

Owl

Executive Summary

When an individual experiences a catastrophic event that limits their mobility, they must learn to operate a wheelchair alongside the frustration that comes with losing their physical mobility. The learning process may be difficult and dangerous, involving damage to property, injury to loved ones, and a complete and utter loss of self-confidence. Staff in disability centers are available to make the process of learning to operate a wheelchair simpler and safer. Meetings with these staff can be frustrating to schedule, especially if no training centers are nearby.

Owl offers a convenient solution in the form of a virtual training simulator with orientation tracking and obstacle detection. This system, named “Train and Go”, communicates with a virtual reality headset that can be used to navigate a virtual environment and learn wheelchair operation. To guarantee the connection to the VR headset is consistent, Train and Go incorporates specific distance constraints tested during prototyping. The VR system is paired with an obstacle detection system that provides haptic feedback to ensure the user’s safety while operating the VR headset. This obstacle-detection system exceeded initial accuracy requirements to maintain the safety that is of utmost importance for Train and Go users. Train and Go is able to train its users and increase their confidence while helping them learn in a protected environment.

Train and Go translates a wheelchair’s motion into VR inputs using an inertial measurement unit. The wheelchair’s motion is captured using an inertial measurement unit. That motion is then formatted and sent to a VR headset using a microcontroller with on-board Bluetooth. Train and Go also keeps its user safe by notifying them of eminent collisions with walls, furniture, or pets via haptic feedback from a rumble motor. Train and Go’s object detection is implemented using ultrasonic sensors, which are controlled alongside the rumble motor using a separate microcontroller. The operation of these systems is visualized in Figure 1.

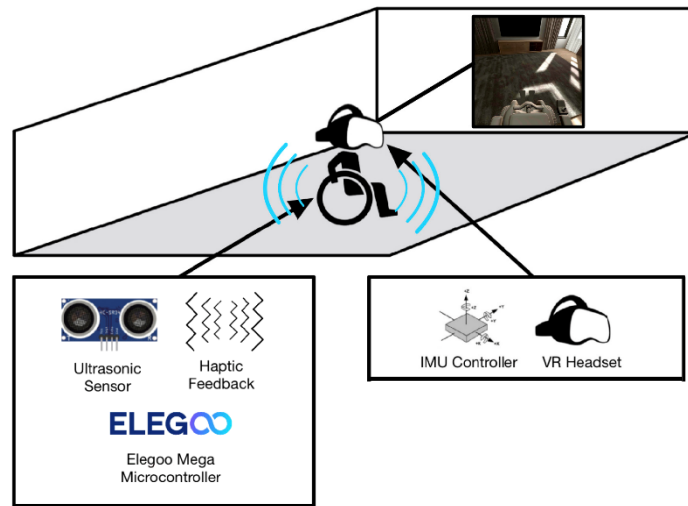


Figure 1. Train and Go Overview

Owl's goal is to help people with disabilities by providing them with a safe environment in which to practice using a power wheelchair through realistic scenarios. Train and Go empowers wheelchair operators with the skills they need in the real world through VR.

Objectives

Owl intends to meet the following objectives as operations begin:

- ☐ Sell 1,450 Train and Go units in the first year of operation.
- ☐ Establish a distribution network for Train and Go within two years.
- ☐ Achieve a clinician recommendation rate of at least 25% within five years.

Keys to Success

For Owl to succeed as a business, the following business details will be maintained:

- ☐ Prioritize medical professionals in marketing budget.
- ☐ Refine Train and Go based on medical professional feedback.
- ☐ Produce and sell Train and Go at a lower cost than our competitors.

1. Plan Overview

1.1 Mission

Owl is dedicated to flattening the learning curve associated with the operation of assistive technology experienced by the disabled community. Owl revolutionizes how people with disabilities learn to operate accessibility devices. Rather than relying solely on a limited number of specialized training facilities and the limited availability of their staff, Owl's products offer professional training with on-demand availability. Owl offers specialized training mediums that take advantage of advanced technologies to provide superior-quality training materials to its users.

