Section 5

Team 4

Fall 2023

Business Plan Draft

Business Name: PureCap

Business Idea: UV light self-cleaning water bottle cap



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**Executive Summary**

PureCap

Samantha Leech

6 Shea Way, Newark, Delaware, 19713

**Phone:** (703)-547-7428

**E-mail:** info@purecap.com

**Management:** Chief Executive Officer

**Industry:**

Plastic products (326199)

Miscellaneous Electric Component Manufacturing (335999)

**Number of Employees:**

Year 1: 13

Year 5: 18

**Amount of Financing Sought:**

Total: $3,700,000

Bank Loan: $1,000,000

Common stock: $2,000,000

Owner Investment: $700,000

**Investment Sources:** Bank Loan, Common Stock

**Use of Funds:** Product development, marketing, operational expenses (rent, salaries, equipment, materials)

**Product/service selling price**:

Year 1: $39.99 (Retail)

Year 2: $44.99 (Retail)

Year 3: $49.99 (Retail)

Year 4: $49.99 (Retail)

Year 5: $52.99 (Retail) $29.99(Wholesale)

**Competition:** Our indirect competition is made from companies that sell high-end full water bottle versions of our product. They are very costly and only have 2-3 sizes available. Our direct competition comes from a company that sells the lid alone for $90 and is not reliable.



**Financial Projections (Unaudited):**

2024 2025 2026 2027 2028

Revenue: $356,431 $1,106,934 $3,310.668 $4,624,675 $8,673,191

EBIT:  $(1,222,319) $(991,874) $(303,849) $(108,147) $162,8729

**Distribution Channels**: Our products will be distributed directly to consumers through Amazon and our personal website for the first four years. Year five we plan to additionally distribute through target.

**Business Description:** PureCap will develop and sell smart water bottle caps

that use UV-C light technology to kill bacteria inside reusable water bottles and sterilize the water. Our goal is to offer consumers a safe, effective, consistent, and easy to use product.

**Products/Services:** PureCap is a twist off water bottle cap made from recycled plastic. Inside the cap, made from two parts, will be placed a small UV-C led light. The cap will contain a power button, and a USB-C charging port. The cap will be sold in standard Yeti, Hydro flask, Stanley, and custom sizes.

**Competitive Advantage:** We plan to not only invest in the quality of our product, but also invest in our employees and work environment.

**Markets:** The primary market for PureCap is 20–30-year-olds in the upper-middle class with families. This market includes 1.96 million Americans living in suburban and small-town areas. This market has an estimated growth rate of 4% over the next 5 years. These households are most likely to find interest in new electronics and technology.

**Elevator Pitch**

Reusable water bottles are great for the environment, but if not cleaned regularly they can harbor more germs than a toilet seat (Ballweg et al., 2017). Our solution is PureCap: the ultimate self-cleaning water bottle cap. Our caps contain a UV-C light, which with the touch of a button will no longer have any water bottle comparable to a toilet seat.

**Product Description**

PureCap sells caps to fit standard Yeti, Hydro Flask, and Stanley bottles, as well as custom caps that can fit other brands. When purchasing, the customer is given the option to pick from these models or enter information pertaining to their specific bottle. With purchase, customers receive their cap and a charger. The cap is made from two molds that are then glued together, containing the UV light inside. The cap will contain the name “PureCap” in bold font on the side of the cap. For year 1, the cap is $39.99, projected to increase within the next five years.

**Competitive Advantage**.

PureCap offers a superior alternative to traditional cleaning methods for water bottles. Compared to dishwashers and handwashing, our UV-C cap outperforms in consistency, ease of use, and efficiency. Unlike competitors selling poorly reviewed single-size caps or bundling them exclusively with bottles, PureCap provides a sustainable solution (WAATR. (n.d.)| *LARQ Bottle PureViSTM Cap | LARQ*. (n.d.). Our caps, made from recycled plastic, seamlessly fit onto customers' existing bottles. With a simple entry of basic information, customers can trust us to take care of the rest.

**Value Proposition**

Experience healthier hydration with PureCap's cutting-edge UV-C water bottle caps. Our advanced technology prioritizes your health and well-being by providing thorough disinfection, reaching every corner of the bottle. The user-friendly design makes cleaning hassle-free, addressing the safety concerns of our consumers. PureCap effectively eliminates bacteria, ensuring a healthier and safer drinking experience.

**Business Strategy**

PureCap uses a cost-focused business strategy to bring an affordable product to a narrow market. PureCap aims to deliver high-quality, affordable caps to environmentally conscious middle-class consumers, focusing on niche segments: Young Wired Families, Networked Neighbors, and Upper Midscale without kids.

**Business Location**

Our offices and warehouse, both within the same building, will be located in Newark, Delaware. A benefit of incorporating in Delaware is the state’s lenient tax policies. We will provide customers with lower prices due to the absence of sales tax ([Crail et al](https://www.forbes.com/advisor/business/incorporating-in-delaware/#:~:text=The%20most%20famous%20reason%20Delaware,not%20pay%20corporate%20income%20tax)., 2023). Newark is within 2 hours of Washington DC, Baltimore, Philadelphia, and Wilmington and all of those cities have major transportation hubs that we can use.

**Outsourcing**

We plan to conduct all production and marketing functions in-house. We will outsource accounting (to local firms) and IT to reduce operating costs, which will eliminate the costs associated with hiring, training, and benefits for the employee (*Basis 365 Accounting*. (n.d.).

**Financial Performance**

PureCap’s revenues and net income grew significantly over the 5 years as our company became more efficient. Initially, our net profit margin and ROE lagged from 2024-2025, but from 2026-2028, they surpassed industry standards. In 2028, our net profit margin of 22.61% exceeded the 3.48% industry average, and our ROE reached 58.33%, compared to the industry's 4.57%, demonstrating our superior profitability and return on investment ([Bizminer](https://app-bizminer-com.eu1.proxy.openathens.net/if/18390864/ratios), 2023| IBSWorld, 2023).

**Exhibit #1: Organizational Chart**

 

Key timeline events:

Day –30: Secure key leadership

Day –14: Apply for EIN

Day –14: Apply for a business license

Day 0: Open bank account, deposit funding, start books

Day 1: Begin hiring management

Day 55: Bring on board production managers and supervisors

Day 160: Hire assembly employees

Day 180: Kick-off business and begin selling product online

Day 190: Deliver product

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| --- | --- | --- | --- | --- | --- | --- |
| **Positions Added by Year** | Year 1  | Year 2 | Year 3 | Year 4 | Year 5 | Total Employees |
| CEO | 1 | 0 | 0 | 0 | 0 | 1 |
| Finance Manager | 1 | 0 | 0 | 0 | 0 | 1 |
| Marketing Assistant | 2 | 0 | 0 | 0 | 0 | 2 |
| Cust. Serv. Rep | 2 | 0 | 1 | 0 | 0 | 3 |
| Manufacturing Engineer | 1 | 0 | 0 | 0 | 0 | 1 |
| 3D Prinitng/Mold Tech | 1 | 0 | 0 | 1 | 0 | 2 |
| Line Manager | 1 | 0 | 0 | 0 | 0 | 1 |
| Frontline Assembly | 1 | 1 | 4 | 2 | 2 | 10 |
| Sales Rep. |  |  |  |  | 1 | 21 |

