% **simple** interest used for the NPV analysis

- The average interest rate at banks is approximately 0.20%

2. Assume for the NPV analysis the interest is only applied to the expenses

- The present value analysis is only applied to the expenses because we assume our production will sell immediately after manufacturing each unit

3. Assume that the materials for the ramp are bought in the first year and do not change in value over the 3 years

- If the value of materials bought change during the duration of the 3 years the cost per unit must fluctuate to obtain similar margins (unaware of the market)

4. The cash generated will be immediately reinvested to generate a return at a rate that is equal to the discount rate used in present value analysis

- The cash flow will be reinvested to cover the cost of the next batch of materials and any costs associated with the business

5. Assume that the units made are sold by the end of the three years so that no supply is remaining

- The units must be sold or then the revenue would change as less units have been sold, thus decreasing the net income

Conclusion

In the last deliverable, we discussed the BOM referenced to the design used for our second prototype. With the economic report in mind, this deliverable allowed us to plan our accumulated revenue and expenses for the next three years. This information was used to figure out if our company will thrive and be cash flow positive for that duration. An NPV analysis was conducted to figure out the net present value of the expenses. From this analysis, we were able to find the break-even point to which how many units need to be some so the total revenue is equal to the total expenses. Some assumptions were made to imply that this deliverable was not fully accurate to an extent were assumptions would help define any misconceptions with our economic report.