1.2 Objectives

In the first year, Owl aims to sell 1,450 Train and Go units, which is a small fraction of the customer base as will be discussed in Section 4.1. This will provide a strong basis for business and allow an exponential increase in sales over the proceeding years.

Within two years, Owl would like to have a distribution network for Train and Go devices. Devices will need to be constructed, assembled, tested, and sent to end-users.

Within five years, Owl wants to increase the percentage of clinicians who recommend our services to 25%. This would help increase market share and name recognition for the business.

1.3 Keys to Success

One key to success for Owl is prioritization of medical professionals in our marketing budget. Meetings, presentations, pitches, and advertisements should be developed so that medical professionals realize that Owl products are valuable to the users they need to service and worth the cost Owl asks for them.

Another key to success is that Owl plans to work hand in hand with trained medical professionals to draw on their vast amounts of experience of what the users of Owl's products require. In collaboration with Mississippi State University's T.K. Martin Center, Owl's products can be used on a trial basis by individuals who would benefit from such a product to discover what design aspects require modification.

A final key to success is to maintain a smaller budget than competitors and sell Train and Go at a fraction of the cost. This will allow Owl products to be more appealing for users and insurance companies that may not be able to afford a \$5,000 system. This will also allow Owl to provide adequate aid to those who need it.

1.4 Competitive Advantage

Owl's Train and Go offers the ability to learn how to operate a wheelchair in a virtual environment. This feature prioritizes safety by allowing users to navigate obstacles that could pose a serious threat to their safety in the real world with no risk to user safety. The simulation is fully contained in a virtual reality headset, and only one controller is attached to the chair to make the simulation run. With this self-

contained design, Train and Go can be attached to any wheelchair. Additional sensors are added to the wheelchair to ensure safety while the user is operating the chair. The sensors provide 360-degree obstacle detection, and they notify the user of a potential obstacle in the room if they are about to run into it.

1.5 Target Market

People with physical and mental disabilities, as well as the medical professionals who serve them, are included in the product's target market. Owl's mission is to help people with disabilities starting with Train and Go. Anyone beginning their journey of learning to use a powered wheelchair can benefit from Train and Go. The product can be adjusted to meet each user's specific needs and can help improve confidence and competence during wheelchair operation. Medical professionals can promote the product as a necessary supplement to other wheelchair training materials as a means of helping minimize the risk of damaging property or equipment or harming others while learning how to operate a powered wheelchair.

1.6 Basic Strategies

Owl's strategy for funding and marketing is to travel to disability centers where our target market frequently visits and pitch Owl's mission. This allows Owl to have exposure that can spread through word of mouth before transitioning to online marketing. Disability centers can be reached through email and social media to schedule visits and distribute promotional samples of Train and Go. Owl's target market is limited to a specific community of people. Large-scale manufacturing facilities will not be needed. Owls has created a unique product that serves a purpose not yet satisfied by competitors and plans to expand with new ideas, reaching new markets.

2. Company Summary

2.1 Company Description

Owl is a Limited Liability Company founded by Garrett Bradshaw, Slade Hicks, Brandon Waldrup, and Kyler Smith. The company's product is the Train and Go. Owl is an equally split ownership between the four members, three of which are Electrical Engineers, and one is a Computer Engineer.

2.2 Company Location and Facilities

Owl is headquartered in Starkville, Mississippi. Owl operates out of an office housed in a building leased by one of the founders. The 800 square foot office space is where all product development and business planning meetings are held, and where all company work is performed. The office is leased for one year, after which a new office will be leased to house company operations. The office provides reliable and adequate access to wireless internet services, air conditioning, electricity, and plumbing which allow company operations to run smoothly and efficiently. This office is in Starkville, Mississippi in a central location that is easy for partners to access, but far enough away from downtown Starkville to avoid

frequent distraction or interruption. Owl will reevaluate our needs yearly to determine the working space best suited for the company.

2.3 Company Strategy

Owl aims to offer accessible, convenient, and effective training services for assistive technology. Before these devices are presented to investors, Owl would ensure that the products work as intended. To help build the Owl brand, Owl products will be available on a rental basis for clinicians that see fit to recommend our products to users. For a rental fee, we will ship our product to the user with the requirement that they send it back when training is complete. Owl intends to utilize the experience gained during the development of Train and Go to develop more technologies that expound on our company values. The company plans to schedule meetings and attend trade shows to promote our products.