**Exhibit #2: Pay, Deductions, Benefits, Knowledge, Skills, Abilities & Motivation Table**

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| --- | --- | --- |
| **Compensation** | **Mandatory Payroll Deductions**  | **Benefits**  |
| Position  | Salary/Wage  | Bonus or Commission | Employees for position | Projected End of Year 2 Salary or Wage **including** bonus/comm. Each | Projected End of Year 2 Salary or Wage **including** bonus/comm. all positions | FICA | FUTA\* | SUTA | WC | Mandatory Deductions - Total | Benefits - Health Cost | Benefits - Retirement Cost | Any other Benefit Cost-List line 17 | Benefits - Total  | Total Cost per Employee | Total Cost for All Employees |  |
| **CEO** | **$105,000** |  **$ 2,500**  | **1** |  **$ 107,500**  |  **$ 107,500**  |  **$ 8,223.75**  |  **$ 420**  |  **$ 329**  |  **$ 2,687.50**  |  **$ 11,660.25**  |  **$ 17,280**  |  **$ 3,000**  |  **$ 2,000**  |  **$ 22,280**  |  **$ 141,440.25**  |  **$ 141,440.25**  |  |
| **Finance Manager** | **$85,000** |  **$ 2,500**  | **1** |  **$ 87,500**  |  **$ 87,500**  |  **$ 6,693.75**  |  **$ 420**  |  **$ 329**  |  **$ 2,187.50**  |  **$ 9,630.25**  |  **$ 17,280**  |  **$ 3,000**  |  **$ 2,000**  |  **$ 22,280**  |  **$ 119,410.25**  |  **$ 119,410.25**  |  |
| **Marketing Assistants** | **$55,000** |  **$ 2,500**  | **2** |  **$ 57,500**  |  **$ 115,000**  |  **$ 8,797.50**  |  **$ 420**  |  **$ 329**  |  **$ 2,875.00**  |  **$ 24,843.00**  |  **$ 17,280**  |  **$ 3,000**  |  **$ 2,000**  |  **$ 44,560**  |  **$ 92,201.50**  |  **$ 184,403.00**  |  |
| **Customer Service Representatives** | **$45,000** |  **$ 2,500**  | **2** |  **$ 47,500**  |  **$ 95,000**  |  **$ 7,267.50**  |  **$ 420**  |  **$ 329**  |  **$ 2,375.00**  |  **$ 20,783.00**  |  **$ 17,280**  |  **$ 3,000**  |  **$ 2,000**  |  **$ 44,560**  |  **$ 80,171.50**  |  **$ 160,343.00**  |  |
| **Manufacturing Supervisor** | **$70,000** |  **$ 2,500**  | **1** |  **$ 72,500**  |  **$ 72,500**  |  **$ 5,546.25**  |  **$ 420**  |  **$ 329**  |  **$ 1,812.50**  |  **$ 8,107.75**  |  **$ 17,280**  |  **$ 3,000**  |  **$ 2,000**  |  **$ 22,280**  |  **$ 102,887.75**  |  **$ 102,887.75**  |  |
| **3D Printing & Mold Technician** | **$75,000** |  **$ 2,500**  | **1** |  **$ 77,500**  |  **$ 77,500**  |  **$ 5,928.75**  |  **$ 420**  |  **$ 329**  |  **$ 1,937.50**  |  **$ 8,615.25**  |  **$ 17,280**  |  **$ 3,000**  |  **$ 2,000**  |  **$ 22,280**  |  **$ 108,395.25**  |  **$ 108,395.25**  |  |
| **Line Manager** | **$55,000** |  **$ 2,500**  | **1** |  **$ 57,500**  |  **$ 57,500**  |  **$ 4,398.75**  |  **$ 420**  |  **$ 329**  |  **$ 1,437.50**  |  **$ 6,585.25**  |  **$ 17,280**  |  **$ 3,000**  |  **$ 2,000**  |  **$ 22,280**  |  **$ 86,365.25**  |  **$ 86,365.25**  |  |
| **Assembly** | **$45,000** |  **$ 2,500**  | **2** |  **$ 47,500**  |  **$ 95,000**  |  **$ 7,267.50**  |  **$ 420**  |  **$ 329**  |  **$ 2,375.00**  |  **$ 20,783.00**  |  **$ 17,280**  |  **$ 3,000**  |  **$ 2,000**  |  **$ 44,560**  |  **$ 80,171.50**  |  **$ 160,343.00**  |  |
| **Totals** | **$535,000.0** |  **$ 20,000**  | **11** | **555,000** |  **$ 707,500**  |  **$54,123.75**  |  **$3,360**  |  **$2,632**  |  **$17,687.50**  |  **$111,007.75**  |  **$138,240**  |  **$ 24,000**  |  **$16,000**  |  **$245,080**  |  **$ 811,043.25**  |  **$1,063,587.75**  |  |
|   |
| Standard Time-off Benefits (Annualy) \*Bonuses: 2,500 Per Employee |
| 10 vacation days Govt. Holidays: New Year’s Day, Birthday of Martin Luther King, Jr., Washington’s Birthday, Memorial Day, Juneteenth National Independence Day, Independence Day, Labor Day, Columbus Day, Veterans Day, Black Friday, Thanksgiving Day, Christmas Day, 8 days sick leave (transferrable to next year), 1 hour paid lunch break |
| Other Benefits: (include cost and descriptions for each): Flexible Scheduling, IRA contribution matching up to $3,000Mandatory Payroll Deductions: FICA = 7.65%, FUTA = 6.00%, SUTA = 4.70%, WC = 3.00% (Limit = $7,000)Health Insurance Information: Total cost per employee per month = $1,800, 80% paid by company ($1,440), Annual Deductible = $1,700, Co-Pay per medical visit for primary/specialist = 40/80 |

