Engineering Senior Design Business Plan

BUS 357 Business for Engineers
Calvin College
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Executive Summary

Company Name

The name of this establishment is called JavTools. The name was chosen based on the product that we offer to consumers and the possibility of expanding to offer other services related to Javelin throwing. The breakdown of company leadership is as follows:

- President
  - Head of the company and top of the decision making chain. The president is supported by a team of three executives, the VP of Hardware Development, the VP of software Development, and the Chief Financial Officer. The president is in the person of HRH. Dr. Rev. John Mugabe, Ph.D.

- VP of Hardware Development
  - Leads a team of two other hardware engineers in developing hardware components and specifications that contribute to building the product, CoachJav. The VP of hardware is in the person of Mr. David Dadzie.

- VP of Software Development
  - Leads a team of two other software developing engineers to design a brain for all the connected hardware and also supports the company in providing a Graphical User Interface (GUI) for the system on a mobile phone platform. The VP of software is in the person of Mr. Landon Potts.

- Chief Financial Officer
  - As a key part of the management team, the CFO organizes the organization’s monetary affairs and also leads the marketing team in product advertisement and sales. This person is also in charge of the ergonomics of the product and how it appeals to consumers and also leads a team of two individuals. The CFO is in the person of Mr. Ofiliojo Ichaba.

Company Brief

When we consider sports such as tennis, baseball, cricket and even bowling, one thing they all had in common is the involvement of a ball or similar spherical playing object. In the sports listed above, it is fairly simple to record the speed of the ball. The technology used to determine the speed of the ball is simple, cheap and relatively available. The use of such technology in ball sports makes them more exciting to watch and also easier to monitor for athletes performance.

In the sport of Track and Field, Javelin throwing is one of the most technical events and requires a combination of speed, flexibility and power. It also exerts a lot of stress on the body because of all the forces involved, up to 9000N transferred through the body. Consequently, it is very difficult for Javelin throwers to perform many throws in a single practice sessions. Coaches have to determine technical ability and flaws in athletes’ technique from only a few throws per week. This can be challenging, and without technology it is difficult to capture some of the throws and analyze then effectively. Currently, it takes up to 8-12 high speed
cameras, speed gates, and other expensive equipment to measure parameters, such as release speed, run-up velocity, release angle, and angle of attack.

JavTools is an engineering design and data analysis firm that deals primarily in making effective and efficient sensor packages that gather data from sports activities and reports them back to a user as feedback. CoachJav the company’s main product aspires to create a coaching tool for Javelin throwers. The primary focus of the design team is to provide a microchip technology that can be infused with a javelin to monitor the parameters of a javelin thrower’s mechanics. CoachJav is built to detect the velocity of a javelin when it is released as well as the angle of release. A coach should be able to make quick adjustments to an athlete’s technical flaws to improve performance faster. Future JavTools products would include other tools and equipment specifically aimed at improving javelin, e.g. Shoes, braces, specialty javelins, etc.

Market

The market for JavTools is made up of young athletes, high school, college, and professional coaches, as well as professional athletes around the U.S. who are still trying to find their technical “sweet spot” in the field of Javelin throwing. There is also a major possibility of taking the product to the international market, specifically in Finland where javelin throw originated. Expansion of the current market is probable, since future updates to the product will provide real time data analysis of performance and individualized coaching tips.

Business Strategies

CoachJav will be instrumental in adding value to any athlete in the sport of Javelin throwing. In recognition of this, JavTools plans to differentiate itself by the production of the sensor package as a stand-alone tool that can fit onto any javelin with ease, and not to redesign the javelin itself. The company will also rely on the efficiency and effectiveness of the product and its cutting edge technology to win the trust of customers.

Managerial and Technical Experience

The key personnel in this company are experienced retired athletes and coaches, they have the best technical expertise on javelin throwing and will have strong input in the product design. Other key personnel include sales and marketing specialists who will work under the supervision of the CFO. JavTools will prefer to employ people who have 3 or more years of marketing experience within the sports industry.

Financials

JavTools will require a startup capital of $300,000. This capital will be used in the production of a prototype of CoachJav, testing the prototype and production of a final product to meet pending demand. Part of the capital will also be used in paying employees and also in paying showcase sports outlets; and part to support materials, facilities and marketing. JavTools anticipates being debt free after the sixth year to allow for flexibility and more positive cash flow.
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Vision and Mission Statement

The content herein explains further the information related to the vision and mission of JavTools.

Entrepreneur’s Vision Statement for the Company

JavTools strives to be a world leader in javelin throwing technologies and aspires to be the standard in coach feedback management through innovation, while retaining a traditional approach with client needs.