2.4 Startup Costs

To launch Owl, several expenses must be paid to achieve initial goals. These expenses are detailed in Table 2.1.

Table 2.1. Startup Expenses

Category	Amount (USD)
Legal	\$125
Prototype Development	\$400
Initial Advertising	\$500
Research and Development	\$275
Monthly Recuring	\$1300
Other	\$400
Total	\$3000

The \$125 legal expenses listed in Table 2.1 cover the Mississippi LLC filing fees and the hiring of a registered agent for one calendar year. The \$400 prototype development expenses cover the cost of parts and labor for the initial prototyping of Train and Go. This prototype required 3D prints, electrical components, and an enclosure. The \$500 initial advertising budget covers the cost of gas, booking fees, and other costs associated with traveling. The \$275 research and development budget covers the cost of buying tools and materials for the research and development of new product lines. The monthly expenses budget is a single payment made out to the landlord of the office space Owl rents. The \$1200 covers the cost of rent and the power, water, sewer, and internet bills.

To satisfy these expenses, The founders of Owl each contributed a one-time payment of \$325 to make up \$1300 of the total \$3000 of the initial budget. The \$800 was put toward the cost of legal fees, research and development, initial advertising, and any other unforeseen expenses. Each founder of Owl also contributes \$325 a month for a total \$1300 to pay for rent and other utilities. The Electrical and Computer Engineering Department contributed the remaining \$400 towards the parts required for development of the original prototype Train and Go. This covers the expenses listed in Table 2.1 with a buffer for unforeseen expenses.

3. Product Summary

3.1 Product Description

Train and Go is the Owl's main product and is designed to allow its users to safely learn how to operate a power wheelchair. Train and Go allows users to practice difficult or risky maneuvers in a high-fidelity VR (Virtual Reality) environment to increase their real-world wheelchair operating skills. Train and Go interfaces with VR to present different environments and situations to the user. Train and Go is an attachable module that can be used on most wheelchairs. It can be attached easily in minutes using only a few common household tools. The main components of Train and Go are the main housing, external controller, and ultrasonic sensors. The main housing contains the circuitry, power supply, and microcontroller of Train and Go. The externally mounted controller tracks the wheelchair's position and transfers the information into the VR environment. The ultrasonic sensors and mounts allow Train and Go to notify its users of approaching obstacles to reduce the risk of injury during operation.

3.2 Customer Needs and Benefits

Owl's target customers are individuals with disabilities that are beginning to use a new assistive technology. One example of a target customer is an individual that has recently experienced a traumatic event like a car crash. That individual may have lost mobility in their legs and require a powered wheelchair. Owl Products benefit such individuals by offering a portable training regimen that is simple, enjoyable, and safe. Owl products can be shipped straight to the front door of its customers' homes. Providing this purchase option eliminates the hassle experienced by people with disabilities when

facilitating travel to and from their home and is also better than practicing at home without any assistance and potentially damaging their home.

3.3 Future Products

Our future products include various other assistive technologies. Owl has designed a prototype of a white cane that can assist its user by detecting objects from waist to eye level. Owl is also developing our own VR environments to interface with Train and Go. This allows Owl to create customized environments to better help its customers and enables new products to use these environments without additional licensing cost. Ultimately, Owl plans to branch out into other areas of assistive technology and help as many people as possible.

3.4 Competitive Comparison

A company called LUCI is the closest competitor of Owl. LUCI is also trying to help people with disabilities, but they are using a different approach than Owl. LUCI protects wheelchair users through a sensor array that can detect objects and prevent collisions by stopping the chair. With this method, the user is not fully in control of the wheelchair and is less capable of making mistakes. This can be a great feature under normal conditions, but there are some edge cases that the system does not account for. One of them being running over someone's toes or a small pet. This can also give wheelchair users a false sense of security in instances like these. Since Train and Go uses a VR environment, its users can make consequence-free mistakes to learn and improve their skills.