**Exhibit #3: Market Segmentation Analysis/Target Market Selection**

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| **Segment Name** | **Size (# of Peopleor Households inSegment)** | **Growth Projection** | **Description** | **Priority level for targeting** | **Justification for Targeting** |
| **Parents (Networked Neighbors) (Wealthy Middle Aged Mostly With Kids** | **U.S. Households:** 1,257,212  | 1% growth in the next 3 years for this age group | Mostly wealthy, living is suburban areas, aged 35 - 55. This market has children who are young adults or college age. These people are likely to be wealthy and own brand name water bottles. These parents are likely to buy products that their children want, without much forethought, thus marketing to their children on social media would be effective. You could also market to them directly via television. | 2 | This target market is a priority because they have wealth, and high demand for complimentary goods. High school and college students have a very large demand for reusable water bottles (a complimentary good to ours). The middle/upper class white mom is an especially good target market for this product. This age group is also projected to grow in the next 3 years. |
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| **Executive Suite Mostly w/ Kids** | **US Households:** 1,655,529 | 1% growth in the next 2 years  | Executive suite refers to the suites which are used by top managers of a business or executive. The age group is 35–54-year-olds who see themselves traveling a lot. Alot of high-level executives and business travelers are in this group. Another part of this is small startup businesses that are growing. With an increase of small startups and businesses, this led to an increase in the market. They also have an average household income of around $108,000.  | 5 | This is a target market because these are high level executives, business travelers, or small startups that are building. Due to this, these people tend to be on the go people and are very busy. These people will be more likely to have a reusable water bottle because they are always traveling to and from home. They will be constantly traveling with this water bottle and will not have time for a dishwasher, hence why our product will be so useful for them. Another reason is that most of them have kids, and because these are wealthier families they will be sending them off to school with reusable water bottles.  |  |
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| **Upper Midscale Younger Mostly w/o Kids** | **US Households:** 1,197,068 | 4% growth next 5 years | Young & Influential is a segment of college educated mainly 25–44-year-old adults who are influential in their communities and social networks and are very tech savvy. The segment is a common address for upper-middle-class singles and couples who are more preoccupied with balancing work and leisure pursuits, and who live in apartment complexes surrounded by ball fields, health clubs, and casual-dining restaurants. The are also very likely to buy new technology and are willing to spend money to buy new technology. | 3 | They are young and have money to spend. They are busy balancing work and leisure so they would enjoy the efficiency of our product. They care about social issues so the environmental aspect of our product would be appealing. |  |
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| **“Tech Nests”**  | **US Households:**  1,966,526 | 4% growth next 5 years | Tech Nests is a segment of suburban and small-town families with big appetites for consumer electronics. Many of these upper middle-class twenty-something and thirty-something adults have homes with plenty of technology to keep up with their favorite sports teams: streaming video services from NHL.TV, NFL Game Pass, and NBA League Pass. They rank highest of the Family Life groups to have transferred mobile or online service in the last 3 months and will change providers for better service bundle options. Tech Nest families also rank high for using Smart appliances and connected home device | 1 | They are young families who are upper middle class who love technology. They are very likely to want to find new products that can make their life easier, and our product will give them that. They will also be more likely to view our social media advertisements because of their interest in similar products with advanced technology. |  |
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| **Exhibit #4: Market Quantification**  |  |  |
| **Year** | **Total Market Potential (No. of Customers)\*** | **Market Share\*\*** | **Annual purchase frequency\*\*\*** | **Annual Unit Sales** | **Wholesale Price†** | **Retail Price†** | **Annual $ Revenue** |
| 2024 |  1,966,526  | 0.35% | 1.278 | 8913 |   | 39.99 |  $ 356,430.87 |
| 2025 |  1,982,258  | 0.97% | 1.278 |  24,604  |   | 44.99 |  $ 1,106,933.96  |
| 2026 |  3,263,640  | 1.59% | 1.278 |  66,227  |   | 49.99 |  $ 3,310,687.73  |
| 2027 |  3,283,801  | 2.20% | 1.278 |  92,512  |   | 49.99 |  $ 4,624,674.88  |
| 2028 |  4,539,940  | 2.82% | 1.278 |  163,676  | 39.99 | 52.99 |  $ 8,673,191.24  |
| \* Indicate source and/or assumptions used to calculate total market potential: Claritas sectors as identified in segmentation and targeting. Target markets were added once marketing budget reached the CPM required to reach the entire market potential. Year 3 target market 2 was added. Year 5 target market 3 was added. |
| \*\* Indicate source and/or assumptions used to identify the market share AxTxAxR = ? : Using our survey responses, we calculated the awareness, trial, and action percentage. To calculate the growth in market share over the first five years, we averaged our low and high estimates over five years. |
| \*\*\* Indicate source and/or assumptions used to identify the annual purchase frequency: Average of the responses to the survey question "how many times a year would you purchase this product?" |
| † Justify your price point and indicate your assumptions as to what % of your revenues come from wholesale and what % come from retail sales: Our price point is based off of our pricing strategy: penetration. Our goal is to have one of the lowest prices on the market, while having a high quality product. |

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| **Breakeven Analysis** |  |  |  |
| **Year** | **Average Price** | **Total Fixed Costs** | **Unit Variable Cost** | **BEP in Units** |
| 2024 | 39.99 |  $ 1,449,433.12  | $21.21  |  77,179  |
| 2025 | 44.99 |  $ 1,645,866.98  | $20.97  |  68,520  |
| 2026 | 49.99 |  $ 2,289,545.21  | $20.91  |  78,732  |
| 2027 | 49.99 |  $ 2,818,116.04  | $21.31  |  98,260  |
| 2028 | 52.99 |  $ 3,552,386.67  | $21.72  |  113,603  |
| A assumption that we had is that we would not get a deal from a major retailer until year four, so all of our sales would be through our website and amazon. Starting in year 5, we will be selling our product wholesale to target |
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**Exhibit #5: Positioning/Competitive Analysis**

**Positioning**

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**Positioning Statement**

It is important to clean reusable water bottles, as bacteria can build up quickly inside. Hand-washing and using the dishwasher lack consistency and ease of use. Introducing PureCap, using harnessing UV-C technology, it sterilizes water bottles and water with the press of a button. Our product will clean the water bottles consistently each time in the exact same way. The graph above shows that from our surveys people believe that our Cap will be cleaning water bottles more consistently than hand-washing and using a dishwasher. Our product will have consistent performance and it will work the same way each time of use.

**Exhibit #6: Marketing Mix**

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| **Product/Service Branding** |
| Through our logo and brand name, we aim to emphasize the environmental aspect of our product. Not only will our product be popular in the hiking industry, but we also utilize materials used from recycled products and promote water and environmental safety.  |
| **Pricing** |
|  | **2024** | **2025** | **2026** | **2027** | **2028** |   |
| **Unit Variable Cost:** | $25.00 | $25.00 | $25.00 | $25.00 | $25.00 |
| **Wholesale Price:** | - | - | - | - | $29.99 |
| **Retail Price:** | $39.99 | $44.99 | $49.99 | $49.99 | $52.99 |
| For year 1 our product is priced at $39.99. This utilizes the odd-even pricing strategy. We then plan to slowly raise our prices through the next years and eventually reach $52.99 by year five. We raise the price because as our business expands, we plan to offer more specialized products. Raising the price will also account for changes in inflation through the next five years. |
| **Distribution/Location Strategy** |
| We begin by selling our product through Amazon and our personal website. By year 5, we will begin selling wholesale though Target.  |
| **Promotional Strategy** |
|  | **2024** | **2025** | **2026** | **2027** | **2028** |   |
| **Total IMC Budget:** |   |   |   |   |   |
| Campaign #1 | $200,000 | $220,000 | $132,000 | $171,600 | $160,160 |
| Campaign #2 |   |   | $132,000 | $171,600 | $160,160 |
| Campaign #3 |   |   |   |   | $160,160 |
| For Campaign 1, we are going to be targeting young, wired families. These families tend to be tech-savvy and live in the suburbs. For these ads, we are going to focus on the UV-C cap's technology and how this is game-changing for reusable water bottle users. In these ads, we showcase how life-changing and timesaving it can be. For Campaign 2, we will target wealthy, middle-aged families. These advertisements will focus on outdoor activities such as golfing and fishing. For these advertisements, we will show the person doing the activity with their water bottle and attached UV-C cap. For Campaign 3, the target market will be upscale couples, usually without kids. For these ads, we are going to be showing couples traveling across global landmarks. We will have the slogan: "Travel more, worry less with PureCap." |
| No. of Salespeople: | 0 | 0 | 0 | 0 | 0 | **If applicable** |
| Compensation Method: | (Example: 30K Salary + 3% commission) |
|   |
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**Exhibit #7: Flow Chart**



