



AFM 131 – 004

Group 2 Team 1

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0. EXECUTIVE SUMMARY

Volponics is a start-up that provides a unique, green alternative to gardening that protects the environment without sacrificing cost and convenience. The company will sell a high quality indoor gardening system which uses hydroponic technology. The sale of the product is scheduled to begin on January 21, 2018.

Market and Competitor Analysis

Market research forecasts an increase in the demand for indoor gardening among millennials. While Volponics faces several well-established competitors, there are nonetheless lucrative markets to explore since indoor growth units are in the introduction stage of the product life cycle. With low bargaining power of suppliers, Volponics provides a more appealing total product offer than competitors. Although Volponics currently offers a narrow product line, the company is considering educational workshops to enhance the indoor growth unit.

Marketing and Promotional Strategies

Volponics has identified Toronto as the best place to advertise to after research into the Canadian market considering changes in demographic, age, climate, values and accessibility. The product was tailored to meet the needs of the market: low maintenance, space conservative, visually appealing, eco-friendly, and able to produce high quality greens. The price was set low to compete with other products and appeal to consumers who are worried about the price. It will be mainly distributed online, and advertised through buzz marketing and a social media contest.

Operations Plan

Through detailed analysis of current options. The executive team is excited to bring forward a comprehensive outline of the different processes through which Volponics operates. In this section, we present a high-level outline of production workflow, supply chains, and methods of quality control. We also delve deep into equipment, assets, materials we require to succeed as well as potential operating issues and efficient inventory management.

Financial Needs

When examining the financial side of Volponics, we are able to see the monetary aspects of the business. This section provides us with start-up costs, sources of revenue, and any sources of external funding that can be received. Through a thorough analysis of this section, we are able to determine a forecasted income statement that indicates our level of prosperity. This outlines whether we will operate at a profit as we go from year to year.

Human Resources Plan

As the human resource department receives increased attention due to the scarcity of talented employees, we are planning to focus on employee recruitment to achieve the company's objectives. We will emphasize on treating employees equally and respectfully regardless of their positions. We will set rigorous guidelines and fair performance appraisals to evaluate employee contributions and achievements. Moreover, an ideal compensation plan and multitude of additional welfare programs will be implemented to encourage employee productivity and build up company loyalty among employees.

1. COMPANY BACKGROUND

Background

Volponics is dedicated to protecting the environment in a way that is beneficial for everyone. With the continuous trend of smaller housing, it is hard to be environmental friendly while caring for yourself and your family. That is why we at Volponics decided to revolutionize traditional gardening to better suit modern needs. By applying the state of the art hydroponic technology, Volponics allows users to grow an abundance of greens with little maintenance and at a faster rate than normal gardens. Not only is this method better for the environment, it also provides healthy and fresh greens without the need for dangerous chemicals.

Mission Statement

To provide a unique, green alternative to gardening for the everyday person. Volponics uses hydroponic technology to create an innovative system that uses less resources and work to provide the same amount of food. Users can enjoy the experience of growing the fresh greens

while reducing their carbon footprint. With Volponics, see that protecting the environment can be beneficial for you and the earth.

Vision Statement

By renewing the practice of growing food independently, Volponics aims create a culture in which the environment is cherished and protected for future generations. We hope to inspire people to be innovative and combine modern technology with common practices and find efficient solutions to products and services which sustain the environment without sacrificing cost and convenience.

Opportunity and Growth Potential

As a start-up in the thriving nursery market, Volponics has strong growth potential in attracting millennials and young families as well as in expanding to foreign markets. Volponics will experience an increase in demand, which is forecasted by indoor gardening's share of the nursery market growing 8.2 per cent in the past five years with expected growth of over 30 per cent in the next five years.^{1.1}

Millennial's increasing awareness of healthy diets will allow Volponics to maintain a steady level of interest among the target market throughout the year, evidenced by millennials' use of indoor gardening being expected to increase annually by 6.3 per cent until 2021.^{1.2} Volponics also effectively responds to the recently emerging demand for home-growth to ensure ingredients are GMO-free and fertilizers are environmentally-friendly by providing customers with knowledge of the growing process and convenient access to organic produce.^{1.4}

Volponics has a positive outlook in the nursery market with 65 per cent of millennials expressing interest in gardening workshops.^{1.4} Volponics will accommodate to this change in demand by introducing a new product line of home-gardening workshops to provide consumers with information on the uses of the different vegetables, herbs, and fruits.^{1.4} Workshops can also educate consumers on the benefits of indoor gardening, from relieving stress and increasing productivity to maintaining physical and mental well-being.^{1.4}

Volponics can explore new markets by offering national and international shipping as well as related accessories, such as seeds. Volponics can be successful in the foreign market by taking advantage of Canada's Free Trade Agreements such as the Trans-Pacific Partnership and

overcoming legal challenges associated with exporting. To be successful in the global market as a start-up, Volponics can also partner up with existing companies in the form of strategic alliances to establish itself as a strong competitor, with some partnerships being hotels and office buildings to offer people a sense of nature.

For increased financial stability, Volponics plans on partnering up with NASA on its Vegetable Production System, where NASA experiments with growing plants in space through grow lights, water, fertilizers, and clay.^{1,3} Indoor growth units using hydroponics presents the solution to the problem of extreme environment in space through LED lighting and circulated water system that provides sustainable plant growth. Volponics can alter its products in accordance with NASA's needs and requirements. Volponics will also explore partnerships with the government to promote healthy living and environmental friendliness, as the product allows households to grow organic produce and reduces pollution from commuting to grocery stores.