4. Market Summary

4.1 Market Analysis

The target market for Train and Go is people with disabilities learning to use electric wheelchairs. With Train and Go, Owl is attempting to enter the assistive technology industry. Due to Train and Go's purpose as assistive technology, Train and Go can be classified as a medical necessity for its users. This makes it possible for customers to purchase Train and Go using insurance by writing a letter of medical necessity to their insurance provider.

4.2 Marketing Strategy

Owl's primary marketing strategy for Train and Go will center around cultivating organic growth through the power of word-of-mouth referrals and expert endorsements. We recognize that building a reputation as a reliable and reputable service within our industry is paramount. By having industry professionals recommend and promote Train and Go, customers will have assurance in Train and Go's quality and performance.

4.3 Sales Projection

The United States Department of Transportation conducted the National Household Travel Survey in 2017 which estimates 2.9 million wheelchair users in the United States [1]. Each of these individuals may need to purchase a new wheelchair or better learn how to use their existing wheelchair and would thus benefit from using Train and Go. Projecting that Owl can converse with clinicians resulting in 0.05% of the population of wheelchair users purchasing Owl's product within the first year, Train and Go would have a first-year sales figure of 1,450 units. Assuming 10 new users per previous user each year given clinician influence, Figure 4.1 illustrates a three-year sales projection for Train and Go, resulting in 145,000 sales in the third year.

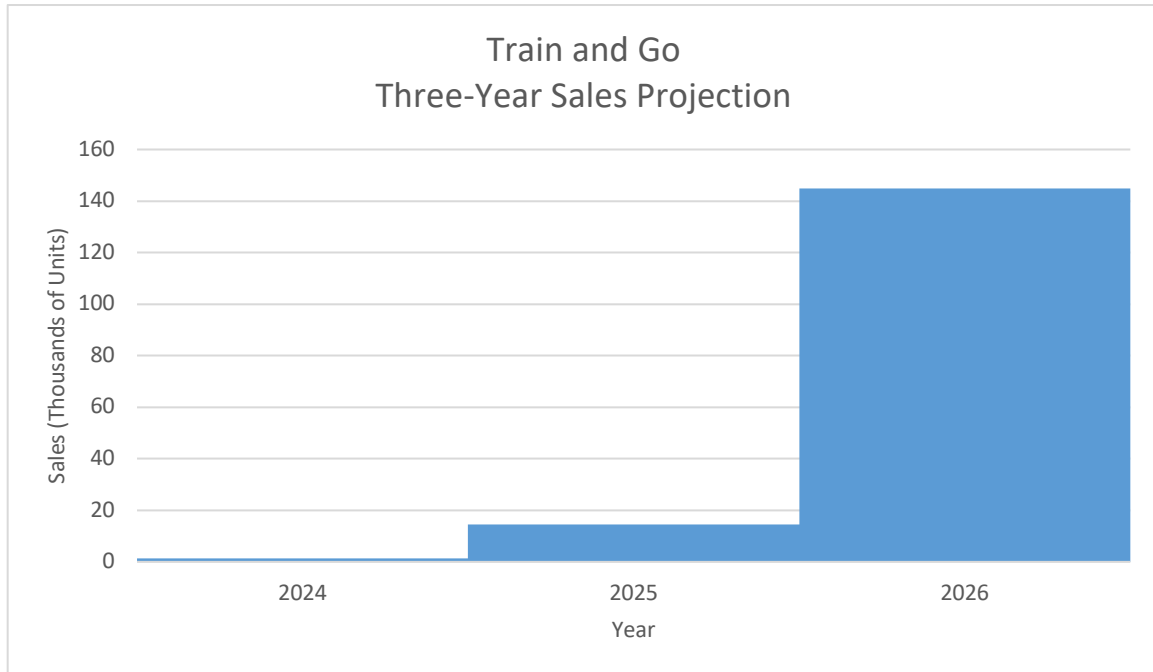


Figure 4.1 – Three-Year Sales Projection

Considering the three-year projected sales, the \$50 materials cost, and a \$20 labor cost per product, Train and Go's target market price is \$100 dollars. A price of \$100 leaves Owl with a 100% profit margin that can be reinvested into the company. Owl is projected to make \$145,000 in sales in its first year with an overall profit of over \$9000. Owl is projected to make \$145,000 in Sales in the second year with an overall profit of over \$84,000. Owl is projected to earn \$1,450,000 in sales in the third year with an overall profit of over \$3,000,000.