Mission Statement for the Company

JavTools offers the best products its customers. We place athletes and coaches at the forefront of all our designs. The mission of JavTools is to create solutions that don’t only meet the customer needs but inspires them to excel in their craft.

Values and Principles on which the Business Stands

JavTools believes in ethics and principles which sustain and build good relationship with our clients and our community. We emphasize Trust, Cultural appropriateness, and Integrity.

Industry Profile and Overview

Industry Background and Overview

The intricate details required in training for any sport have certainly seen major growth in the past couple of decades. With athletes sprinting and running much faster than their predecessors, golfers and basketball players reaching their prime at much younger ages, and competition for spots in any major sports club, more training methods are being tested for efficiency and effectiveness. One such market is in the sport of Javelin Throw. The need for technological growth in order to better comprehend the biomechanics of athletes is apparent. Consequently, JavTools aims at filling this gap by building a product that will allow javelin throwers to compile and analyze their performance data, specifically release speed and angle of release.

Major Customer Groups

We foresee both coaches and athletes using CoachJav as their primary tool for feedback during practices. CoachJav will allow them to record and analyze data from their throws in real-time to enable the coaches in making necessary changes to the javelin throwers technique. The essential attribute that customers would be most interested in is a high level of reliability and accuracy from CoachJav.

Regulatory Restrictions

For customers that are interested in using CoachJav for training purposes, there are no known regulatory restrictions. However, regulatory restrictions are involved if the customers seek to use CoachJav
competitively. The National Collegiate Athletic Association (NCAA) states that no attachable technology may be utilized in a competitive setting, if it provides a particular party an advantage in performance or disclosed knowledge. These regulations are also sustained by most high school athletic associations. In addition, the International Association of Athletics Federations (IAAF), which is the world governing body for athletics, has strict regulations of the dimension of a Javelin. By attaching CoachJav to a javelin this might infringe the specifications and may cause an athlete to be disqualified in a competitive environment.

**Significant Trends**

The unique property of this market is that there are no significant trends. This is a brand new market as far as we know and a product such as CoachJav would be revolutionary in the athletic industry. The potential for huge success is very high and a quality product will lead to the emergence of a profitable market.

**Growth Rate**

The company expects an annual increase in revenue of 10% or more. This rate will mostly depend on the market response to the first round of product delivery. Most of our competitors are involved more in analysis via video and we anticipate that consumers will appreciate not holding up a camera the entire training session.

**Barriers to Entry and Exit**

As mentioned before there aren’t any product like CoachJav out there on the market. That means that JavTools essentially has a free entry and exit pass.

**Key Success Factors in the Industry**

There are several goals that JavTools hopes to attain. The key goals that will classify CoachJav as a success are based on product reliability and cost. Coaches and athletes are looking for an intuitive and sleek design that will not interfere with their regular practices. JavTools can become extremely profitable if it competes on product differentiation. It is known that for a business to be successful in this kind of industry, where reliability and good product quality are needed. These are generally well received regardless of cost.

**Outlook for the Future**

Looking ahead, the market only looks to grow in sales. JavTools will expand and diversify its services by making available other product specific to javelin. The cost for raw materials and size will continue to minimize, while reliability and accuracy will continue to grow. The future appears to be promising.

**Business Strategy**

** Desired Image and Position in Market**

The desired image in the market is that of a company that makes quality products. The company needs to be seen as high quality, trustworthy, and honest. To do this, the company will need to only make and sell the products if that meet the quality standards. Also, the company must give the workers a fair wage for their work, display stewardship and use resources wisely, be easy to work with and have good relations with
customers and employees and other companies. Finally, the company must make ethical decisions, without cutting any corners, taking bribes, or other dishonorable actions. Overall, the company should be a company that sets ethical standards in industry.

**Company Goals and Objectives**

**Operational**

The company must stay on the leading edge of technology as well as employ quality management. The final product must be high quality and work as designed. To reduce scrap or wasted operations, the defective parts must be appraised and fixed as early on in the process as possible. To stay at the leading edge, the company will conduct R&D work, as well as possibly expand the core expertise to employ other applications with the product.

**Financial**

Obviously, the first product will be a first generation design. The goal for the company overall would be to take this design and sell it to make enough money to break even on the startup loans and debt, and to make enough profit to reinvest in the company and R&D to improve the product design to newer and better generations, as well as improve the process of making the product.

**SWOT Analysis**

**Internal Strengths**

The main strength of the company is that the product is unique and has a low cost to the consumer. There is no product on the market currently like it, just products that do similar data collection but only through expensive equipment and in controlled situations and mostly require video. Also, the product will be high quality and easy to use, allowing it to be recommended by the users to new clients that would not otherwise be reached.