2. MARKET AND COMPETITOR ANALYSIS

SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> – Management team with well-respected backgrounds and diverse expertise – Location provides convenient access to suppliers, customers, and talent – Grant up to \$25,000 and funds from crowdfunding – Partnerships with firms and online-monitoring of consumer interest reduce asset investments and rent expenses – Low bargaining power of suppliers from partnering up with more than one supplier and creating contingency plans – Total product offer consists of safety features, aesthetic design, and customer service 	<ul style="list-style-type: none"> – Lack of brand recognition – Narrow product line – No patent to protect the product – Customers may experience difficulty understanding hydroponics and be hesitant to purchase the product – Challenges in securing market share due to several existing well-established competitors – Higher bargaining power of consumers to substitute Volponics' product with produce from grocery stores or with competing products

Opportunities	Threats
<ul style="list-style-type: none"> – Expected growth of indoor gardening by over 30 per cent^{1.1} and of millennials' use of indoor gardening units by 6.3 per cent until 2021^{1.2} – Explore geographical locations with growing populations and target people aged 18 to 40 – Free Trade Agreements facilitate entrance into the global market with access to additional revenue and cost reductions – New product line of educational workshops for free to retain old customers and attract new customers or at a cost to generate revenue 	<ul style="list-style-type: none"> – Changing legal environment of the app market – Not updating the product in accordance with improvements in technology may lead to obsolescence – Strong current and future competitors – Increased bargaining power of customers to substitute with competing products

3. MARKETING AND PROMOTIONAL STRATEGIES

Target Market and Market Segmentation

Geographic

Volponics' target market is located within large metropolitan cities, with the primary focus being Toronto. Our product provides the most for people who live in space-constricted housing with little to no outdoor space, such as apartments. Toronto has increased by 13.6% in apartment style renting while detached homes sales decreased by 7.6%^{3.1}; therefore, Toronto is trending towards urban living with little access to nature. Canada presents the ideal climate to promote year-round indoor gardening. The perfect temperature for growing vegetables is about 27 °C^{3.3} while the highest Toronto reaches is 25.5 °C^{3.2}. Temperatures also drops to freezing from December to February^{3.2}, so it is impossible to grow vegetables during these months. The harsh climate provides a greater incentive for consumers who want to garden year-round.

Demographic

Volponics' target market is people between ages of 18 to 40 living by themselves, with children or pets. Toronto had 690,340 families by 2011 which increased by 20,235 from 2006^{3.4}. About 4000 families per year^{3.4} provides a large growing market. Additionally, a report from TD

economics revealed that Toronto is seeing an influx of people born between 1972 and 1992, and that "These individuals and young families are choosing quicker commute times, proximity to amenities, workplaces and transit, locating themselves in the downtown."^{3.5} From 2006 to 2011, the suburbs faced a decline of 17.2% to 13.7%, while downtown incurred a massive growth up from 1.5% to 16.2%^{3.5}. From these numbers, there is a noticeable trend towards living in smaller housing areas for the sake of convenience.

Our target market holds two main values: protecting the environment and providing healthy food for themselves and their family. A study from 2015 based on global consumers reported that 81% of consumers were willing to take personal sacrifices to address social and environmental issues^{3.6}. A majority of people are willing to pay more money if the product addresses environmental issues. Secondly, over the years, research has indicated that pesticides and herbicides used in mass production farming is dangerous for the human body. In response, people are beginning to prefer natural organic foods. Stat Canada found that from 2005 to 2006, sales on organic food increased from 22% to 31%^{3.8}, which is exactly what our product provides.

Finally, we expect consumers to feel proud when they buy the product. Volponics lowers carbon emissions, does not harm the environment with pesticides and herbicides, and is more efficient. Growing food in close proximity does not require the use of planes or trucks to transport, and studies indicate that hydroponics requires 50% less land and 90% less water^{3.8}. All these factors prove that Volponics is more eco-friendly than buying food that has been imported from mass production farms. Thus, consumers will feel happy knowing that they are aiding the environment by reducing their carbon footprint.

Marketing Mix

Product

Consumers want a product that needs little space and low maintenance, and is energy efficient, family friendly, and eco-friendly. In accordance to these values, Volponics is 20 cm by 30 cm by 30 cm to be space efficient while producing twice as much compared to soil gardening^{3.8}. It minimizes complexity by requiring very little installation for the basic kit and providing consumers with a web application and an app that tracks plant growth with notifications for refilling the nutrient-based water and harvest times. It only uses LED lights and

grows plants that require temperatures close to room temperature^{3,9} to reduce electricity usage. To make the product safe for the family, there is an optional glass surface that prevents pets and children from touching and eating the plants. There are also no exposed wires or cords to create a smooth surface.

The main differentiating factor between Volponics and competitors is the emphasis on customer convenience. The product needs to be aesthetically attractive for consumers to display in their homes. Thus, it is designed to be sleek and modern in white and black. In order to tailor our product to individual consumers, customizability became a key feature. It can be placed on a surface or mounted to a wall and is a single tier system that allows for the growth of a wide variety of plants. These features allow consumers to easily integrate the product into their rooms.

Price

The product's total cost is \$30.00 with \$2.00 per plant. The market price was determined by using a demand-based pricing strategy to draw in more consumers. There are products in the market that are similar to ours, so by retailing a lower price, people who are hesitant to use indoor gardening will realize that there are fewer cost drawbacks when buying our product.