For each major quality step:

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| --- | --- | --- | --- |
| **Quality Step**  | **What is measured?**  | **How often?**  | **How will you ensure quality?**  |
| Q1  | Parts are correctly placed together, glue holds together both pieces, electronics are correctly placed together | Every product has this process done  |  After placing the top and bottom piece together, assembly workers will go through a series of a test to make sure our product is up to standard |
| Q2  | Battery life, L.E.D strength, and that when the button is pressed, everything turns on  | 10% of all caps are tested  | By using the data we gather from testing our electronics, we can make sure our products are up to standard and even find ways to improve it |

For each critical resource:

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| --- | --- | --- | --- |
| **Critical Resource**  | **Brief Description**  | **Unit Cost (in appropriate unit)**  | **How many?**  |
| CR1 - 2  | Dedicated plastic mold injection machines create the top and bottom halves of the product respectively. Plastic injection molding is “one of the prime processes for producing plastic articles” (British Plastics Federation, n.d.). | Each mold injection machine costs about $12,500   | 6 total machines (2 for each parallel process)  |
| CR3 - 4  | 3d print farms make custom orders that are not Yeti, Hydro Flask, and Stanley brands. These make-to-order builds are projected to be 21% of our total demand.  | Each 3d printer costs $2,950  | 6 total 3d printers   |

Briefly describe your main facility - provide information about layout and dimensions.

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| We have a 13,820 square foot rectangular warehouse. This will serve as our office space, as well as our manufacturing facility, and our storage space. The layout will be separated into around 3,000 square feet of office space, 8,000 square feet for manufacturing, and 2,820 square feet of storage. If needed, some manufacturing space could be lent to storage in the later years of operation.  |

**Exhibit #8: Quality**

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| **Indicate the Dimensions of Quality on which you will focus.** | **Why is this dimension important, given your industry & target market?** | **Identify the Quality Step(s) on the Process Flowchart / Service Blueprint to which this corresponds.** |
| Convenience | Our product is designed on the fact that using a dishwasher, and especially handwashing water bottles is time consuming and out of the way. With this cap, you simply push a button on a cap already on your water bottle and wait for it to cycle. The convenience factor of pushing a button is our main attribute and focus of our product.  | Quality step 1 |
| Reliability | Our product uses USB-C charging, which has become the most widely adopted charging method, due to its efficiency and longevity. The cap will also provide consistent results which makes it reliable in the customer's eyes, in addition to the long-lasting battery. | Quality step 1 and 2 |
| Consistency | Our product will show consistent results compared to hand washing and using a dish washer, which can produce different results with each use. With this cap, consistency is key so that our consumers feel safe and know our product is effective.  | Quality step 1 and 2 |
| Durability | Not only will our product be made from durable plastic, but the battery life will be long-lasting in hopes of never having to use the charger it comes with. Our competitors have products that are known to die quickly and need to be replaced within a year or so. What differentiates our product is that it is long-lasting and is sold at a fair price. | Quality step 1 |

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| **Use the space below to describe any additional Proactive Quality Assurance Plans that are not connected to a specific activity on your Process Flowchart / Service Blueprint.**  |
| If an employee happens to notice a defective or broken cap, they will be trained to recognize this and eliminate the cap from the process. After the broken cap has been found we can then look at the cap to figure out why it is broken or defective and work to eliminate the issue.  |
| **Describe any reactive quality assurance plans. Include a recovery plan should a customer receive poor quality goods and/or services.** |
| If a customer has any issues with our products, such as a broken or defective cap, they get free return within a month of receiving the product and can exchange it for free and get the same product. They also get the quickest possible shipping option for free so they can enjoy our product as soon as possible. They can choose to get a full refund of the product but will not receive a free exchange for a new working product.  |

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| --- |
| **If you will utilize a quality/process improvement methodology, indicate which:**[ ]  NA [ ]  TQM [ ]  Six Sigma [ ]  ISO [ ]  Benchmarking [ ]  Other (specify what): ***Note: You will not use all of them; only those with highest relevance.*** |
| **Provide a specific explanation of how your chosen quality methodology relates to your business and how it will be applied:** |
| We chose the Six Sigma approach to the quality/process because it focuses on eliminating defects in the production process (McGraw Hill, 2021, p. 400). It is super important that we make sure that our product fits what the customer wants and works consistently. Six Sigma will be applied through our proactive quality sampling step (quality step 2), as in this step we sample 10 to 30% of all products (30% in earlier years, 10% later) in order to get an accurate reflection of the population, so we can insure our process is in control and within control limits. |

**Exhibit #9: Inventory, Suppliers, and Distribution**

***RAW MATERIAL INVENTORY & SUPPLIER SELECTION*** *If your organization does not have raw material inventory, please check this box*: [ ] NA

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Item(s)** | **Supplier Name & Location (City, State, Country)** | **Reason for selecting this supplier** | **Supplier lead time (in days)** | **Frequency of replenishment (in days)** | **System of Management** | **Mode(s) of Transportation** |
| UV-C Led Light  | Lumex Inc (Carol Stream, Illinois, United States) | Supplier that is cheap but also has the correct wavelength and strength to clean the inside of the water bottle. | 126  | 60 | Fixed Order Interval | [x]  Highway [x]  Rail[ ]  Waterway [x]  Air |
| USB-C cord | Huizhou Hongshengda Technology Co.,Ltd (China) | Cheap and easy to buy in bulk and allows for the price of the total product to be cheaper for the consumer | 30 | 60 | Fixed Order Interval | [ ]  Highway [ ]  Rail[x]  Waterway [x]  Air |
| Mold Plastic | Shanghai Qishen Plastic Industry CO, LTD(China) | Recycled plastic and is the correct kind of plastic for injection molding | 30 | 60 | Fixed Order Interval | [ ]  Highway [ ]  Rail[x]  Waterway [x]  Air |
| 3d printer plastic | Xtellar  | Easy to buy, and the company has recyclable 3D printing pellets. | 2 | 60 | Fixed Order Interval | [x]  Highway [x]  Rail[ ]  Waterway [x]  Air |
| Glue | Uline (Wisconsin, United States) | Has the glue in a 5-gallon container and is the glue that can works with our plastic | 1 (same day shipping) | 60 | Fixed Order Interval | [x]  Highway [x]  Rail[ ]  Waterway [x]  Air |
| Printed Circuit Board | Pinsheng Electronics Co. | Highly customizable board with great discounts when ordering in bulk | 30 | 90 | Fixed Order Interval | [ ]  Highway [ ]  Rail[x]  Waterway [x]  Air  |
| Rechargeable Battery | Shenzhen Hysincere Battery Co. | Rechargeable 18650 3.7v batteries | 30 | 60 | Fixed Order Interval | [ ]  Highway [ ]  Rail[x]  Waterway [x]  Air  |