4.4 Manufacturing and Distribution Strategy

Train and Go will be made and packaged at the Owl corporate office. The assembly process will consist of soldering, wiring, final assembly, testing, and packaging stations. The soldering and wiring stations will provide a steady supply of sub-parts to the final assembly station. After leaving the final assembly station, the products will go to the testing station where their function will be verified. Any products that fail testing will be sent to the appropriate station for rework or to the scrap bin if rework is not possible. The products that pass testing will then go to the packaging station, where they will be made ready to ship. The products will then be shipped from the Starkville post office. For the first year, all executives will work on the floor. Since there are 5 stations, an additional worker will need to be hired. This production assistant will be paid \$14 an hour. If they do well, it is possible for them to be promoted to the role of production manager in

year 3. By the second year, all five stations will be manned by 2 hourly workers for a total of 11 employees on the floor. The first worker will be team leader and will be responsible for meeting production goals. By year 3, the original worker will be promoted to production manager, and each station will consist of a team of 5 for a total of 26 employees on the floor.

5. Organization Overview

5.1 Company Structure

Owl's board of directors consists of the CEO, CFO, COO, CSCO, and anyone appointed by the board including investors. The board of directors has full joint ownership of Owl. The board is tasked with overseeing corporate activities and judging performance. Members of the board must sign a noncompete and a nondisclosure agreement upon appointment. Figure 5.1 depicts the responsibilities of each member of the board of directors.

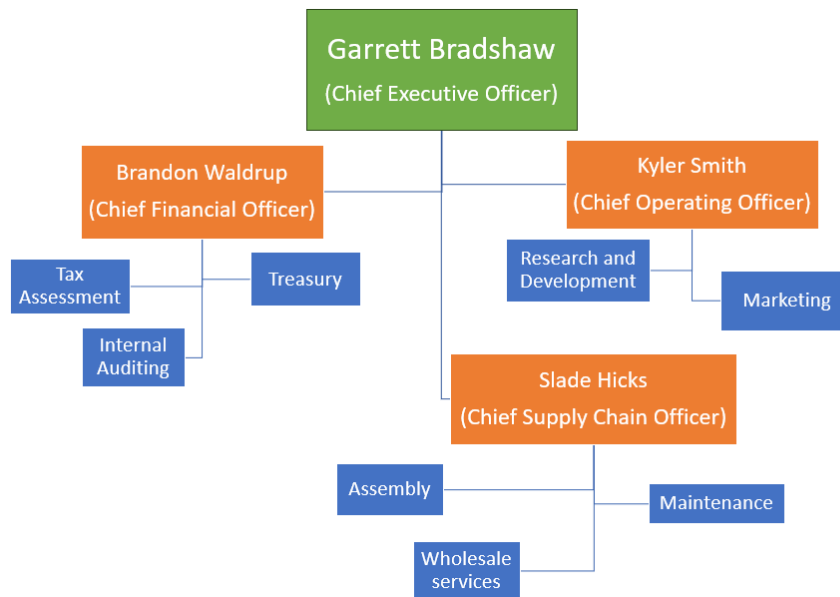


Figure 5.1 – Responsibilities of the Board of Directors

The Chief Executive Officer (CEO) is responsible for making major corporate decisions, managing overall operations, and setting the company's strategic direction. The Chief Financial Officer (CFO) is the financial controller who handles everything relating to cash flow, financial planning, and taxes. The Chief Operating Officer (COO) is tasked with overseeing the day-to-day administrative and operational functions of the business. The Chief Supply Chain Officer (CSCO) is responsible for overseeing and delivering value throughout the end-to-end supply chain operation of the organization. As part of the supply chain operation, the CSCO will oversee the production manager.