Place

When the company is starting, Volponics will be sold online. There will be a crowdfund that links to an online website where it can be pre-ordered. When the crowdfund ends, it will be sold on the company's website where facts about its benefits will be provided as well as on Amazon where many consumers can find it. Once the product gains traction, we plan on expanding to retail stores using selective distribution. Selective distribution is used to highlight the quality and allure of a product, which are the exact values we want our customers to feel^{3,10}.

Promotion

Volponics will be focusing on a pull marketing strategy. Advertisements in eco blogs, family sites, and appearances in trade shows will be used to find consumers who are passionate about our product. Eager users will provide word of mouth marketing to friends and colleagues, which will spread awareness and educate people about the benefits of this product. One of the company's large promotional campaigns will be a photo contest to gain media attention.

Consumers will post a picture of a room with the product, using different colours, LED lights, placements, and plants to create a creative and stunning display. Not only does the contest promote the product, it also gives users ideas on how to integrate the product into their home.

4. OPERATIONS PLAN

Volponics

Volponics leverages the most up to date hydroponics system to help customers grow their favourite garden plants indoors. Hydroponics^{4.1} is a subset of hydroculture: the method of growing plants without soil, using mineral nutrient solutions in a water solvent. Volponics supports roots by an inert medium called vermiculite. The nutrients in hydroponics can come from an array of different sources. Volponics selects only the best suppliers with which we will develop long-term relationships. The process is independent from the external environment as Volponics comes with its own LED lights and irrigation system to maximize customer convenience. To take this a step further, Volponics allows users to remotely monitor their plants through both a mobile and web application. Customers simply need to place the individual seed pods into the designated slots, and refill the water and nutrients periodically. As a bonus, we have designed Volponics to include as many replaceable parts as possible. Although we will lose some revenue from customers not replacing the entire products due to one failing part, the executive team believes that our customers satisfaction will increase, and consequently, our users would be more likely to provide positive feedback to friends and family when prompted.

Supply Chain

As the Volponics executive team, we have implemented a detailed plan for the manufacturing and assembly of our product. The requirements of our product consist of seeds, nutrients, vermiculite, irrigation, packaging, LED lighting, and assembly. We plan to contract credible firms with each of these necessities. As a startup, we value customer satisfaction and retention over reduction of costs. We strongly believe that the quality of our product will serve as a spark to create buzz and word of mouth advertisement among our user base.

Recently, a local Canadian company, Bayer^{4.2.1}, merged with the giant of the seed industry: Monsanto. We have negotiated a long-term contract with this firm for the various types of seeds and nutrients we will require. In order to leverage the best price and avoid total

dependence on one company, Volponics will also seek a partnership with the local Incredible Seed Company^{4.2.2}, who may offer better options for small business customers like us.

Vermiculite^{4.3} is a hydrous phyllosilicate mineral that helps support the roots of Volponics' homegrown plants. Not to be confused with soil, this mineral can be reused and helps with the aeration of plant roots rather than directly providing nutrients for the plants to absorb. We have taken advantage of the Canada-European Union to contract the German supplier Florapeat^{4.4} for these purposes. As a contingency plan, Volponics has negotiated with Vermeko^{4.5}, a less known vermiculite producer located in Poland.

Our irrigation requirements are quite miniscule. Due to this, Volponics has negotiated with a reputable Toronto firm, DJ Rain and Co^{4.6}, to implement both a sizeable water pump and an underlying structure through which water will be delivered. The executive team has planned for the worst-case scenario through a deal with our secondary supplier, TurfRain^{4.7}, who is also a local irrigation equipment provider.

The North American west coast is famous for indoor growing operations. Volponics has negotiated a contract with one firm that stands out as the most reputable LED lighting supplier: California Lightworks^{4.8}. Our secondary supplier is BC Northern Lights^{4.9}, a smaller but growing firm in Vancouver. The advantage of our secondary provider is reduced risk under the current indecisive state of NAFTA. If the trade agreement becomes detrimental to Canadian businesses, we are ensured another choice in the matter.

The executive team has designed both a web and a mobile application that can be used to remotely monitor and control Volponics. Due to the relative simplicity of the code required, we plan to hire a few co-op students from local universities who have experience with web, android, and iOS development or with related frameworks such as Django or Android Studios.

As a startup, we have decided to forgo our own assembly. Instead, Volponics will partner with Novy Assembly^{4.10}, an experienced firm located in Waterloo. Including prior contracts for mass production with large companies, Novy has partnered with smaller startup companies located in Waterloo and has experience with mass customization and smaller, more delicate production routines. The executive team will also consult with Hammond Manufacturing^{4.11} in order to leverage the best possible deal.

Risks and Potential Issues

Due to Volponics being a startup, we have less control than desired when obtaining materials from suppliers. In order to prevent overdependence on any one firm, Volponics always seeks to negotiate with secondary suppliers in every aspect to leverage the best deal possible.

Both vermiculite and the pods within which seeds for various plants will housed may present a choking hazard for small children. Volponics will clearly issue all warnings on both the packaging as well as the user's manual to emphasize this and any other potential hazards.

In the world of internet and software, it is inevitable that our web or mobile applications may fail, simply due to machine issues or other malicious entities. Volponics' Operations Manager, Felix, is an experienced web developer and is able to maintain our website if small errors occur. However, should a large system failure ensue, Volponics has negotiated with both Clear Software^{4.12.1} and NeuStyle Software^{4.12.2} from Waterloo for software solutions.

