

Part 1. Cover Page with Elevator Pitch

Miss Alyssa L. Smith

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SwingMax, Volleyball Training Device for Players to Improve Skills Outside of Team Practices
Business Plan

The *SwingMax* is an easy-to-use and convenient volleyball training device that can be used with one or more players. The *SwingMax* can be used to practice volleyball skills such as hitting, passing, and setting. For a fraction of the cost of competitors, the *SwingMax* delivers with its durability and effectiveness to improve players skillset.

Part 2. Executive Summary:

The *SwingMax* is a volleyball training device that comes in a variety of color combinations and allows for volleyball players to practice multiple skills. The *SwingMax* rests inside of the rim and netting of a basketball hoop. The height of the *SwingMax* can be adjusted by adjusting the height of the basketball hoop and how the device rests in the netting. A volleyball is passed or set into the *SwingMax* where it filters through the base and is caught by the arms of the device. The volleyball is held in the cushioned part of the arms and is ready to be hit. Hitting is just one of the skills that can be practiced by working on the players skillset that goes into hitting such as an approach, jumping on top of the volleyball, swinging all the way through, snapping their wrist, and making a good connection with the volleyball and the palm of their hand. Volleyball players can also work on precision and accuracy by passing and setting the volleyball into the *SwingMax* device. The *SwingMax* provides convenience to busy athletes lives by allowing the player to practice the various skills whenever they would like because it can be used with only one person. However, the *SwingMax* can also be used with multiple people. By having multiple players practice with the *SwingMax* at one time, one player will hit the volleyball and another player will pass or set that volleyball up. The *SwingMax* maximizes the uses while minimizing the cost.

Part 3. Problem Summary and Proposed Solution:

Practicing volleyball drills solo can be difficult if a player wants to work on specific skills. It is difficult to practice alone at home if a player wants to improve on hitting and other skills like passing and setting with precision and accuracy because the player does not have someone to set the volleyball up for them or the player does not have anything to target with the volleyball. Working on hitting, even with a friend, is difficult because the volleyball is not going to be set up where it is needed every time. In the market, there is not an affordable option that is practical and easy to set up, take down, and store in and out of volleyball season. All volleyball players who want to work on their skillset of hitting by working on their approach, jumping on top of the volleyball, swinging all the way through, snapping their wrist, and making a good connection with the volleyball and the palm of their hand face this problem when wanting to practice outside of team practices.

With the *SwingMax*, however, this is no longer a struggle. The *SwingMax* is a portable easy-to-use device that holds a volleyball in place at hitting height, allowing the player to work on getting the best swing possible and more. In order to hit a volleyball correctly and effectively, the player must do multiple skills back to back. The hitting skills are all skills that can be worked on by using the *SwingMax*. An approach is when the player takes steps toward the volleyball when it is in the air to give the player momentum. With this momentum, the player jumps and pulls themselves to be as high in the air as possible. When the player is in the air, they start their swing by taking their dominate arm towards the volleyball and not stopping the motion when there is a connection with the volleyball. When the palm makes connection with the volleyball, the wrist should snap causing the volleyball to go down towards the ground when combined with swinging all the way through (see

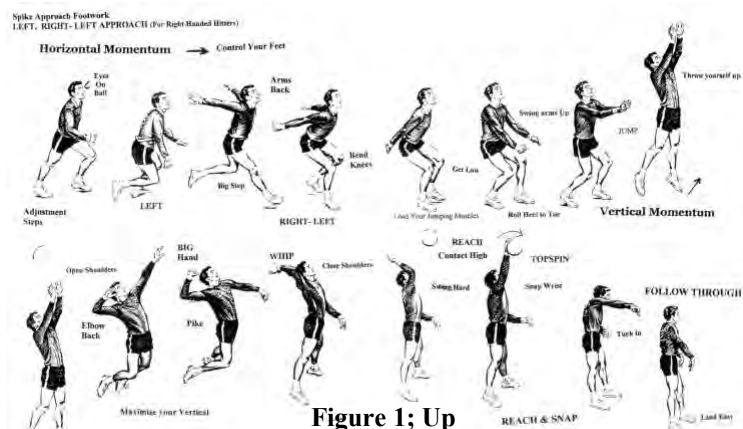


Figure 1; Up
This diagram demonstrates how to properly go through the motions of an approach, jumping, swinging the arm, snapping the wrist, and making a connection with the volleyball and the palm of the hand (Sports and Collectibles).

Figure 1). The *SwingMax* is used to practice with all of the skills that go into hitting by allowing for fast repetition of hitting a volleyball to happen easily without a setter needed to set the volleyball in the air with their hands.