***FINISHED GOODS INVENTORY***  *If your organization does not have finished goods inventory, please check this box*: [ ] NA

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Finished goods produced** **(per hour)** | **Frequency of shipping finished goods** | **Average level of Finished goods inventory on site** | **Amount of safety stock on site** |
| At the end of Year 1 | 4.46 | Biweekly | 910 | 47332 over the whole year |
| At the end of Year 2 | 12.3 | Biweekly | 2392 | 77,111 over the whole year |
| At the end of Year 3 | 33.1 | Daily | 7553 | 268,368 over the whole year |
| At the end of Year 4 | 46.3 | Daily | 14378 | 354,898 over the whole year |
| At the end of Year 5 | 81.8 | Daily | 24057 | 503,325 over the whole year |

|  |  |  |
| --- | --- | --- |
| **What is the lifespan of your finished goods inventory?** | [x] NA | If our products are stored in the proper conditions, their lifespan is effectively indefinite. |
| **How will you manage perishability of Finished Goods Inventory?** | [ ] NA | We will store them in our warehouse in boxes to make sure they don’t break and are ready to be shipped. |

**DISTRIBUTION** *If your organization does not require distribution, please check this box*: [ ] NA

|  |  |  |
| --- | --- | --- |
| **Name of transportation provider/carrier** | **Reason(s) for selecting this provider/carrier** | **Frequency of Pick Up / Drop off** |
| UPS | UPS is the most reliable and one of the largest carriers in the world. We can get the most reliable results for our customers with them while ensuring the product is safe and will arrive at its destination.  | Biweekly for the first two years, then Daily from year 3 onward |
| Amazon | Amazon is projected to be the main place our product is sold. Amazon is a brand that is trusted by many to ship quickly and effectively. | Biweekly |

**Exhibit #10: Capacity**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Demand****(per hour)** | **Capacity****(per hour)** | **Utilization****(%)** | **Hours of Operation**  | **Bottleneck name and description**  | **How will you manage /adjust the bottleneck to ensure you can appropriately serve or supply your customers?** |
| At the end of Year 1 | 4.46 | 11.25 | 39.6% | 3.17 per day (to match demand) | Combined processes of printed circuit board (PCB) assembly, quality sampling, and packaging for all processes. Only one employee is needed for all of these due to our demand being low. | For this bottleneck, we will add a second employee to the combined process of circuit board assembly, quality sampling, and packaging. This will almost double our capacity, and shift our bottleneck to a different combined process. |
| At the end of Year 2 | 12.3 | 22 | 55.9% | 4.5 per day | Combined process of plastic injector oversight (assuming all production must be watched), electronic insertion, and gluing | Once demand increases, more employees will be added to more specific roles, and both combined steps will be decoupled so that our capacity increases efficiently. |
| At the end of Year 3 | 33.1 | 45 | 73.5% | 6 hours per day | Our bottlenecks year 3 are Plastic injection, electronics and gluing, and board assembly. All three of these processes have a currnet capacity of 45 units per hour. | Since we have three bottlenecks this year, we will need to add at least one employee to each step. After the increases, Plastic Injection and electronics / gluing will both have a new capacity of 90 units per hour. Board assembly will be our next bottleneck, as adding one more person will only increase the capacity by 15 per hour. |
| At the end of Year 4 | 46.3 | 60 | 77.16% | 6.2 hours per day | PCB Assembly: This process requires 4 minutes to complete per product, and will need the most employees out of all of our processes. | Since our only bottleneck this year will be PCB assembly, simply adding two more employees to that step will increase our bottleneck to 90 units per hour. |
| At the end of Year 5 | 81.8 | 90 | 90.89% | 7.3 hours per day | Our bottlenecks in year 5 are the same as in year 3: Plastic injection, electronics and gluing, and board assembly | Similarly to year 3, we will need to add employees to all three of these steps. Considering growth in demand, multiple employees will need to be added to PCB board assembly. |

\*Note that all Capacity, Demand, and Employee counts

**Show your calculations for the following parameters at the end of Year 1.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Hours of operation/month**  | **Demand/month** | **Demand/hour** | **Capacity/month**  | **Capacity/hour** | **Utilization**  |
| **3.17 \* 260 (work days per year) / 12 (months) = 68.68** | **8,913 / 12 = 742.75****(year 1 demand / 12)** | **4.46****(year 1 demand / 250 work days, / 8 hour days)** | **2,700****(hourly capacity \* 8 \* 30)** | **11.25****(derived from the speed of the bottleneck)** | **39.6%****(demand / capacity)** |

|  |
| --- |
| Additional resources (beyond your bottleneck) must be allocated appropriately to support operations. Identify which resources have a significant impact on capacity at start up and describe why these are appropriate amounts of resources at start up. |
| During Years 1 and 2, due to low demand relative to the speed of each production step, all production steps will be split into two combined processes. Combined process 1 involves overseeing plastic injection, inserting electronics, and gluing caps together, this step will require a trained mold technician, while the other step does not. Combined process 2 will be PCB (printed circuit board) assembly, quality sampling, and packaging. Going into year 3, these combined processes will be decoupled into what our process map details. Our resource that drains the most labor is PCB assembly, as one person can only assemble about 15 per hour. Because of this, it is our most common bottleneck over the first five years. |
| Describe adjustments you will make as resource requirements vary with time. Be specific regarding which key resources (beyond your bottleneck) will be adjusted, when and how. If you will make multiple adjustments, explain each. |
| We will start with two employees, one technician, and one frontline assembly worker. Going into year 2, one more frontline assembly worker will be added to combined process 2 (as detailed previously). Year 3, we will add four frontline workers. The total employee counts are as follows: One technician overseeing plastic mold injection, and 6 frontline assembly workers. Three frontline assembly workers will be assembling PCBs, one will be inserting electronics and gluing, one will be performing quality control sampling, and the final employee will be packaging products. Going into year 4 we will add one mold technician, and 2 frontline workers. The total for that year will be 2 technicians, and 8 frontline assembly workers. The two technicians will be overseeing the plastic injection mold machines, four frontline workers will be assembling PCBs, two frontline workers will be inserting electronics and gluing, one worker will be doing quality control, and one worker will be packaging products. Finally, we will add 2 more frontline workers during year 5. We will have 2 total technicians and 10 total frontline assembly workers. The two technicians will be overseeing the plastic injection mold machines, six frontline workers will be assembling PCBs, two frontline workers will be inserting electronics and gluing, one worker will be doing quality control, and one worker will be packaging products. |