Inventory

Although Volponics prioritizes quality over reducing costs, we adamantly shave off all possible unnecessary spending. In accordance to our beliefs, Volponics will hold back on physical retail in the beginning phase. The executive team plans to closely monitor the variations in orders coming in daily to maintain a minimal quantity in our inventory. This allows us to reduce rent costs of maintaining a large physical space. To gauge our initial inventory, Volponics takes advantage of Kickstarter^{4.13} and Amazon's pre-order options^{4.14} to estimate consumer interest and demand. An inventory count is implemented at the end of each accounting period to ensure accuracy of information reported.

Distribution Channels

Due to reasoning mentioned in the Inventory section, Volponics will not be available in general retail but exclusively in our online store and Amazon.com for orders. We will ship our product through either UPS^{4.15} or FedEx^{4.16}, giving our customers the choice. The shipping price is included in the price of the product so that the extraneous prices are withheld from customers.

Quality Control

As a company geared towards providing gardening convenience for cramped families, Volponics understands and prioritizes the quality of our products. We will implement periodic

random sampling for incoming shipments to ensure that our suppliers and assembly partners are following the standards upon which we agreed. As statistically proven, this is the optimal method considering the cost to effectiveness ratio. In addition, Volponics will aim to become ISO 9001 certified^{4.17}, a certification program for quality control of small firms.

Location

Volponics is currently located in the startup incubator Velocity^{4.18}, hosted at the University of Waterloo. However, the executive team is in the midst of applications with Y-Combinator^{4.19}, a reputable startup incubator located in Silicon Valley. Failing that, we plan to move our office into Toronto, where we will be closer to many of our suppliers and customers. Toronto's unique location also allows the executive more access to talented university students who could provide priceless sources of innovation during potential internships.

Daily Processes

In the age of data and automation, Volponics is able to automate its delivery, ordering, and inventory as much as possible. In the time that is freed, we make data-driven decisions towards the future of the firm. In order for our just-in-time inventory system to be fully functional, executives must rigorously monitor short-term and long-term shifts in demand and orders placed. Volponics will adjust the quantity of supplies we will need from our reputable suppliers and assembly firms accordingly.

In addition, much of our initial efforts after launch will be towards research and development towards achieving greater independence from manufacturers. We plan to customize production to suit Volponics' customers' needs by limiting external input to raw materials. Areas of envisioned improvement include more effective lighting for different plants, alternatives to vermiculite, and increased storage time for pods. Volponics is looking to provide different sizes of our bases as well.

The executive team holds a meeting every other week to ensure that our firm's path is strictly aligned with our mission and vision. Volponics is constantly reevaluating itself in order to provide the best experience possible for our users.

Production

Volponics is able to start producing large quantities of our product as soon as we receive the necessary funds to complete orders with our business partners. The executive team will work closely with the assembly firm to ensure quality. Tools we will implement include both the GANT and PERT charts.

Feasibility

From rigorous surveys, online crowdfunding platforms such as Kickstarter^{4.20}, and online crowdsourcing consulting such as Chaordix^{4.21}, there is little doubt about the feasibility of Volponics. The executives seek to bring convenience to customers in an activity which humans have pursued since the dawn of civilization.

Studies^{4.22.1, 4.22.2} show that the average room of a rented apartment for \$1800 on the monthly comes to 758 square feet for Toronto, 824 square feet for Victoria, and as small as 475 square feet for Vancouver. Despite the shrinking living space, the trend towards going green is as strong as ever. There is a clear need for gardening solutions in cramped apartment spaces and Volponics aims to fill that gap.

Cost of Production

Cost for production per unit is bound by \$30. However, current research shows promise that Volponics will be able to reduce this price even further to maximize profit. In addition, individual seed pods can be produced at little under \$2 each depending on the specific plant.

5. FINANCIAL NEEDS

Sources of Funding

The first source of funding for Volponics is through the use of business incubators. Business incubators, such as Velocity and Greenhouse, are offering \$25,000 in grants to help new and growing businesses to become successful. When utilizing this resource, Volponics will have access to the space, services, and additional advice and support to become a prosperous business. Another source for securing funds that also showcases our business and products is crowdfunding, where we will set up a website platform for the general public to offer small contributions to aid in our business development. When financing Volponics, angel investors can

invest their own money into our business before the initial public offering, which is a process that will be conducted through the Canadian Investment Network. The last option to funding Volponics will be through debt financing, in which the company borrows money from lending institutions. Volponics may, however, have to pay interest on the principle amount, which adds an additional expense to the business.

Start Up Costs

There are certain costs associated with starting up Volponics. The costs that will be incurred at the beginning are website development, research and development, business registration, legal fees, and insurance. Volponics' fixed assets consist of office stationary, equipment, and furniture. Specific start-up costs can be found in appendix C.

Sources of Revenue

Volponics generates revenue from two sources: sale of hydroponics system and sale of replacement parts of the hydroponics system. Customers would first purchase the product and then during the year, will purchase replaceable parts of the hydroponics system. The purchases made by our customers during the year include seeds, nutrient, LED Grow lights, water pump, air pump, GH rainforest vortex, and induction light. The allocation of the sources of revenue can be found in appendix C. Our forecasted income statement in appendix C shows our level of profitability in the upcoming years and indicates whether we will be in business or not.