The *SwingMax* is a bucket with the bottom cut out that has four arms extending from the bottom of the bucket, which are cushioned, and the arms will hold the volleyball in place as it filters through the bucket. These are cushioned so that the volleyball is still being held but it is not squished or making the volleyball harder to hit. The *SwingMax* is placed inside of the rim and netting of a basketball hoop (see Figure 2). The *SwingMax* fits in the standard basketball rim. Basketball hoops that are adjustable are the best for players to use so that way the player can adjust the height of the volleyball to be exactly where they want to practice hitting at. However, the height of the *SwingMax* can still be adjusted by where the device is in the netting, but the adjustable basketball hoop gives a bigger range of heights. There are different positions and heights that players like the volleyball set to. The main ones are called 5, 1, and 2: A 5 gets set to the outside hitter, 1 is a low set that goes to the middle hitter, and a 2 gets set to the middle hitter but it is a higher set than the 1 (see Figure 3). The *SwingMax* accommodates for this by using the basketball hoop to adjust for height of players and height of sets. The *SwingMax* is placed inside of a basketball hoop, inside of the rim and through the netting, and can be easily taken out of the hoop whenever the player wants to switch back to playing basketball, making it universal for multi-sport athletes. With the *SwingMax*, not only is the player improving on the skills to hit properly, they are also working on accuracy with passing and setting by using the *SwingMax* to pass the volleyball up with their forearms or to set the volleyball up with their hands into the bucket (see Figure 4). Maximizing the uses and minimizing the price is what the *SwingMax* does best.

Part 4. Summarize the STEM Concepts and Principles Underlying the Overall Plan:

The *SwingMax* uses the STEM concepts of science, engineering, and math. The *SwingMax* uses science with the laws of physics, math with the dimensions and the angles used to put the *SwingMax* together, and engineering with how it is put together using the math dimensions; making engineering and math closely related in the production of this device. Physics is used in the *SwingMax* device when it is in use. Newton's first law in his Law of Motions states that an object in motion will stay in motion unless another force acts upon the object in motion (Newton's Three Laws of Motion). Consequently, this means that if an object is at rest it will remain at rest unless another force acts upon the object. This



Figure 2; Up

These pictures show the *SwingMax* in an adjustable basketball hoop. The picture to the left shows the *SwingMax* from the front and the picture to the right is a side view.

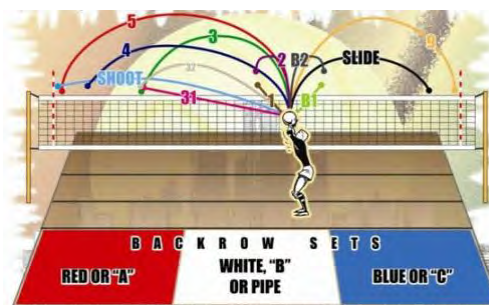


Figure 3; Up

This diagram shows the position in the air a setter will set a volleyball to (Understanding Set Numbers).



Figure 4; Up

These pictures show a 5'2" volleyball player setting (to the left) and passing (to the right) a volleyball into the *SwingMax*.

law applies to the *SwingMax* because when a volleyball is put into the device, the volleyball stays in the device until it is hit by someone practicing. Newton's third law comes into play when the volleyball is being hit. Newton's third law states that for every action there is a reaction that is equal and opposite to the original action (Newton's Three Laws of Motion). This is shown with the *SwingMax* when a player hits the volleyball that is resting, and their hand forces the volleyball out of the arms of the device. The action in this scenario is the volleyball hitting the hand, and the reaction is the volleyball going out of the device and towards the ground.

Math and engineering go hand in hand in the production of the *SwingMax*. The math is what makes the engineering work for this device because the math determines where everything goes when constructing the device. With the *SwingMax* device, the bottom of the bucket, or the base, has a diameter of 25.7 cm (10.1 in) and the top of the base has a diameter of 30.2 cm (11.9 in). The height of the base is 27.9 cm (11 in). The EMT Conduit is originally 304.8 cm (10 ft or 120 in) long with a diameter of 1.3 cm (0.5 in) but will be cut down to make the arms for the *SwingMax*. Each arm is 37.5 cm (14.75 in) long with the top 5.1 cm (2 in) of each arm flattened. The two holes on each arm are 0.6 cm (0.25 in) apart and 0.8 cm (0.3125 in) from the top of the arm. The holes on the base are each 3.8cm (1.5 in) away from the center and are directly across from each other on both sides of the base making a total of four holes on each side of the base. The arms are going in at a 20-degree angle to hold the volleyball in place. The pool noodles that are originally 139.7 cm (55 in) long will get cut down to four 6.4 cm (2.5 in) pieces (see Figure 5).

