

GNG 2101

Introduction to Product Development and Management for Engineers and Computer Scientists

**Project Deliverable H: Economics Report and 1 Minute Video Pitch**

Lab Section: A02, Wednesday, Lab Group A7

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**Introduction**

The following deliverable outlines the income statement for our device. It goes into detail about the variable, fixed, direct, and indirect costs of our business based on the manufacturing and sale of our product. This deliverable also contains the three year income statement plan for our product, which includes ; sales revenue and costs of units sold for each year, gross profit, operating expenses and operating income. Additionally we have also included an NPV analysis to determine the break even point in our report.

**Assumptions**

 For the following data in the deliverable it is important to know the following assumptions which the calculations are based on. In Canada there are approximately 226,000 blind people, of 3.8 million people with disabilities 5.8% were legally blind as reported by the survey linked below. Of the 226,000 blind we planned to sell to 1.5% in the first year, another 3% in the second and an additional 3.5% in the third. For the rent calculations the data was collected from edmonton commercial which is referenced below. The Edmonton commercial reports an average of $2-3 per square foot of factory space and another $9-20 each square foot for rent. The salary/wages are estimated from the average wage of a Honda employee in Canada which is between $29,000 for an entry level worker and $54,000 for an experienced worker. We preferred the experienced workers for our factory because they may need a multitude of different skills to function thus $50,000 became the average wage of the employees. As for our marketing spotify will play an add for $0.015 per listener and we would like approximately 5,000,000 adds to play thus reaching a total of $75,000 and we would like to invest $50,000 in to radio stations which cost $200-2000 to play and add for 30 seconds 20 times throughout the week. We made the assumption that we would need $100,000 dollars worth of machine investments into the company initially such as forklifts($20,000-45,000), milling machines($2,000-5,000), drill presses($1,000-5,000), 3D printers($100-10,000), conveyors($100/sqft), Injection moulding machines($10,000-100,000) all of which would add up to an estimated $100,000. The cost of materials is initially 48.44 for one unit and we estimate that only 1/10 people will buy a warranty leading to our calculations. The manufacturing costs are calculated based on the value of the machines and how many units they produce so at 3390 units and $100,000 the manufacturing cost is $29.5 each unit ($100,000/3,390).

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| --- | --- | --- | --- | --- |
| **Costs** | **Fixed** | **Variable**  | **Direct ($)** | **Indirect ($)** |
| Cost of Materials |  | x | 48.44 per unit |  |
| Salaries | x |  | 200,000 |  |
| Rental Space | x |  |  | 80,000 |
| Marketing |  | x |  | 175,000 |
| Depreciation |  | x | ($10,000)@10% |  |
| Loans | x |  | 112,000 |  |
| Utilities | x |  | 12,000 |  |
| **Price** | **Fixed** | **Variable**  | **Direct ($)** | **Indirect ($)** |
| Individual Product | x |  | $140 per unit |  |
| Warranties | x |  | $15 |  |
| Bulk Product |  | x | 45 per unit |  |
| Manufacturing costs |  | x | $29.5 per unit |  |

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| --- | --- | --- | --- |
| **Revenue:** | 2020 | 2021 | 2022 |
| Product income | (3,390\*$140)= $474,600 | (6,644\*$140)= $930,160 | (7,519\*$140)= $1,052,660 |
| Warranties | (3,390/10)=452339\*$15=$5,085 | (6,644/10)=664664\*$15=$9,960 | (7,519/10)=752752\*$15=$11,280 |
| **Sales Revenue** | $479,685 | $940,120 | $1,063,940 |
| **Cost of Goods Sold** |
| Production Materials | $48.44\*3,390= $164,211 | $(40-$8.44)\*6,644= $265,760 | ($30-$18.44)\*7,519= $225,570 |
| Manufacturing costs | $0 | ($8.44/2)\*6,644= $56,075 | ($18.44/3)\*7,519=$138,650 |
| **Gross Profit(**Sales revenue - cost of goods**)** | $479,685-$164,211= $315,474 | $940,120-$265,760-$$56,075= $618,285 | $1,063,940-$225,570-$138,650= $699,720 |
| **Operating Expenses:** |
| Marketing | Spotify $75,000+Radio $50,000=$125,000 | $125,000+$50,000=$175,000 | $175,000+$50,000=$225,000 |
| Utilities | $3/sqft \* 4000 sqft= $12,000 | $3/sqft \* 4000 sqft= $12,000 | $3/sqft \* 4000 sqft= $12,000 |
| Salary | 4\*$50,000=$200,000 | 4\*$50,000=$200,000 | 5\*$50,000=$250,000 |
| Depreciation | $100,000 at 10% =$10,000 | $90,000 at 10% =$9,000 | $81,000 at 10% =$8,100 |
| Rent | $20/sqft per year \*4000=80,000 | $20/sqft per year \*4000=80,000 | $20/sqft per year \*4000=80,000 |
| **Operating Income(**Gross profit-operating expenses**):** | $ -111,526 | $142,285 | $121,620 |
| **Net Income:**(\*No tax or interest) | $ -111,526 | $142,285 | $124,620 |

**Cash Flow Analysis:**

**Year 2020**

|  |  |  |
| --- | --- | --- |
|  | **Cash In ($CAD)** | **Cash out ($CAD)** |
| **Product Income** | 474,600 |  |
| **Warranties**  | 5,085 |  |
| **Production Materials** |  | 164,211 |
| **Manufacturing cost**  |  | 0 |
| **Marketing** |  | 125,000 |
| **Utilities** |  | 12,000 |
| **Salaries**  |  | 200,000 |
| **Depreciation** |  | 10,000 |
| **Rent** |  | 80,000 |
| **Total Cash in** | 479,685 |  |
| **Total Cash out** |  | 591 211 |

**Net Cash Flow:** 479 685 - 591 211 = $-111 526

**Year 2021**

|  |  |  |
| --- | --- | --- |
|  | **Cash In ($CAD)** | **Cash out ($CAD)** |
| **Product Income** | 930,160 |  |
| **Warranties**  | 9,960 |  |
| **Production Materials** |  | 265,760 |
| **Manufacturing cost**  |  | 56,075 |
| **Marketing** |  | 175,000 |
| **Utilities** |  | 12,000 |
| **Salaries**  |  | 200,000 |
| **Depreciation** |  | 9,000 |
| **Rent** |  | 80,000 |
| **Total Cash in** | 940,120 |  |
| **Total Cash out** |  | 797 835 |

**Net Cash Flow:** $142 285

**Year 2022**

|  |  |  |
| --- | --- | --- |
|  | **Cash In ($CAD)** | **Cash out ($CAD)** |
| **Product Income** | 1,052,660 |  |
| **Warranties**  | 11,280 |  |
| **Production Materials** |  | 225,570 |
| **Manufacturing cost**  |  | 138,650 |
| **Marketing** |  | 225,000 |
| **Utilities** |  | 12,000 |
| **Salaries**  |  | 250,000 |
| **Depreciation** |  | 8,100 |
| **Rent** |  | 80,000 |
| **Total Cash in** | 1,063,940 |  |
| **Total Cash out** |  | 939,320 |

**Net Cash flow:** $124 620



<https://www.edmontoncommercial.com/utility-costs-warehouse-space-edmonton/>

<https://www150.statcan.gc.ca/n1/daily-quotidien/160229/dq160229c-eng.htm>

<https://youtu.be/mwqh5IjcBbU>

<https://makerepo.com/joshh05027/gng-2101-/edit>