6. HUMAN RESOURCES PLAN

Key Roles and Responsibilities:

- Finance, as a key component of a start-up company, is mainly responsible for keeping track of the company's daily finance-related activities and reporting accurate financial statements to stakeholders, such as management, investors, creditors, and regulatory bodies.^{6.1}
 - Build close relationships with financial institutions and investors.^{6.1}
 - Maintain a cost-effective system.^{6.1}
 - Provide analyses on budgets, financial forecasts and economic trends.
 - Set limits on production costs and a target revenue to maximize profits.

- Operations monitors daily operational activities and maintains good relationships with employees to encourage maximum productivity by implementing work instructions.^{6.2}
 - Establish reasonable guidelines on performance appraisal with rewards and penalties based on the employee's actual performance and contributions.^{6.2}
 - Build supply chains by partnering with key suppliers and maintaining long-term business relationships to ensure reasonable production costs.
- Marketing is crucial to product development and requires the use of effective strategies to reach out to the market, build brand awareness and establish a positive brand reputation through promotions by collecting market information and analyzing market demands.^{6.7}
 - Satisfy customer needs and conduct customer relationship management.
 - Develop a creative and outstanding promotion plan.
 - Identify the stages of the product life cycle to create effective marketing plans with set annual goals.
 - Collect, organize and analyze products and promotion plans of competitors to attain a thorough understanding of the external environment.^{6.3}
- Human resources establish and implement rules for the recruitment process and staff usage to enhance the company's development. This role involves participation in all company recruitment decisions and setting an annual recruitment goal with policies that measure employees' performances to encourage increased work efficiency and quality.^{6.4}
 - List key roles and associated responsibilities within the company.
 - Plan short-term and long-term recruitment with job descriptions and analyses.^{6.4}
 - Implement reward and penalty policies and performance appraisal based on employees' performances and job contributions.^{6.8}
 - Provide appropriate training to help new employees develop key skills resulting in improved productivity.^{6.8}

Short-Term Recruiting Needs

- Co-op students: work as short-term employees, a role that requires a great deal of passion toward success, and must have the ability to remain optimistic under high pressure.

- A small group of people will be hired to promote the product; these employees need a thorough understanding of the market and promotion strategies as well as the culture, background and goals of the company.

Long-Term Recruiting Needs

- Corporate lawyer: aids the company in understanding legal rights, complying with corporate responsibilities and conducting contract negotiations while paying attention to business rules and legal regulations.^{6.5}
- Financial advisor: analyze the company's current financial situation, develop long-term business strategies, provide insightful suggestions on finance-related activities to maximize profits and establish the company as a stronger competitor in the market.^{6.6}
- Plant specialist: possesses knowledge on a wide range of plants in terms of characteristics, growth stages and functions, in addition to creativity and receptiveness to the latest innovations and technologies, and is able to help a company that primarily focuses on gardening products develop more types of plants for their indoor growth unit.

Company Regulations

- Salaries (for the first year):
 - Base salary for each co-founder is \$40,000
 - \$15/hour for co-op students
- Performance appraisal and staff relationship policies:
 - Work 8 hours per day; arriving between 7 to 9 a.m. and leaving between 3 to 5 p.m.
 - Overtime will be accounted for in the bonus
 - Employees will have one week paid leave per year
 - Bonuses will be determined through contribution and achievements
 - Penalties will be determined by the number of unethical and illegal actions conducted
 - Bi-weekly staff meetings that enable staff to get to know each other better through communicating with each other and annual mandatory employee training
 - Avoidance of insults and discrimination as well as cellphone usage during work time
 - Full understanding of company culture, goals and policies

7. WORKS CITED LIST

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8. APPENDICES

Appendix A: SWOT Analysis

The SWOT analysis was conducted by incorporating information from the environmental scan and Porter's Five Forces.

Strengths

Volponics is founded by a team of entrepreneurs with well-respected backgrounds and diverse expertise from Waterloo, ON, who will be able to efficiently develop the product and actively respond to customer needs. Volponics' potential locations of Silicon Valley and Toronto will allow convenient access to suppliers and customers as well as facilitate the securing of talent by recruiting students from prestigious universities.

The company's financial advantage of accessing up to \$25,000 in grant allows the company to immediately move forward into production and to quickly become a competitor in the indoor growth market. However, Volponics also explores crowdfunding through Kickstarter to obtain additional funds to finance development and production. As a start-up, Volponics is limiting the purchase of assets and reducing rent expense by forming partnerships with existing firms and monitoring consumer interests through Kickstarter and Amazon.

By partnering up with more than one credible supplier in the production of each individual part, Volponics will be able to lower the bargaining power of suppliers and subsequently provide customers with the product at all times at the lowest possible cost. With a contingency plan, Volponics will be able to respond to changes in suppliers and maintain the quality of service. With the potential to produce each growth unit under \$30 and individual seed pods under \$2, Volponics has a cost advantage in the market of indoor growth units. Due to having more flexibility regarding marketing and promotion strategies, Volponics is able to offer more attractive discounts.

As a company that values customer satisfaction, Volponics strength lies in its total product offer, including installation services, active communication through the Internet and phone calls, and customized recommendations in addition to the modernistic growth unit. Volponics product allows for a more diverse product line than its current competitors by offering an adjustable top that enables the growth of plants of different bases. Furthermore, the product is

child and pet-friendly due to its protective screen. Therefore, a high demand among families that focus on safety in addition to health benefits and aesthetics is expected.