Engineering is used for how the *SwingMax* is constructed. To produce one *SwingMax* device, it takes about 20 minutes. To start out, the bottom of a 5-gallon bucket is cut off using an air body saw powered by an air compressor. The arms are made next by taking EMT Conduit and cutting it down using a die grinder with a cutting wheel to make the four arms. The top 5.08 cm (2 in) of each arm is then flattened using a press. Two holes that are 0.79 cm (0.3125 in) from the top of the arm and are 0.64 cm (0.25 of in) apart are drilled using a power drill with a 21/64" drill bit. This is done to the four arms of each device. A total of 8 holes are drilled in the base of the *SwingMax*, the bucket, by using the same drill bit used for the arms, lining up where the arms will be placed. Each arm is secured to the bucket by using 5/16"x1" hex bolts and 5/16"-18 hex nuts and a 1/2" wrench to fasten them tightly. Before nuts and bolts are fastened tightly, a small drop of Loctite Threadlocker 242 is applied to the bolt to make sure the nuts and bolts stay tight and don't loosen over time. A pool noodle is cut down to size to fit at the ends of each of the arms. The inside of the noodle is sprayed with Loctite General Performance Spray Adhesive and slid onto the arms of the *SwingMax*. The finished device (see Figure 6) is then left for the threadlocker and glue to set for 24 hours.

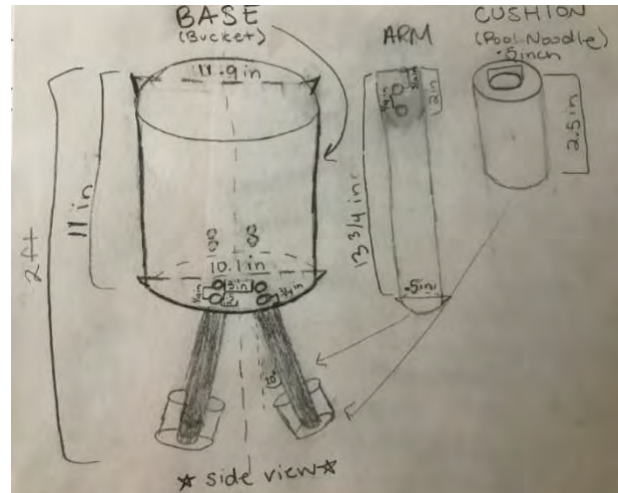


Figure 5; Up

This diagram shows the measurements and relationships between the base, the arms, and the cushion of a *SwingMax*.

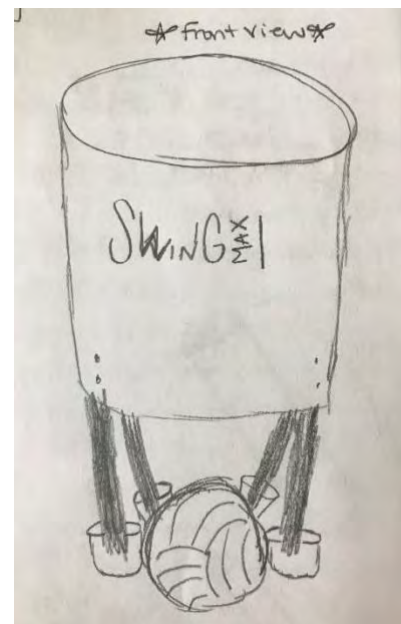


Figure 6; Up

This diagram shows what a finished *SwingMax* looks like while holding a volleyball

Part 5. Commercialization Assessment of the Overall Plan:

Problem, pain point or market opportunity:

The market does not have an affordable and easy to use, including set up, take down and storing, training device to practice volleyball outside of team practices with one more players. Many volleyball training aids or devices range from \$280 to \$360. This high price range does not allow the average family to purchase a device for home use. The convenience factor in many training aids for volleyball is missing because the devices are big and difficult to store. The devices also have multiple steps to set up or take down in between uses. Many of the devices are also only meant to work on one specific skill or it need other players to be a part of the practice time making it difficult to fit into a busy schedule, and also only come in one color option.

Proposed solution:

The *SwingMax* is a device that is used to improve one’s volleyball skills in multiple areas. The *SwingMax* can be used to work on volleyball skills to hit properly (see Figure 7). However, this is not the only thing the *SwingMax* is used to work on. The *SwingMax* can also be used to work on precision and accuracy when passing or setting along with working on passing the volleyball up when being hit, which is called a dig. The *SwingMax* is sold for a low price of \$89.99 when the price is compared to its competitors price. The *SwingMax* is only 2 feet tall, which is shorter than its competitors making it easier to store when not in use. The *SwingMax* makes it easy on multi-sport athletes by making the set up quick and simple. The *SwingMax* gets placed inside of the rim and net of a basketball hoop making it easy to take out for when the player wants to go back to practicing basketball.