**How will you manage seasonality?** *If your organization does not have seasonal demand, please check this box*: [ ] NA

**Exhibit #11: Income Statement**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Period 1 | Period 2  | Period 3 | Period 4 | Period 5 |
|  | 31-Dec | 31-Dec | 31-Dec | 31-Dec | 31-Dec |
|  | 2024 | 2025 | 2026 | 2027 | 2028 |
|  |  |  |  |  |  |
| Sales Revenue |  $ 356,431  |  $ 1,106,934  |  $ 3,310,688  |  $ 4,624,675  |  $ 8,673,191  |
|  Materials Cost |  $ 189,043  |  $ 515,941  |  $ 1,384,793  |  $ 1,971,412  |  $ 3,555,010  |
|  Direct Labor Cost |  $ 242,573  |  $ 344,089  |  $ 780,485  |  $ 1,140,033  |  $ 1,600,531  |
|  Total Cost of Goods Sold |  431,616  |  860,029  |  2,165,278  |  3,111,445  |  5,155,541  |
| Gross Profit |  **$ (75,185)** |  **$ 246,905**  |  **$ 1,145,410**  |  **$ 1,513,230**  |  **$ 3,517,651**  |
|  |   |   |   |   |   |
| **Operating Expenses** |   |   |   |   |   |
| Advertising and Promotion Expense |  $ 200,000.00  |  $ 220,000.00  |  $ 264,000.00  |  $ 343,200.00  |  $ 480,480.00  |
| Indirect Labor Cost  |  $ 673,409.25  |  $ 713,991.75  |  $ 808,627.00  |  $ 856,747.00  |  $ 856,747.00  |
| Rent/Mortgage  |  $ 207,300.00  |  $ 214,907.91  |  $ 222,795.03  |  $ 230,971.61  |  $ 239,448.27  |
| Utilities  |  $ 29,022.00  |  $ 30,087.11  |  $ 31,191.30  |  $ 32,336.03  |  $ 33,522.76  |
| Depreciation Expense |  $ 30,274.23  |  $ 30,274.00  |  $ 33,259.00  |  $ 33,259.00  |  $ 33,259  |
| Other Overhead |  $ 7,128.52  |  $ 29,517.93  |  $ 89,386.42  |  $ 124,864.01  |  $ 245,464.35  |
| **Total Operating Expenses** |  **$ 1,147,134**  |  **$ 1,238,778.70**  |  **$ 1,449,259**  |  **$ 1,621,378**  |  **$ 1,888,921**  |
|  |   |   |   |   |   |
| **Earnings Before Interest and Taxes** |  **$ (1,222,319)** |  **$ (991,874)** |  **$ (303,849)** |  **$ (108,147)** |  **$ 1,628,729**  |
|  |   |   |   |   |   |
| Interest Expense | $90,000.00  | $84,076.19  | $77,619.24  | $70,581.16  | $62,909.66  |
|  |   |   |   |   |   |
| **Earnings Before Taxes** |  **$ (1,312,319)** |  **$ (1,075,950)** |  **$ (381,468)** |  **$ (178,729)** |  **$ 1,565,819**  |
|  |   |   |   |   |   |
| Income Tax Expense |  -  |  -  |  -  |  -  |  328,822  |
|  |   |   |   |   |   |
| **Net Income (Loss)** |  **$ (1,312,319)** |  **$ (1,075,950)** |  **$ (381,468)** |  **$ (178,729)** |  **$ 1,236,997**  |
|  |   |   |   |   |   |
|  |   |   |   |   |   |
| **Operating Cash Flow** |  $ (925,792.27) |  $ (826,312.81) |  $ (287,147.19) |  $ (132,667.96) |  $ 982,394.02  |
|  |   |   |   |   |   |
| **Free Cash Flow** |  $ (4,559,972.18) |  $ (1,919,915.82) |  $ (717,186.70) |  $ (404,307.04) |  $ 2,105,749.05  |

**Exhibit #12: Balance Sheet**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | As of Inception | Date Ending | Date Ending | Date Ending | Date Ending | Date Ending |
|  | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 |
| **ASSETS** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Current Assets** |  |  |  |  |  |  |
|  |   |   |   |   |   |   |
| Cash and Cash Equivalents |  $ 3,548,629  |  $ 2,181,262  |  $ 1,022,475  |  $ 448,946  |  120,940  |  1,079,518  |
| Accounts Receivable |  -  |  $ 1,485.13  |  $ 4,612.22  |  $ 13,794.53  |  $ 19,269.48  |  $ 36,138.30  |
| Inventory |  -  |  71,936  |  143,338  |  360,880  |  518,574  |  859,257  |
| Total Current Assets |  $ 3,548,629  |  $ 2,254,683  |  $ 1,170,425  |  $ 823,621  |  $ 658,783  |  $ 1,974,913  |
|  |   |   |   |   |   |   |
| **Fixed (Long-Term) Assets** |   |   |   |   |   |   |
|  |   |   |   |   |   |   |
| Machinery and Equipment |  135,575  |  135,575  |  135,575  |  150,501  |  150,501  |  150,501  |
| Office Supplies |  15,796  |  15,796  |  15,796  |  15,796  |  15,796  |  15,796  |
| Total Gross Fixed Assets |  $ 151,371  |  $ 151,371  |  $ 151,371  |  $ 166,296  |  $ 166,296  |  $ 166,296  |
| Less: Accumulated Depreciation |  -  |  30,274  |  60,548  |  93,807  |  127,066  |  160,325  |
| Net Fixed Assets |  $ 151,371  |  $ 121,097  |  $ 90,823  |  $ 72,489  |  $ 39,230  |  $ 5,971  |
|  |   |   |   |   |   |   |
|  |   |   |   |   |   |   |
| **Total Assets** |  **$ 3,700,000**  |  **$ 2,375,780**  |  **$ 1,261,248**  |  **$ 896,110**  |  **$ 698,013**  |  **$ 1,980,884**  |
|  |   |   |   |   |   |   |
| **LIABILITIES AND STOCKHOLDERS' EQUITY** |   |   |   |   |   |   |
|  |   |   |   |   |   |   |
| **Liabilities** |   |   |   |   |   |   |
|  |   |   |   |   |   |   |
| **Current Liabilities** |   |   |   |   |   |   |
| Accounts Payable |  -  |  $ 15,753.58  |  $ 42,995.08  |  $ 115,399.44  |  $ 164,284.35  |  $ 296,250.83  |
| Accrued Labor Costs |  -  |  $ 38,165.94  |  $ 44,086.68  |  $ 66,212.98  |  $ 83,199.15  |  $ 102,386.57  |
| Current Maturity of LT Debt | $65,820.09  | $71,743.90  | $78,200.85  | $85,238.93  | $92,910.43  | $101,272.37  |
| Total Current Liabilities |  $ 65,820  |  $ 125,663  |  $ 165,283  |  $ 266,851  |  $ 340,394  |  $ 499,910  |
| **Long-Term Liabilities** |   |   |   |   |   |   |
|  |   |   |   |   |   |   |
| LT Debt Less Current Maturities | $934,179.91  | $862,436.01  | $784,235.16  | $698,996.24  | $606,085.81  | $504,813.44  |
|  |   |   |   |   |   |   |
| **Total Liabilities** |  **$ 1,000,000**  |  **$ 988,099**  |  **$ 949,518**  |  **$ 965,848**  |  **$ 946,480**  |  **$ 1,004,723**  |
|  |   |   |   |   |   |   |
| **STOCKHOLDER'S EQUITY** |   |   |   |   |   |   |
| Common Stock |  2,700,000  |  2,700,000  |  2,700,000  |  2,700,000  |  2,700,000  |  2,700,000  |
| Retained Earnings | 0 |  $ (1,312,319) |  $ (2,388,270) |  (2,769,738) |  (2,948,466) |  (1,723,839) |
| **Total Stockholders' Equity** |  **$ 2,700,000**  |  **$ 1,387,681**  |  **$ 311,730**  |  **$ (69,738)** |  **$ (248,466)** |  **$ 976,161**  |
|  |  |  |  |  |  |  |
|  |   |   |   |   |   |   |
| **Total Liabilities and Stockholders' Equity** |  **$ 3,700,000**  |  **$ 2,375,780**  |  **$ 1,261,248**  |  **$ 896,110**  |  **$ 698,013**  |  **$ 1,980,884**  |