Weaknesses

As a start-up, Volponics lacks brand recognition among consumers, and may experience difficulties attracting customers. Since Volponics only has one product line, a weakness lies in the product line being too narrow, which limits consumer choice. As Volponics has not yet applied for patents to protect its product, the technology is at risk of being stolen by other firms looking to create indoor growth units.

Since the hydroponic systems of plant growth is a relatively new concept to consumers, some may have difficulty understanding the technology and subsequently be hesitant to purchase a product from a start-up company. With several well-established competitors in the market (please see table 1 in appendix A), Volponics will encounter challenges in securing market share upon the initial entrance. Therefore, Volponics is at risk of consumers having high bargaining power due to potential substitution with produce from grocery stores or with indoor growth units of other companies.

Opportunities

As a product in the introduction stage of the product life cycle, indoor gardening's share of the nursery market is expected to grow by over 30 per cent in the next five years.^{1.1} With a forecasted increase in millennials' use of indoor growth units of 6.3 per cent every year until 2021, the market's needs are changing and the demand for Volponics' products among the target market is expected to rise.^{1.2} These statistics suggest a positive future for Volponics with vast opportunities to secure customers aged 18 to 40 in geographical locations with growing populations.

Volponics will be taking advantage of Canada's Free Trade Agreements such as the Trans-Pacific Partnership as a medium to begin its entrance into the global market. Participating in the global market will help provide Volponics with access to new customers and suppliers, allowing Volponics to secure additional revenue and reduce costs through foreign contractors.

With 65 per cent of the target market interested in gardening workshops, a new product line Volponics can explore is workshops that educate consumers on the different uses of each

plant and the benefits of indoor gardening. The workshops can be either free to retain old customers and attract new customers or at a cost to generate additional revenue.

Threats

Since the total product offer includes a mobile app, the app is at risk of the changing legal environment of the app market. Therefore, Volponics must be constantly aware of and abide by the strict rules of the Apple Store to allow customers continuous access to the app. Some rules include protecting users from physical and psychological harm; being compatible with both hardware and software; providing easily understandable the functions and payment options; featuring original and navigable user interface; and complying with local laws as well as protecting customer privacy.^{2,1}

As a start-up focused on innovations, Volponics must actively respond to improvements in technological research and update its product line to remain competitive in the indoor growth market. In addition to the established companies with experience in this market, Volponics is also competing against companies that have either recently delivered products to customers or will be shipping out products in the upcoming year. With each company's product lines offering slightly different features, the bargaining power of customers is increased to place Volponics at risk of being substituted by the competition. However, the threat of potential competitors is mitigated due to the significant amount of research and costs associated with producing indoor growth units, which would be a challenge for new firms that may not have the grants to conduct the necessary operating processes.

Appendix A: Competitor Comparison

Table 1

Current competitors of Volponics with analysis of the location of the company, price of the growth unit corresponding to the maximum number of plants that can be grown, types of acceptable seeds, and the operating features.

Company Name	Location	Price (USD)	Plants/ Unit	Seed Options	System and Features
Super Closet	USA ^{2.3}	\$274.95 ^{2.7}	8 ^{2.7}	Vegetables; Fruits; Flowers ^{2.3}	No mobile app; Hydroponic system with automated air and water pump; ^{2.3} No LED lighting ^{2.7}
		\$349.95 - \$399.95 ^{2.7}	16 ^{2.7}		
		\$399.95 - \$449.95 ^{2.7}	12 ^{2.7}		
IKEA	United Kingdom ^{2.9}	\$82.7 ^{2.9}	8 ^{2.9}	Vegetables; Herbs ^{2.8}	No mobile app; Hydroponic system; LED lighting ^{2.9}
		\$131.66 ^{2.9}	16 ^{2.9}		
Click & Grow	USA; Estonia ^{2.10}	\$59.95 ^{2.13}	1 ^{2.13}	Vegetables; Herbs; Fruits ^{2.10}	No mobile app; Hydroponic system with automated circulation of water and nutrients; LED lighting ^{2.10}
		\$99.95 ^{2.14}	3 ^{2.14}		
		\$199 ^{2.15}	9 ^{2.15}		
Niwa	United Kingdom ^{2.12}	\$375 ^{2.12}	6 ^{2.12}	Vegetables; Herbs; Fruits; Flowers ^{2.12}	Mobile app monitors growth and regulates environment; Hydroponic system with automated circulation of water and air as well as control of temperature, light, and humidity ^{2.10}

Table 2

Future competitors of Volponics with analysis of the location of the company, amount of time involved in the industry, maximum number of plants that can be grown, types of acceptable seeds, and the operating features.

Company Name	Location	Timeline	Plants/ Unit	Seed Options	Systems and Features
Grow Chef	Estonia ^{2.5}	Oct. 2014 (Idea) – Mar. 2018 (Shipping) ^{2.4}	51 ^{2.2}	Vegetables; Herbs; Fruits ^{2.4}	Mobile app monitors growth; Hydroponic system that provides at least one bush of herbs every day; Circulation of water with liquid aeration system; ^{2.4} LED lighting of three colours ^{2.2}
Herbert	Germany ^{2.6}	Apr. 2015 (Idea) – Oct. 2017 (Shipping) ^{2.6}	15 ^{2.6}	Vegetables; Herbs ^{2.6}	Mobile app controls LED lights and offers vacation mode; Hydroponic system that provides 40% more efficiency than traditional farming ^{2.6}
Nectar Smart Garden	USA; Estonia ^{2.11}	2015 (Idea) – 2018 (Production) ^{2.11}	4 ^{2.11}	Vegetables; Herbs; Fruits ^{2.11}	Mobile app monitors growth with estimates on yield; Hydroponic and machine learning systems;