Figure 7; Up
 These pictures show volleyball players that are 5’9” (to the left) and 5’2” (to the right) using the same basketball hoop just adjusted differently to practice hitting properly.

Target customers and intended users:

The *SwingMax* is for all volleyball players wanting to practice and improve their skills. However, the target market and the heaviest concentration of the buyers of the *SwingMax* would be female athletes in high school wanting to work on improving their hitting skills and even accuracy with setting and passing which particularly are front row hitters. Front row players are the players whose job is to mainly hit the volleyball at the opposing team in attempting to score a point. In order to put volleyball downs effectively, the player needs to work on the skills that go into hitting a volleyball

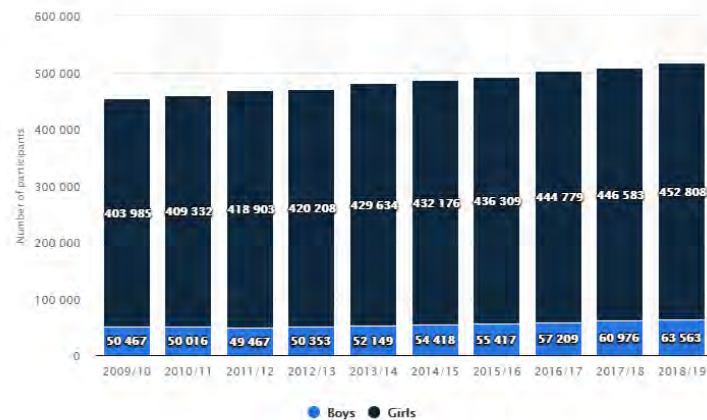


Figure 8; Up
 This graph shows the relationship between how many girls and boys play high school volleyball throughout the years of 2009-2019 (Statista).

properly, which is some of what the *SwingMax* is useful for. The graph (see Figure 8) of all U.S. high school volleyball participants from the school years of 2009/2010 to 2018/2019 shows the increase of players throughout the years, but it also shows the relationship between how many more volleyball players are female versus male. This helps the *SwingMax* know more about its target market because volleyball is becoming more popular over the years and there are consistently more female players than male players.

Competitors:

The *SwingMax* is an original idea, but it does have some competitors like the DynamicSpike Volleyball Training System, the Excel Spike IT Volleyball Training Aid, and the Park & Sun Spectrum Precision Volleyball Trainer. The DynamicSpike Volleyball Training System is a device that gets put into the rim of a basketball hoop without the netting (See Figure 9). It is designed for the volleyball player to work on their skillset of hitting. The Dynamic Spike Volleyball Training System costs \$329.95 (All Volleyball).

The competitor Excel Spike It Volleyball Training Aid is a device that someone can either hold (see Figure 10) or pay more for a base to hold it up (see Figure 11). It allows a volleyball to be placed in it for the player to practice and improve their skillset of hitting. The device without the base requires more than one person to be actively using the device when practicing while the device with the base can be used with just one player. The Excel Spike It Volleyball Training Aid costs \$355.95 (Anthem-Sports).

The Park & Sun Spectrum Precision Volleyball Trainer is essentially just a net that holds the volleyball that gets passes or set into it (see Figure 12). This device is used to work on precision and accuracy when passing and setting the volleyball. The Park & Sun Spectrum Precision Volleyball Trainer is \$289.95 (Anthem-Sports).

Customer value proposition & competitive advantage:

The *SwingMax* is an easy-to-use device with multiple uses. With the *SwingMax*, the player can work on the skills to properly hit a volleyball along with working on precision and accuracy with setting and passing the volleyball all within the one device. The *SwingMax* is easy to set up because all that is needed is a stepstool or a ladder, and a basketball hoop with an adjustable height; a regular basketball hoop is also fine, it just doesn't give as big of a height range to work with. To set the *SwingMax* up, the player just simply puts it inside of the rim and netting of the basketball hoop and they are ready to start working. The *SwingMax* offers a variety of different skills to be worked on in one compact device with one or more players. The competitors of the *SwingMax*, however, are not so easy to use.