**Internal Weaknesses**

The main weakness of the company is that it is a new startup and thus has no branding or public image yet. This will lead to the company needing aggressive marketing, which takes money and capital that the company does not have easy access to, again because it is a new startup company.

**External Opportunities**

There are several possible opportunities for the company. First, the company name could spread at track meets and events, especially among the coaches and athletes. This gets the company name out quickly without too much marketing costs. With expansion, many teams including high school, college, or even national teams would want to buy the product and use it to improve their skills. Second, the technology could figuratively be applied to other events in the sport, especially other throws like hammer and shot put, but also long jump or high jump. Then the product could be enhanced or new products developed to incorporate these events as well. Finally, the technology could be expanded outside of the sport to other applications. This could include other launched things, such as missiles, footballs, or other projectiles.
External Threats

The main threat to the company is competition. If another company with an already established customer base designs a similar product, this creates competition in the market. Especially if that company is much larger and more established, the competition would set the company back and it would be hard to vie for our place in the market.

Competitive Strategy

Cost Leadership

Any product currently on the market that gives similar results to our product is expensive and requires a controlled environment, making it a hassle for clients. Our product is cheaper and has no hoops to jump through to get it to work. This gap in the price range exists already, and the company will exploit it to its advantage.

Differentiation

As well as keeping the product low cost, the product will be unique. There is currently no product like it on the market, which makes it very easy for our product to standout and for the company to be different from others. To keep the differentiation, the company intends to stay on the leading edge of technology, especially in the area of their core expertise, using R&D.

Response

While the company remains small, taking orders and making products will be fast and simple. If the company begins to grow, a sales division as well as a packaging and shipping division will need to be considered.

Company Products and Services

Description

Product and Service Features

The product includes a small, low power device that attaches to a javelin. This device then transmits data via Bluetooth to an Android device where an app collects the data and outputs it for the coach or athlete to see the thrower’s mechanical measurements on that throw. The app will provide a straightforward user interface such that it is easy to understand and even those users that are less tech-savvy will be able to use it. The only similar product we could find includes force sensors and high speed cameras in a controlled environment to capture that data we are capturing with the device. This makes the product unique and a great addition to the sport of the javelin throw, which previously has not seen many technology advances and is often overlooked.

Warranties and Guarantees

First of all, a disclaimer: this product does not guarantee making a javelin thrower that uses this product great. The necessary coaching and hard work needed in any sport also applies here. In addition to
raw talent, the sport takes a lot of time and work to continuously make improvements. This product will, however, make it easier to find the areas that need improving.

Second, there will be a limited warranty on any product that made it to the customers. If the product is defective, it must be replaced or fixed. If there is a serious design flaw, the company will provide a product recall with compensation or replacement, or possibly repairs. However, JavTools practices prevention costs to avoid external quality costs.

**Customer Benefits**

The customer can use the data, the initial velocity of the throw and the angle of the throw at the release point, to see what the thrower is doing well with their throw and to see if and where they can improve. If they work on the improvement areas, they can hopefully target their weakest point so that they can continually improve and be the best that they can be.

**Patent or Trademark Protection**

As a patent is very expensive, especially for a new startup, the company will not be looking to obtain a patent, at least not yet. If the company continues to grow and there is the possibility of other companies developing a similar product, a patent or trademark to protect the design will be looked into at that time.

**Future Product or Service Offerings**

As the current proposed product simply is a device that attaches to a javelin and outputs data, it is possible that this technology could be expanded to other areas. It could be attached to other flung implements, such as a football, a person (arm-wrist/leg-ankle), or even a missile. This would lead to the development of similar products, but in different aspects of life and sport.

**Marketing Strategy**

**Target Market**

JavTools’ target market as mentioned before would be high school and college javelin throwers as well as professional throwers and coaches.

**Problem to be solved or benefit to be offered**

The problem that JavTools is trying to solve is that there are no simple and cost effective technologies out on the market suited to Javelin throwing to help coaches train their athletes better. The company aims to give coaches the ability to assess the biomechanical data of javelin throwers on the training field in real-time.

**Demographic Profile**

JavTools’ market demographic profile includes coaches, trainers, and different level of athletes. Coaches and athletic trainers will experience the most gain from CoachJav since they will have the ability to make real time adjustments to during their sessions. Since CoachJav is able to display results of javelin throwing mechanics, athletes will have direct benefit from the system.
Other significant customer characteristics

JavTools seeks customers who are very skilled in the art of javelin throwing and also those who display very good potential to throw long distances. The company sees these as significant customer characteristics because CoachJav will be well advertised if the company has these types of customers.