					Automated temperature, humidity, pH level, and LED lighting adjustments ^{2.11}
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Appendix B: Operating Assets

Equipment Required

- Miscellaneous Cloud Utilities
 - Amazon Web Service
 - Microsoft Azure
- Office Stationery
 - Desks
 - Paper
 - Printer
 - Pen/pencil/eraser/ink/etc.
 - Coffee/snacks

Assets

- Inventory
 - Prototype products ready to be mass produced
- Furniture
 - Couches
 - Chairs
 - Tables
- Equipment
 - Printer
 - Computers

Appendix C: Financial Statements

Forecasted Income Statement

	2017	2018	2019	2020
Revenue (Note 1)	\$435,600	\$435,600	\$435,600	\$435,600
Costs of Goods Sold (Note 2)	\$30,000	\$30,000	\$30,000	\$30,000
Gross Profit (Note 3)	\$405,600	\$405,600	\$405,600	\$405,600
Operating Expenses				
Advertising (Note 4)	\$43,560	\$43,560	\$43,560	\$43,560
Research & Development (Note 5)	\$87,120	\$87,120	\$87,120	\$87,120
Insurance (Note 6)	\$7,405.20	\$7,405.20	\$7,405.20	\$7,405.20
Website development (Note 7)	\$1,100	\$600	\$600	\$600
Salary (Note 8)	\$223,000	\$223,000	\$223,000	\$223,000
Shipping/Delivery (Note 9)	\$3,484.80	\$3,484.80	\$3,484.80	\$3,484.80
Business registration (Note 10)	\$86	\$60	\$60	\$60
Legal Fees (Note 11)	\$1,655.28	\$1,655.28	\$1,655.28	\$1,655.28
Miscellaneous Expense (Note 12)	\$176.16	\$176.16	\$176.16	\$176.16
Interest (Note 13)	\$14,091	\$14,091	\$14,091	\$14,091
Total Operating Expense	\$381,678.44	\$381,152.44	\$381,152.44	\$381,152.44
Income before tax (Note 14)	\$23,921.56	\$24,447.56	\$24,447.56	\$24,447.56
Income after tax (Note 15)	\$21,170.59	\$21,636.10	\$21,636.10	\$21,636.10

Notes to the income statement:

1. Total revenue earned by our business is the addition of our 2 sources of revenue. Our projected number of customers per year is 1000 and our price per unit is \$150. As a result, revenue collected from the first source is \$150,000 ($\150×1000). Our second source of income is coming from the sale of replaceable parts and the price of each can be found in the sources of revenue section of the appendix. Total revenue earned from the sale of the replaceable parts are \$285,600. Therefore, our total revenue earned in a year is \$435,600 ($\$150,000 + \$285,600$).
2. The cost of goods sold is the amount we spent on acquiring the inventory for selling purposes. The cost per unit is \$30 and is mentioned in the operations plan. The cost of goods sold is calculated by multiplying the projected number of customers per year by the cost per unit ($\$30 \times 1000 = \$30,000$).
3. Gross profit is calculated by subtracting cost of goods sold from revenue ($\$435,600 - \$30,000 = \$405,600$).

4. Advertising is calculated by allocating 10% from our net revenue ($0.1 \times \$435,600 = \$43,560$). We are using 10% of our net revenue for advertising because that is an ideal amount for a new, growing business.^{5.1}
5. Research and Development cost is calculated by allocating 20% of net revenue ($0.2 \times 485,600 = \$87,120$).
6. Insurance expense is calculated by allocating 1.7% of our net revenue ($0.017 \times \$435,600 = \$7,405.20$). Insurance includes liability insurance, premium insurance, etc. This percentage is taken from the statistics presented by the Government of Canada.^{5.2}
7. Website development cost per year is calculated by multiplying the number of months by the cost per month. ($\$50 \times 12 = \600). However, in the first year, a set-up fee of \$500 is needed. Therefore, the first year will have a website development cost of \$1,100, and the years after that will be \$600.^{5.3}
8. Salaries expense per year will be \$223,000 and is elaborated in more detail in the human resources plan.
9. Shipping and delivery expense is calculated by allocating 0.8% of the net revenue ($0.008 \times \$435,600 = \$3,484.80$). These expenses include the expenses for delivery, shipping, and distribution services used by Volponics. This percentage is taken from the statistics presented by the Government of Canada.^{5.2}
10. In the first year, to register our business, Service Canada charges a maximum of \$86. In the later years, a renewal fee of \$60 is needed.^{5.4}
11. Legal Fees is calculated by allocating 0.38% of total revenue ($0.0038 \times \$435,600 = \$1,655.28$). This percentage is taken from the average spending on legal services by small businesses.^{5.5}
12. Miscellaneous expense includes expenditure on Amazon Web Service and Microsoft Azure. Amazon Web Service per year costs \$36^{5.6} and Microsoft Azure per year costs \$140.16.^{5.10} Therefore total miscellaneous expense is \$176.16 ($\$36 + \140.16).
13. Interest expense is calculated using the loan calculator. Since the start-up cost is high, around \$50,000 will be collected using borrowed money from lending institutions. The interest expense for a year with a loan term of 4 years and an interest rate of 6% will be \$14,091.^{5.9}
14. Income before tax is calculated by subtracting total operating expense from gross profit.