To set up the DynamicSpike Volleyball Training System, the netting of the basketball hoop has to be taken off the rim, making it harder to switch from playing basketball and practicing volleyball than it is with the *SwingMax*. With the *SwingMax*, all the player has to do to



**Figure 9; Up
DynamicSpike Volleyball
Training Aid (AllVolleyball).**



**Figure 10; Up
Excel Spike IT Volleyball
Training Aid Without Base
(Anthem-Sports).**



**Figure 11; Up
Excel Spike IT Volleyball
Training Aid With Base
(Anthem-Sports)**

switch from practicing basketball to volleyball is to put the *SwingMax* in the hoop to rest in the netting and the player is all set. Another big difference between the DynamicSpike Volleyball Training System and the *SwingMax* is the difference in price. The DynamicSpike Volleyball Training System costs 367% more than the *SwingMax* making it hard for the average person to save up to buy (All Volleyball).

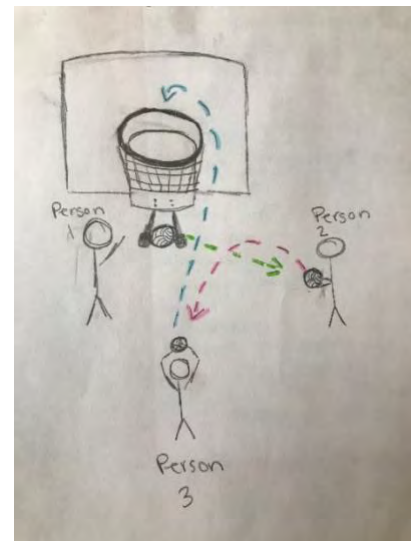
To use the Excel Spike It Volleyball Training Aid Without the Base, another person must be present to hold the device up. The *SwingMax* can be used with one person hitting the volleyball. To stop the volleyball from going everywhere, the volleyball can be hit towards something like the side of a house or a garage door to stop the volleyball from getting too far. However, the *SwingMax* can also be used with multiple people. For example, there can be Person 1 hitting the volleyball at Person 2. Person 2 would be passing the volleyball up to Person 3, and Person 3 would be working on precision and accuracy with setting and/or passing by getting the volleyball into the basketball hoop for it to fall into the *SwingMax* and the drill start all over again (see Figure 13). The Excel Spike It With and Without the Base both are not able to be adjusted height wise. Volleyball players range from all different heights, so having a device that is not able to be adjusted is not ideal. Each hitter in volleyball has different preferences on where they like to hit the volleyball as well. Some people like to hit the volleyball higher, and some like their sets to be lower. With the *SwingMax*, the recommended material to use it with is a basketball hoop with adjustable heights so that way the hitter can work on sets of particular heights. Excel Spike It needs to have someone hold it or buy the one with the base, and it is not adjustable (Anthem-Sports). The *SwingMax* can be used with one player and if more people want to join its only to receive the volleyball that is hit, they do not need to have someone actively holding it up. The basketball hoop can also be adjusted so that way if shorter people are hitting or taller people are hitting or if a player wants to practice hitting higher or lower sets, all that needs to happen is adjusting the basketball hoop. The Excel Spike It Volleyball Training Aid without the base is 373% more than the cost of the *SwingMax*. With the base, the Excel Spike IT Volleyball Training Aid is 396% more than the cost of the *SwingMax* (Anthem-Sports).

The Park & Sun Spectrum Precision Volleyball Trainer does essentially the same thing as the *SwingMax*- hold the volleyball. With the Park & Sun Spectrum Precision Volleyball Trainer however, the only skill to work on is precision and accuracy when passing and setting, but with the *SwingMax* that is still possible. The *SwingMax* is different from the other products because it is not just used for working on hitting. Working on precision and accuracy when passing and when setting is another thing the *SwingMax* is useful for. A volleyball can be passed or set into the *SwingMax* and the arms hold the volleyball similar to the Park & Sun Spectrum Precision Volleyball Trainer holds the volleyballs passed into it (Anthem-Sports). However, the *SwingMax* has more uses in one smaller device with great quality and a lower price. The Park & Sun Spectrum Precision Volleyball Trainer cost 322% more than the *SwingMax*.

The *SwingMax* will also be available in 110 different color combinations while its competitors are only available in one. The base of the *SwingMax* can be one of eleven different colors: white, gray, black, red, orange, yellow, light green, dark green, light blue, navy blue, and purple. The *SwingMax* logo will be



**Figure 12; Up
Park & Sun Spectrum
Precision Volleyball
Trainer (Anthem-Sports)**



**Figure 13; Up
This diagram shows how
the *SwingMax* can be used
with three people.**

printed on the base in either white or black. The cushion on the arms of the *SwingMax* can come in one of five different colors: white, black, blue, green, and purple. None of the competitors of the *SwingMax* are customizable. According to a study conducted by Phillip Cohen, a sociologist at the University of Maryland, the top three favorite colors are blue green and purple in both men and women (Wolchover). With the *SwingMax* having those color options to be chose for the base and cushion on the arms, customers will get to customize their device to include their favorite colors, meaning more sales for *SwingMax*. The ability of the customization of colors also does not cost more to purchase materials for the business because assorted packs would be purchased to be used to produce *SwingMax* devices.