**Exhibit #13: Cash Flow Statement**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | As of Inception  | Date Ending | Date Ending | Date Ending | Date Ending | Date Ending |
|  | Date | 2024 | 2025 | 2026 | 2027 | 2028 |
| **Cash Flows From (For) Operations** |  |  |  |  |  |  |
| Net Income |  **$ -**  |  **$ (1,312,319)** |  **$ (1,075,950)** |  **$ (381,468)** |  **$ (178,729)** |  **$ 1,236,997**  |
| Depreciation |  -  |  30,274  |  30,274  |  33,259  |  33,259  | $33,259  |
| Changes in Current Assets |   |   |   |   |   |   |
| Increase in Accounts Receivable |  -  |  1,485  |  3,127  |  9,182  |  5,475  |  16,869  |
| Increase in Inventories |  -  |  71,936  |  71,402  |  217,541  |  157,694  |  340,683  |
| Changes in Current Liabilities |   |   |   |   |   |   |
| Increase in Accounts Payable |  -  |  15,754  |  27,242  |  72,404  |  48,885  |  131,966  |
| Increase in Accrued Labor Costs |  -  |  38,166  |  5,921  |  22,126  |  16,986  |  19,187  |
| **Net Cash Flow From (For) Operating**  |  **$ -**  |  **$ (1,301,547)** |  **$ (1,087,043)** |  **$ (480,402)** |  **$ (242,768)** |  **$ 1,063,859**  |
| **Cash Flow (For) From Investing Activities** |   |   |   |   |   |   |
| Fixed Asset Purchases/Sales |  (151,371) |  -  |  -  |  (14,925) |  -  |  -  |
|  |   |   |   |   |   |   |
| **Net Cash Flow (For) From Investing** |  **$ (151,371)** |  **$ -**  |  **$ -**  |  **$ (14,925)** |  **$ -**  |  **$ -**  |
| **Cash Flow From (For) Financing Activities** |   |   |   |   |   |   |
| Issuance of Common Stock |  **$ 2,700,000**  |  **$ -**  |  **$ -**  |  **$ -**  |  **$ -**  |  **$ -**  |
| Long Term Debt Borrowings/Repayments | $1,000,000  |  $ (65,820.09) |  $ (71,743.90) |  $(78,200.85) |  $(85,238.93) |  $ (92,910.43) |
| Dividends Paid to Stockholders |  -  |  -  |  -  |  -  |  -  |  (12,370) |
| **Net Cash Flows From (For) Financing** |  **$ 3,700,000**  |  **$ (65,820)** |  **$ (71,744)** |  **$ (78,201)** |  **$ (85,239)** |  **$ (105,280)** |
|  |   |   |   |   |   |   |
| **Net Change in Cash** |  **$ 3,548,629**  |  **$ (1,367,367)** |  **$ (1,158,787)** |  **$ (573,528)** |  **$ (328,007)** |  **$ 958,578**  |
|  |   |   |   |   |   |   |
|  |   |   |   |   |   |   |
| **Beginning Cash Balance** | **0** |  **$ 3,548,629**  |  **$ 2,181,262**  |  **$ 1,022,475**  |  **$ 448,946**  |  **$ 120,940**  |
|  |  |  |  |  |  |  |
| **Net Change in Cash** |  **$ 3,548,629**  |  **$ (1,367,367)** |  **$ (1,158,787)** |  **$ (573,528)** |  **$ (328,007)** |  **$ 958,578**  |
|  |  |  |  |  |  |  |
| **Ending Cash Balance** |  **$ 3,548,629**  |  **$ 2,181,262**  |  **$ 1,022,475**  |  **$ 448,946**  |  **$ 120,940**  |  **$ 1,079,518**  |

**Exhibit #14: Financial Statement Notes**

**Note 1: Assumptions**

* For the first 4 years, all of our sales will be through online retail (Amazon and our website). In Year 5, we assume that we will get a Target deal so we will include sales from wholesale.
* Depreciation of fixed assets is computed using the straight-line method.
* Corporate income tax rate is 21%.
* The accounts payable are assumed to be terms of net 30.

**Note 2: Investment Capital**

Our source of debt financing is a $1,000,000 loan with interest of 9% paid over ten years. We will also have equity financing, with $2,000,000 in angel investors and each group member will contribute $100,000 for a total of 2,700,000.  Our total paid in capital is $3,700,000

**Note 3: Capital Investment**

The initial capital investment of $98,700 is used to purchase six injection molding machines and six 3D printing machines. We will purchase one conveyor belt in Year 1 and another in Year 3 at $14,925.95 each. We will purchase a forklift in Year 1 for $21,950. Office Supplies are purchased in Year 1 as well for $15,795.88.

**Note 4: Risks**
There are many risks and uncertainties associated with the operations of this company.

Risks (Patent)- Since our company relies on other companies' water bottles, for our cap to be added we would have to get a patent for our product. If companies like Hydro Flask and Yeti made our exact product it would take a toll on our share of the market.

Risks (Economy)- The general state of the economy has been improving compared to 2020. According to the Federal Reserve “The [FOMC] seeks to achieve maximum employment and inflation at the rate of 2 percent over the longer run” (Federal Reserve, 2023). The GDP for 2023 is predicted to grow around nine percent. However, inflation is still a problem, so everything is going to cost more every year the business is operating.

Risks (Product)- Our main competitor is Larq, which uses similar technology, but they produce a whole water bottle which costs around 100 dollars. Our product will be priced around 40 dollars and is an accessory that improves your current water bottle. In our survey that we sent out, 56% of all the participants said that they would try our product. Consumers will be willing to buy our product because they can keep the water bottle they already have while still having the same technology that is in high-end water bottles.

Risks (Labor)- It will be relatively difficult to find and hire Plastic Mold technicians, therefore, their salaries will have more variation. However, finding and hiring the rest of our employees will be relatively easy.