5.2 Personnel Plan

Owl's employee body consists of 4 directors and a group of production floor workers. These 4 directors each earn the same amount of money annually with pay increases as the company becomes more profitable. Profit earned from sales will be invested back into the company as assets to fund further production, innovation, and growth. The breakdown of payroll amounts is listed in Table 5.1.

Table 5.1 – Personnel Plan Breakdown

	Oct	Nov	Dec	2023	2024	2025
CEO	\$3,750.00	\$3,750.00	\$3,750.00	\$11,250.00	\$50,000.00	\$98,880.00
CFO	\$3,750.00	\$3,750.00	\$3,750.00	\$11,250.00	\$50,000.00	\$98,880.00
COO	\$3,750.00	\$3,750.00	\$3,750.00	\$11,250.00	\$50,000.00	\$98,880.00
CSCO	\$3,750.00	\$3,750.00	\$3,750.00	\$11,250.00	\$50,000.00	\$98,880.00
Floor	\$1,733.33	\$1,733.33	\$1,733.33	\$5,200.00	\$349,440.00	\$436,000.00
Subtotal	\$16,733.33	\$16,733.33	\$16,733.33	\$50,200.00	\$549,440.00	\$831,520.00

6. Financial Plan

6.1 Profit and Loss

The total sales revenue came from the number of projected sales multiplied by the cost per unit of Train and Go. The total sales were 1,450, 14,500, and 145,000 units for years one through three respectively. The cost per unit of Train and Go is \$100 with \$50 of that being material costs. The cost of rent for the Owl office building is \$1300 per month with utilities included. The cost of insurance is \$1000 a month for the first two years to protect the company up to \$2,000,000. For year three, the company will need insurance to protect the company up to at least \$20,000,000. This new insurance will cost \$5000 a month. Since the Owl offices are rented, there are no building maintenance expenses. Travel expenses cover travel expenses for trade shows or for assistive technology conventions. Advertising for Train and Go will primarily be word of mouth for the first two years, so the advertising budget does not need to be as big. The advertising budget will cover the cost of producing and shipping demo units that will be sent to clinics that do wheelchair fittings. This is so clinicians can let potential customers try Train and Go. Owl's bank charges a flat \$5 fee for accounts with less than \$250,000 and \$50 for accounts with more than that. Miscellaneous expenses include any unforeseen costs that may come up.

Table 6.1 – Profit and Loss Sheet

Type	Year 1	Year 2	Year 3
Sales	\$145,000.00	\$1,450,000.00	\$14,500,000.00
Materials	\$72,500.00	\$725,000.00	\$7,250,000.00
Wages Total	\$50,200.00	\$362,500.00	\$831,520.00
Subtotal	\$22,300.00	\$175,560.00	\$6,418,480.00
Gross Profit	\$22,300.00	\$175,560.00	\$6,418,480.00
Gross Profit (%)	30.76%	24.22%	88.53%
Expenses			
Recurring Salaries	\$0.00	\$0.00	\$0.00
Recurring Wages	\$0.00	\$0.00	\$0.00
Rent	\$3,900.00	\$15,600.00	\$15,600.00
Utilities	\$0.00	\$0.00	\$0.00
Insurance	\$3,000.00	\$12,000.00	\$60,000.00
Building Maintenance	\$0.00	\$0.00	\$0.00
Travel	\$1,000.00	\$10,000.00	\$100,000.00
Advertising	\$500.00	\$5,000.00	\$50,000.00
Bank Finance Charges	\$5.00	\$50.00	\$50.00
Capital Expenditure	\$0.00	\$0.00	\$0.00
Loan Payments	\$0.00	\$0.00	\$0.00
Miscellaneous	\$500.00	\$2,500.00	\$5,000.00
Total Operating Expenses	\$8,905.00	\$45,150.00	\$230,650.00
Operating Profit	\$0.00	\$0.00	\$0.00
Misc. Income	\$0.00	\$0.00	\$0.00
Net Profit (Before Tax)	\$13,395.00	\$130,410.00	\$6,187,830.00
Taxes	\$4,018.50	\$45,643.50	\$2,475,132.00
Net Profit (After Taxes)	\$9,376.50	\$84,766.50	\$3,712,698.00
Net Profit/Sales	6.47%	5.85%	25.60%