Principal revenue streams expected:

The *SwingMax* is sold off of the *SwingMax* website as well as through sporting goods stores and mass-market stores. The profit made on *SwingMax* devices is from Transactional Revenue and from Web Sales. The Transactional Revenue consists of the *SwingMax* being sold to the sporting goods stores and the mass market stores which is then bought by costumers and is how a profit is made. The Web Sales is similar to the Transactional Revenue, except it is the profit made strictly through selling through the *SwingMax* website. The *SwingMax* projects that 235 devices will be sold in the first year, 600 devices in second year, and then 1,200 devices in the third year. This totals for a profit of \$164,855.35 through the Web Sales and Transactional Revenue. The *SwingMax* projects that the third quarter will have the most sales because it is peak volleyball season.

Principal startup and operating costs expected to be incurred:

To start up the *SwingMax* business, \$2,000 of operating cash is needed to purchase enough raw materials to cover the total number of projected units to be sold in year one and 60 units be held in inventory, which will be valued at \$539. Also, \$7,000 is needed in the first year for marketing expenses which will cover commercials, social media advertisements and sponsorship. In the second and third year, the operating cash will increase to \$4,000 and \$5,000 respectively. 120 and 200 units will be held in inventory for year two and three, valued at \$1,078 and \$1,796 respectively. The cost for marketing expenses will drop to \$2,000 for year two and three.

Part 6. Business and Financial Proof of Concept:

Marketing, sales, and pricing strategies to bring your product or service to market:

The *SwingMax* would be sold on its own website, but would also be partnering with sporting good stores, for example Dicks Sporting Goods. The *SwingMax* would also be sold in mass-market stores including Target and Walmart. The *SwingMax* would be partnering with a Pro-Volleyball player for them to sponsor the *SwingMax*.

Megan Courtney would sponsor the *SwingMax*. She is a part of the Team USA volleyball team, but she grew up locally in Dayton, Ohio. Megan is a libero and an outside hitter who, in 2019, was awarded the title of Best Libero of 2019 FIVB Volleyball Nations League (TeamUSA). She would be able to tell her story of how she got where she is with the partnership with *SwingMax* by using social media platforms and commercials that would air when volleyball games would be aired on television channels, including ESNU, to promote the *SwingMax* business and herself.

The *SwingMax* would also run its own social media pages on Instagram, TikTok, and Facebook to be able to promote business by targeting the high school age group. Customer relationship management (CRM) software would also be utilized to be able to target potential customers based on what they view or click on to personalize their ads. CRM software would be beneficial to the *SwingMax* business sales because it is “the largest and fastest-growing enterprise application software category, and worldwide spending on CRM is expected to reach USD \$114.4 billion by the year 2027 (CRM 101: What is CRM?).”

One *SwingMax* device costs \$9.71 to produce. The base of the *SwingMax* is a 5-gallon bucket that will be purchased from The Cary Company with the *SwingMax* logo printed on it for \$4.15 per bucket

(Cary Company). At Menards, a 36 pack of bolts, a 96 pack of nuts, a 40 pack of washers, a 10-foot rod of EMT Conduit, and spray adhesive can be bought. The bolts can be purchased for \$2.83 meaning it costs \$0.64 for 8 bolts for 1 *SwingMax* device. Each pack makes 4.5 *SwingMax* devices. The nuts cost \$6.84 per pack. To make one *SwingMax* device it costs \$0.56 for the 8 nuts used. The pack makes 12 *SwingMax* devices. The washers are purchased for \$1.50 a pack, so for one *SwingMax* it costs \$0.32 for 8 washers. Each pack makes 5 *SwingMax* devices. The 10-foot rod of EMT Conduit costs \$3.44 meaning each arm of the device costs \$0.42 and the four arms together are \$1.68. Each rod makes 8 arms or 2 *SwingMax* devices (Menards). At Lowes, a pack of three pool noodles will be purchased for \$1.98 (Lowes). Each noodle costs \$0.66. The cushion on the *SwingMax* is only 2.5 inches long so 22 cushions are made per 1 noodle or 66 per pack. Four cushions for one *SwingMax* costs \$0.12. One bottle of spray adhesive costs \$4.43 and will last for 25 devices (Menards). This makes the cost for use per device \$0.16. The threadlocker is \$51 but will last for 25 devices making the cost per use per device \$2.08 (ULINE).