Customers’ Motivation to Purchase

Primary motivation for customers is that the device is reliable and accurate. The customer can track their progress and monitor everything in real time. The second motivation for customers to buy CoachJav is that the entire technology is portable and results can be transmitted to either to their phones, tablets, and/or computers.

Market Size and Trends

Market Size

The does not appear to be a large market for this kind of product. The market of wireless, video free technology that is portable and real time is innovative. The potential market for this sort of product is large.

Rate of Growth

Since the introduction of CoachJav and any similar product to markets around the world would be revolutionary, it difficult to know what the current and expected growth rate is. However, given the increasing competitive nature of sports around the globe, JavTools is confident that there would be a large rise in the number of customer within the first 3-5 years after initial introduction.

Advertising and Promotion

Message

JavTools wishes to deliver a strong message which is its vision and mission. JavTools want so famous for its innovation using cutting edge technology to revolutionize the sport of javelin throwing. We want to let our customers know that they can trust our products and that they are always reliable.

Media

JavTools look to incorporate social media ads and short video commercials geared towards young athletes and yet with enough information to make a case to coaches and professional athletes.

Budget

JavTools will be on minimal amounts of cash in the first few years. In light of this the company anticipated implementing most of its advertisement through its website and well-placed sports magazines. Increase in company revenue will certainly contribute to an increase in appropriate increases in marketing and sales incentives.

Plans for generating Publicity

Demonstrating the products at major sports outlets and at different high schools and college will be a major approach to increase publicity. When the company generate more revenue, using prominent sporting figures to advertise our products will be an option to be considered. JavTools also plans on providing javelin
training seminars for track and field programs across the USA and Europe to encourage them to use CoachJav.

**Pricing**

*Desired Image in Market*

JavTools wants to create products and provide services that are trustworthy and reliable to create a loyal customer base that will not only, maintain a relationship with JavTools but will also promote the company’s products.

*Comparison against competitors’ Prices*

JavTools does not have any direct competitors in terms of other companies producing the same or similar product that we have. However, since the company seek to create its product efficiently and at a low cost our products will be more favorable to customers than that of other companies within the market.

*Discount Policy*

As a small startup company, JavTools will not be offering any discounts to its customers. This decision is subject to change and will be readdressed after a few years once the company has experienced considerable growth.

*Gross Profit Margin % Anticipated*

JavTools is anticipating a gross profit margin of 28% by the end of year three with 99% of all debts paid off. This number is reasonable given that the company currently has no credible competitors.

**Distribution Strategy**

Distribution could be accomplished to the general public through all-purpose sporting goods stores such as MC Sports and Dick’s Sporting Goods in the USA. Further distribution could also be achieved through exclusive athletic

**Competitive Analysis**

JavTools’ CoachJav will be one of a kind in terms of coaching tools. Looking at the current market, the closest competitor would be Coach’s Eye.

**Existing Competitors**

**Coach’s Eye**

Coach’s Eye is a coaching tool that uses software and a mobile app to analyze sports and provide feedback. The tool records a video of the athlete’s performance and gives the athlete or the coach the ability to control the speed of the video, pause, rewind and draw on the interface or device.
**Strengths**

The tool has a wide range versatility. This means it can be used to analyze any sport that can be recorded on video. Also since the feedback is in the form of a video, it is easy to analyze the biomechanics of the athlete from beginning to end.

**Weaknesses**

Any smartphone device can take videos and with updating camera features anyone can easily edit videos for sports analysis. It also uses multiple devices to capture an all-round performance of the athlete. Its third weakness is it cost $500 per year to receive the full modification of the product. Finally, since it relies on the technical expertise of the coach or the athlete for best performance.

**Potential Competitors**

*Impact on the business if they enter*

Considering its strengths and weaknesses, the team believes CoachJav would be able to perform marvelously on the existing market. Other Potential competitors could be the manufacturers of the Javelin itself. Nevertheless, Javelin manufacturers make javelins based on specific standards. Creating Javelins with data sensor modifications would imply a new design of the Javelin.

Though these manufactures have the ability to shut us out of the market given their financial power, we strongly believe that it would be adapted by these manufacturers as this is a training tool targeted at pre-professional javelin throwers while the javelin manufacturers have a market base of professional athletes.