**Exhibit #15: Financial Ratio**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Date Ending |   | Date Ending |   | Date Ending |   | Date Ending |   | Date Ending | Industry Average |
|   | 2024 |   | 2025 |   | 2026 |   | 2027 |   | 2028 | Ratios |
| **Liquidity Ratios** |   |   |   |   |   |   |   |   |   |   |
| Current Ratio | **17.94** |   | **7.08** |   | **3.09** |   | **1.94** |   | **3.95** | 1.84 |
| Quick Ratio | **17.37** |   | **6.21** |   | **1.73** |   | **0.41** |   | **2.23** | 1.12 |
| Operating Cycle | **75.19** |   | **48.79** |   | **41.31** |   | **42.45** |   | **37.68** | 244.15 |
| **Leverage Ratios** |   |   |   |   |   |   |   |   |   |   |
| Debt/Equity | **0.62** |   | **2.52** |   | **-10.02** |   | **-2.44** |   | **0.52** | 1.09 |
| Times Interest Earned | **-13.58** |   | **-11.80** |   | **-3.91** |   | **-1.53** |   | **25.89** | 2.72 |
| **Asset Management Ratios** |   |   |   |   |   |   |   |   |   |   |
| Inventory Turnover | **4.95** |   | **7.72** |   | **9.17** |   | **8.92** |   | **10.09** | 3.43 |
| Receivables Turnover | **240.00** |   | **240.00** |   | **240.00** |   | **240.00** |   | **240.00** | 2.56 |
| Fixed Asset Turnover | **2.94** |   | **12.19** |   | **45.67** |   | **117.89** |   | **1452.52** | 1.84 |
| **Profitability Ratios** |   |   |   |   |   |   |   |   |   |   |
| Gross Profit Margin | **-21.09%** |   | **22.31%** |   | **34.60%** |   | **32.72%** |   | **40.56%** | 31.91% |
| Operating Profit Margin | **-342.93%** |   | **-89.61%** |   | **-9.18%** |   | **-2.34%** |   | **18.78%** | 4.08% |
| Return on Assets | **-55.24%** |   | **-85.31%** |   | **-42.57%** |   | **-25.61%** |   | **62.45%** | 86.17% |
| **DuPont Analysis** |   |   |   |   |   |   |   |   |   |   |
| Net Profit Margin | **-368.18%** |   | **-97.20%** |   | **-11.52%** |   | **-3.86%** |   | **14.26%** | 3.48% |
| Total Asset Turnover | **0.15** |   | **0.88** |   | **3.69** |   | **6.63** |   | **4.38** | 0.63 |
| Equity Multiplier | **1.71** |   | **4.05** |   | **-12.85** |   | **-2.81** |   | **2.03** | 2.09 |
| Return on Equity | **-94.57%** |   | **-345.15%** |   | **547.00%** |   | **71.93%** |   | **126.72%** | 4.57% |

**Exhibit #16: Financial Analysis**

**Liquidity**

Our company maintains a current ratio above the industry average for all five years which means we are more liquid than our competition. Our Quick ratio is higher than the industry average but decreases as the years go on, meaning we are not holding a lot of inventory. Our operating cycle is higher than the industry average for the first 2 years because we are overproducing but from years 3-5 our operating cycle is lower than the industry average. (Bizminer, 2023|IBSWorld, 2023)

**Financial leverage**

The company has less debt than is typical for our industry. This shows that we have less debt and because of this, we will be seen as a less risky investment for people. Our times interest earned for the first 3 years we are below the industry average this shows that we have less operating income to cover our interest expenses which makes us a riskier investment. (Bizminer, 2023|IBSWorld, 2023)

**Asset management**

The company's inventory turnover for the first two years is lower than the industry average, which means we are holding onto to inventory for a longer period than our competition. However, in years three to five we have a higher inventory turnover because our demand increases. For our receivable turnover, we are higher than the industry average, which shows we are collecting receivables faster than our competitors and this shows we are likely to have better cash flow. Finally, for our fixed asset turnover, we are higher than the industry average, which shows we are using our fixed assets more efficiently. (Bizminer, 2023|IBSWorld, 2023)

**Profitability**

Our company’s gross profit margin exceeds the industry average for all years. This shows we are effectively managing our production costs and generating more sales from each sale. Our operating profit margin for the first two years is lower than the industry average. This shows in these years we have higher operating expenses than revenues compared to our industry. However, in year three through 5 our operating profit margin is higher. Our return on assets is lower than the industry average for all five years. This shows we are less efficient at generating profit from our assets compared to the industry average. (Bizminer, 2023|IBSWorld, 2023)

**DuPont Analysis**

Our company's net profit margin for the first three years is lower than the industry average and this shows higher expenses compared to our revenues, however in years four and five it is higher than the industry average. Our total asset turnover is lower than the industry average for the first year, however for years 2-5 we are higher, this shows we are using our assets better than our industry to generate revenue. Our equity multiplier for years 1,3,4 and 5 is lower than the industry average, which shows that we rely on less debt than our competitors, which shows we are a less risky investment. Our return to equity is lower than the industry average for the first two years in years 3-5 we are higher than the competition. This shows we are more efficient at generating profit from the equity invested by shareholders. (Bizminer, 2023|IBSWorld, 2023)

**Valuation method**

The valuation is based on the method of multiples using the price to sales ratio of the industry applied to the projected revenues. Our industry P/S average ratio is 0.60.

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**Section 5, Team 4**

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| --- | --- |
| A close-up of a person smiling  Description automatically generated | My name is Samantha Leech, and I am from Mclean, Virginia. I am currently majoring in Finance and minoring in Economics. In my free time, I enjoy going on walks and spending time with friends and family. |
|  A young person in a suit and tie  Description automatically generated | My name is James Hunt, and I am a Finance major from Long Island, New York. I love the outdoors, especially the beach. I am not sure exactly what I want to do yet, but I like working with numbers and I want to help people. |
| A person in a tuxedo smiling  Description automatically generated | My name is Jack Ludwin, and I am a Finance major from Richmond, Virginia. I enjoy skiing and playing sports with friends, and after college, my goal is to be a Financial Advisor.  |
| A child in a suit  Description automatically generated | My name is Justin Werzinger, I am a marketing major from Long Island, New York. I enjoy going golfing, and I like to spend time with my friends and family. I am interested in advertising and digital marketing  |
|  A person smiling for a picture  Description automatically generated | My name is Mackenzie Smith, and I am a Finance major from Burlington, New Jersey. In my free time, I like spending time outside, going to the gym, and hanging out with friends and family.  |
|  A person in a white shirt  Description automatically generated | My name is Sam Loeffler, and I am a CIS major from Fairfax, Virginia. I enjoy working with IT infrastructure, AI, as well as programming. |
| A person with long hair smiling  Description automatically generated  | My name is Jenna Leedy, and I am from Gettysburg, Pennsylvania. I am currently majoring in marketing and minoring in communication studies. Outside of school, I enjoy activities such as reading and painting.  |