Based on how much it costs to make one device, the *SwingMax* will be sold at a retail price of \$89.99. This will allow for profit of \$80.28 per *SwingMax* device sold. This price is \$199.96 cheaper than the cheapest price of competitors of the *SwingMax*, the Park & Sun Spectrum Precision Volleyball Trainer, and it is \$265.96 cheaper than the most expensive competitor, the Excel Spike It Training Aid With Base. This makes it easier on the customers to be able to save up and purchase, meaning more overall sales of the *SwingMax*.

Discussion about your operational plans for developing and making your product or service into a tangible commercial venture:

The *SwingMax* will start out by being made and stored in a home facility without needing to pay rent for manufacturing or storage space. Willing family members and friends will donate their time to help in the production and business growth of *SwingMax*. To make one *SwingMax* device it takes an average of 20 minutes with two people actively working on the production. With a total of five workers, an assembly line set up would be able to be made. In the assembly line, one person would be flattening out the top of the arms, one person would be drilling holes in the arms, one person would be cutting the bottom off the bucket and drilling holes in the base, one person would be cutting the pool noodles into adequate pieces and gluing the pool noodles on the arms, and one person would be bolting the arms to the base.

Cutting the bottom of the bucket off, takes around 1 minute. It takes an average of 45 seconds to cut the EMT Conduit to the length of one arm and to flatten the top of one arm, so it would take an average of 3 minutes to make the four arms needed for one device. Drilling two holes in each of the four arms needed for one *SwingMax* takes an average of 3 minutes. Drilling 8 holes in the base takes approximately 1 minute. Cutting the pool noodle takes around 45 seconds for all four pieces. To glue one pool noodle piece on one arm it takes roughly 30 seconds, so for all four pieces to be glued it would take around 2 minutes. Bolting the four arms onto the base takes about 5 minutes. With accounting for extra time to set up and to have time in between each cut or drill, 8-10 *SwingMax* devices would be able to be made with having 5 workers per hour versus 3 with only two people working.

When sales start to become too much to handle with only five volunteers working, and there is not enough space to store inventory after two years of being on the market, the *SwingMax* will move production to a warehouse. Family and friends will still be donating their time to help with production still, but other workers will be required to be able to make more devices in less time. *SwingMax* will be able to rent out a warehouse that is 2,000 square feet for a rate \$5.50 per square foot per year. To rent the warehouse for a whole year it is \$11,000 making it \$916.67 per month (LoopNet). The *SwingMax* would then be subleasing half of the warehouse. The monthly cost of rent would then only be \$458.33, or \$5,500 per year.

When production of *SwingMax* devices is moved into the warehouse, an extra set of tools and equipment would be purchased along with bringing the tools we used in the home facility to the warehouse. Through Northern Tool & Equipment, all the tools needed could be bought for \$975.15. The press to flatten the top of each arm is \$129.99. A power drill would be purchased for \$99, and drill bits to go along with it would be \$12.99. The die grinder would be purchased for \$31.99, the cutting wheel is

\$1.20, and the air body saw is \$49.99. These are powered by the air compressor which would be purchased for \$649.99 (Northern Tool & Equipment).

The workers that would be hired to work and assemble *SwingMax* devices would be paid an hourly salary of \$10 in year 3. After 3 years of producing *SwingMax* devices, a manager would be hired to take charge in the production processes. The manager would be paid \$12.50 an hour. When customers purchase a *SwingMax* device through the *SwingMax* website, they would pay a packaging and shipping cost of \$5-7 depending on the customers location in the USA. However, if a customer purchases two or more *SwingMax* devices, the cost of packaging and shipping would be free.

Significant risks and uncertainties you expect to face in bringing your venture to market:

The main risks the *SwingMax* company is aware of is the ability to get enough funding, not enough sales out of volleyball season to keep up with the costs, and at the moment with the COVID-19 virus, not knowing how much money customers would be willing to spend based on how many jobs were lost because of the pandemic.

Not being able to get enough funding is a risk that all businesses could face when first starting. *SwingMax*, however, believes they will be able to get enough funding to start up because production will start out at a home facility meaning there is not an extra cost of finding a place to produce the *SwingMax*. The only thing that needs to be bought is the supplies to actually make devices because the home facility already has the tools and equipment.

High school volleyball seasons typically start in August and end in October. However, training happens before a season. Depending on the team, training starts a month to couple of months before the start of the season. From the months of May to October, the *SwingMax* expects to have more sales than in the months of November to April because volleyball is in season. In the months of November to April high school volleyball is not in season so the *SwingMax* is expecting less sales. However, there is club volleyball that takes place in the winter season. But with each *SwingMax* sold there is a \$80.28 profit made, there will be enough profit made during volleyball season to adequately support the business in the off season when there is not as many sales as in season.