6.2 Projected Cash Flow

Table 6.2 – Projected Cash Flow Sheet

Income	Startup	Year 1	Year 2	Year 3
Sales	\$0.00	\$145,000.00	\$1,450,000.00	\$14,500,000.00
Capital Received/Loans	\$0.00	\$0.00	\$0.00	\$0.00
Other Income	\$3,000	\$0.00	\$0.00	\$0.00
Total Inflow	\$3,000.00	\$145,000.00	\$1,450,000.00	\$14,500,000.00
Expenses				
Materials	\$500.00	\$72,500.00	\$725,000.00	\$7,250,000.00
Salaries	\$0.00	\$50,200.00	\$362,500.00	\$831,520.00
Rent	\$1,300.00	\$3,900.00	\$15,600.00	\$15,600.00
Utilities	\$0.00	\$0.00	\$0.00	\$0.00
Insurance	\$0.00	\$3,000.00	\$12,000.00	\$60,000.00
Building Maintenance	\$0.00	\$0.00	\$0.00	\$0.00
Travel	\$0.00	\$1,000.00	\$10,000.00	\$100,000.00
Advertising	\$500.00	\$500.00	\$5,000.00	\$50,000.00
Bank Finance Charges	\$0.00	\$5.00	\$50.00	\$50.00
Capital Expenditure	\$0.00	\$0.00	\$0.00	\$0.00
Loan Payments	\$0.00	\$0.00	\$0.00	\$0.00
Miscellaneous	\$700.00	\$500.00	\$2,500.00	\$5,000.00
Total Outflow	\$3,000.00	\$81,405.00	\$770,150.00	\$7,480,650.00
Income Less Expenditure	\$3,000.00	\$131,605.00	\$1,132,650.00	\$8,312,170.00
Cash Balance	\$0.00	\$13,395.00	\$317,350.00	\$6,187,830.00

6.3 Projected Balance Sheet

Table 6.3 – Projected Balance Sheet

Income	Startup	Year 1	Year 2	Year 3
Sales	\$0.00	\$145,000.00	\$1,450,000.00	\$14,500,000.00
Capital Received/Loans	\$0.00	\$0.00	\$0.00	\$0.00
Other Income	\$3,000.00	\$0.00	\$0.00	\$0.00
Total Inflow	\$3,000.00	\$145,000.00	\$1,450,000.00	\$14,500,000.00
Expenses				
Materials	\$500.00	\$72,500.00	\$725,000.00	\$7,250,000.00
Salaries	\$0.00	\$50,200.00	\$362,500.00	\$831,520.00
Rent	\$1,300.00	\$3,900.00	\$15,600.00	\$15,600.00
Utilities	\$0.00	\$0.00	\$0.00	\$0.00
Insurance	\$3,000.00	\$3,000.00	\$12,000.00	\$60,000.00
Building Maintenance	\$0.00	\$0.00	\$0.00	\$0.00
Travel	\$1,000.00	\$1,000.00	\$10,000.00	\$100,000.00
Advertising	\$500.00	\$500.00	\$5,000.00	\$50,000.00
Bank Finance Charges	\$5.00	\$5.00	\$50.00	\$50.00
Capital Expenditure	\$0.00	\$0.00	\$0.00	\$0.00
Loan Payments	\$0.00	\$0.00	\$0.00	\$0.00
Miscellaneous	\$700.00	\$500.00	\$2,500.00	\$5,000.00
Total Outflow	\$3,000.00	\$81,405.00	\$770,150.00	\$7,480,650.00
Income Less Expenditure	\$3,000.00	\$81,405.00	\$770,150.00	\$7,480,650.00
Cash Balance	\$0.00	\$63,595.00	\$679,850.00	\$7,019,350.00

7. References

[1] “National Household Travel survey,” National Household Travel Survey, <https://nhts.ornl.gov/> (accessed Oct. 10, 2023).