15. Income tax in Ontario is 11.5%.^{5.7} For the first year, the income after tax is \$21,170.59 (\$23,921.56 — \$2750.97). For the years afterwards, the income after tax is \$21,636.10 (\$24,447.56 — \$2,811.46).

Start Up Costs

Start-up costs		
Website development		\$1,100
Business registration		\$86
Legal Fees		\$1,655.28
Insurance		\$7,405.20
Research and Development		\$87,120
Total start-up costs		\$97,366.48

Sources of Revenue

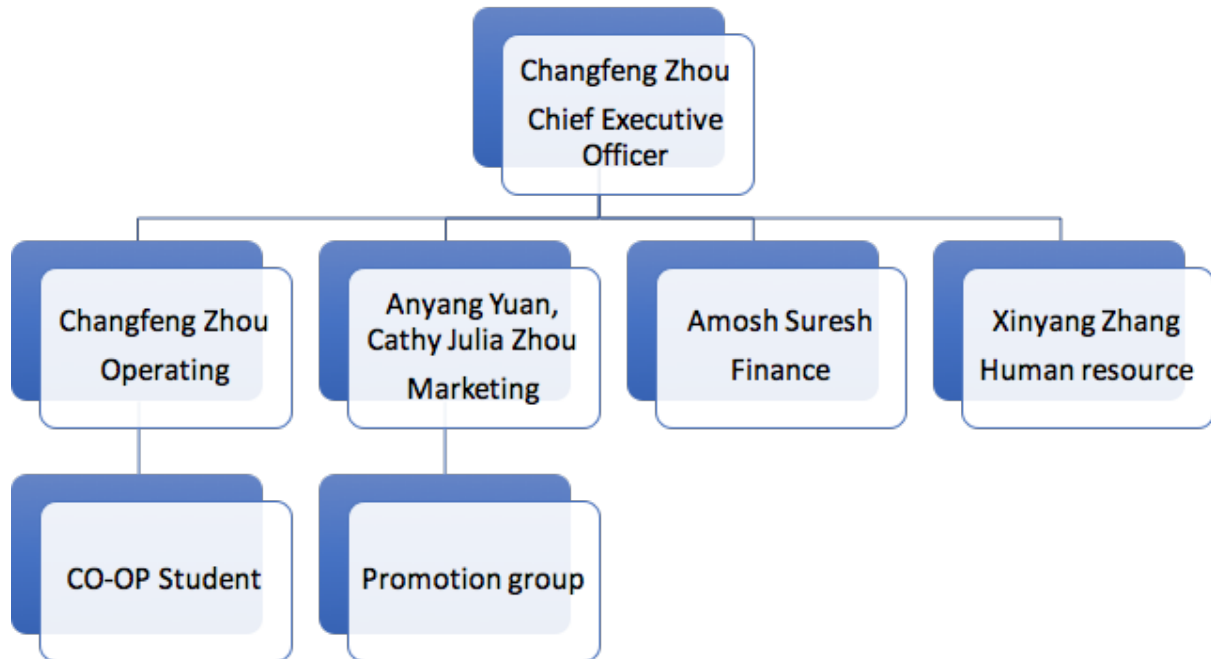
Sources of Revenue		
Sale of hydroponic system		\$150,000
Sale of replaceable parts		
Nutrients	\$124.80	
LED Grow lights	\$39.48	
Water pump	\$11.16	
Air pump	\$13.56	
GH Rainforest vortex	\$9	
Induction lights	\$87.60	
Total sale of replaceable parts		\$285,600
Total Revenue		\$435,600

Amounts are under the assumption that the power of the set-up is at 8.7 p/kwh.^{5.8}

Appendix D: Organization Chart

Figure 1

Organization chart that shows management positions and short-term recruiting needs with an outline of each executive's role.



Group Assignment Checklist

Please read the checklist below following the completion of your group assignment. Once you have verified these points, hand in this signed checklist with your group assignment.

1. All team members have referenced and footnoted all ideas, words or other intellectual property from other sources used in the completion of this assignment.
2. A proper bibliography has been included, which includes acknowledgement of all sources used to complete this assignment.
3. This is the first time that any member of the group has submitted this assignment or essay (either partially or entirely) for academic evaluation.
4. Each member of the group has read the full content of the submission and is assured that the content is free of violations of academic integrity. Group discussions regarding the importance of academic integrity have taken place.
5. Each student has identified his or her individual contribution to the work submitted such that if violations of academic integrity are suspected, then the student primarily responsible for the violations may be identified. Note that in this case the remainder of the team may also be subject to disciplinary action.

Course: _____ **AFM 131/ARBUS 101** _____

Assignment: _____ **Team Assignment** _____

Date: _____ **Fri. Nov. 24, 2017** _____

Name	ID	Section(s) Contributed	Section(s) Edited
Amosh Suresh	20723911	Financial Needs; Executive Summary; Appendices	Company Background
Anyang Yuan	20720738	Opportunity and Growth Potential; Marketing and Competitor Analysis; Executive Summary; Compiling	Human Resources Plan
Cathy Julia Zhou	20715770	Problem, Vision, and Mission Statements; Marketing and Promotional Strategies; Executive Summary; Compiling	Operations Plan
Chang Feng Zhou	20718772	Operations Plan; Executive Summary; Citations	Financial Needs
Xinyang Zhang	20724782	Human Resources Plan; Executive Summary	Marketing and Competitor Analysis; Marketing and Promotional Strategies