Because of the pandemic of the COVID-19 virus spreading worldwide, many jobs were lost. According to the Center for Infectious Disease Research and Prevention, the April 2020 job report shows that the USA lost 20.6 million jobs from mid-March to the end of April making the unemployment rate of 14.7%. The unemployment rate was the highest it has ever been since the Great Depression (Soucheray). Based on those statistics, many Americans lost their jobs resulting in less income in many households. This could affect the *SwingMax* because some households do not have extra money to spend on things other than necessities. The *SwingMax* understands this risk, but because of how low of a production cost it is, the *SwingMax* believes that there will be enough income to support the business even if sales are down because of the COVID-19 virus.

Amount and type of investment expected to be required to bring your idea to market:

Years 1 and 2 the *SwingMax* will be produced and stored at a home facility. In year 3, production will be moved into a warehouse. The warehouse is 2,000 sq ft and will be rented for \$5.50 a square foot. However, the *SwingMax* would be subleasing half of the warehouse. This means that the cost for the *SwingMax* to rent the warehouse would be \$5,500 a year or \$458.33 monthly. When moving to the warehouse in year three, more tools and equipment will need to be purchased. All of the tools and equipment needed will be obtained for \$975.

The *SwingMax* will need to acquire a working capital of \$2,000 for the first year. With this money, the *SwingMax* would purchase enough supplies to be able to make 240 devices. This would be enough for the entirety of the projected sales the *SwingMax* plans to make in the first year and more. The *SwingMax* would not need to purchase anything else in the first year besides the actual supplies to make the devices since the home facility contains the equipment, tools, space for storage, and technology, including a laptop to run the website off of, to make the business run smoothly.

A three-year financial projection that confirms the financial feasibility of bringing our venture to market on a sustainable basis:

Expected sales for the first year will be 235 units, with the largest amount being sold in quarter 3 (100 units) due to volleyball season (see Figure 14). Expected sales in year two and three will continue to increase due to consumer awareness to 600 and 1200 units respectively. Marketing costs will be high in the first year because the business is just starting up. Estimated marketing costs for year one is \$7,000 which will include commercials, website development, social media advertising using CRM, and sponsorship from women's volleyball. Year two and three estimated marketing costs will drop to \$2,000 per year due to brand exposure and awareness that was created during year one. In year three, the production of the *SwingMax* will be moved into a warehouse to help store inventory and house the manufacturing process. Estimated cost for the warehouse is \$5,500. During this time five workers will be hired and be paid \$10 an hour. A manager will also be hired and be paid \$12.50 an hour. The manager and the workers will be working 15 hours a week each, and any extra time that will be needed to produce *SwingMax* devices will be done by family and friend volunteers.

SwingMax								
Financial Projections								
For the First Four Quarters and First Three Years								
						Totals For		
		Quarter 1	Quarter 2	Quarter 3	Quarter 4	First Year	Year 2	Year 3
Sales and revenues		\$0	\$4,500	\$8,999	\$7,649	\$21,148	\$53,994	\$107,988
Costs and expenses:								
Cost of sales		\$0	\$449	\$898	\$763	\$2,110	\$5,388	\$10,776
Selling, marketing and advertising costs		\$4,000	\$1,000	\$1,000	\$1,000	\$7,000	\$2,000	\$2,000
Space and occupancy costs		\$0	\$0	\$0	\$0	\$0	\$0	\$5,500
Management and administrative costs		\$0	\$0	\$0	\$0	\$0	\$0	\$48,750
Total costs and expenses		\$4,000	\$1,449	\$1,898	\$1,763	\$9,110	\$7,388	\$67,026
Pre-tax cash profit (loss)		(\$4,000)	\$3,051	\$7,101	\$5,886	\$12,037	\$46,606	\$40,962
Investment required to start your business:						Year 1	Year 2	Year 3
Working capital: Operating cash						\$2,000	\$4,000	\$5,000
Accounts receivable						\$0	\$0	\$0
Inventory						\$539	\$1,078	\$1,796
Office equipment						\$0	\$0	\$2,000
Warehouse & manufacturing equipment						\$0	\$0	\$975
Cost of developing prototype products						\$500	\$0	\$0
Projected total investment						\$3,039	\$5,078	\$9,771
Projected return on investment (Profit/Investment)						396.1%	917.9%	419.2%

Figure 14; Up

The spreadsheet shows the projected expenses and revenue of the first three years of the *SwingMax* business.

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