**Description of Management Team**

**Key Managers and Employees**

*Background*

The company is made up a President/Chief Executive Officer who supervises three separate teams within the company. The three teams within the company currently are:

- The hardware team
- The software team
- The Sales and Marketing team

The hardware team is made of three employees, headed by one executive/manager, the software team is also made up of three employees/manager headed by one executive and the sales and marketing team is made up of two employees headed by one executive/manager. The personnel filling up these positions are as follows:

President/CEO - HRH. Dr. Rev. John Mugabe, Ph.D.

Mr. Mugabe is a 37 year old engineer who has specialized in the field of embedded systems. Mr. Mugabe in his past experience worked as a manager of the Technology Integration team at Dorner Works
Inc. located in Grand Rapids, MI. He worked there for 16 years as a recent graduate from Carnegie Apple University in Detroit, MI. During his 16 year work experience, he managed to obtain his MBA from Calvin University in Grand Rapids, MI. Mr. Mugabe provides a wealth of experience in the field of software development in Java, .Net, C/C++ and embedded and control systems and automation on the hardware front. In his free time, Mr. Mugabe likes to program robots and toys for the next generation youth.

Sales and Marketing Team

Chief Financial Officer - Mr. Ofiliojo Ichaba

Ofiliojo is a senior Electrical & Computer Engineering Student from Lagos, Nigeria. He is currently serving on the Calvin College Student Senate. Ofiliojo has a strong interest in Computer Science, particularly in Artificial Intelligence and Natural Language Recognition research. His hobbies include Singing, Soccer, and Reading.

Other members that make up the sales and Marketing team include Mr. Joseph Kelley and Mrs. Hannah Green.

Mr. Joseph Kelley

Joe is a junior Electrical & Computer Engineering Student from Munster, Indiana. He is the club president for the Renewable Energy Organization and a member of IEEE. Joe is interested in the area of field robotics and optics. His hobbies include mountain biking, hiking, and rock climbing. His role within the team includes ergonomics, analyzing the competition and implementing the best marketing practices that would be useful for the growth of the company.

Mrs. Hannah Green, CPA

Mrs. Green is a 26 year old lady primarily employed at CoachJav. She was employed into the company in 2015. At 26 years, Mrs. Hannah Green has obtained her CPA license and has practiced as a professional accountant for five years prior to her employment at CoachJav. She is also a family woman with one child and her loving Husband.

Hardware Team

VP of Hardware - Mr. David Dadzie

David is a senior electrical/computer engineering student from Accra, Ghana. He is a fourth year member as well as a team captain of the Men's Varsity Track & Field Team at Calvin College. During the summer of his junior year, he did a research project, working with Professor Yoon Kim, to design and construct a DC-DC constant current, constant voltage solar simulator. The results of the research project can be viewed at www.calvin.edu/academic/science/summer/. David enjoys the broad range of music genres across the world and loves playing the drums. His hobbies include bowling, table tennis, and RPG games, as well as spending time with friends and family.
Other members of the hardware team include: Mr. Kwesi Asare and Ms. Laura Clifton.

Mr. Kwesi Asare

Mr. Kwesi Asare is an international one of the international members of the community. He was born and raised in the southern part of Ghana, where he schooled until college level. He attended college at Calvin College, where he attained his Bachelor of Science degree in Electrical and Computer Engineering. His vast experience and knowledge include embedded systems, Microcontroller units, IMUs and analog PCB design. He was employed into the company right after graduation due to his immense contribution and research capabilities that helped the company rise to its feet.

Ms. Laura Clifton

Ms. Laura Clifton is another international face of the company. Born and raised in Bristol, England, Miss Laura attained her Bachelor of Science from the Bristol Rovers University in the field of Engineering Technology and Mechanical Design. Ms. Clifton contributes a vast wealth of knowledge to the company and therefore works under two teams, the hardware team and the software team. In her free time, Miss Laura likes to knit and sew clothes with embedded Adafruit Flora technology. Her embedded cloth design is very popular among cyclist in the area.

Software Team

VP of Software - Landon Potts

Landon is a senior electrical/computer engineering student from Caledonia, Mi. He is a four year member of both the Men's Varsity Cross Country Team as well as the Men's Varsity Track & Field Team here at Calvin. The summer before his senior year, he worked for hymnary.org, developing an Android app which can be used to view hymnals. In his [limited] free time, Landon stays very active. His hobbies include running, swimming and watersports, skating, and ultimate Frisbee, as well as spending time with friends and family.

The other members of the team are Ms. Laura Clifton and Mr. Harry Kane. Ms. Laura Clifton is also a part of the Hardware team.

Mr. Harry Kane

Mr. Harry Kane is a professional soccer player at Tottenham Hotspurs. He is also a graduate from University of Chingford with a Bachelor of Science in Computer Science and Information Systems. Mr. Kane works remotely from London, England. It is also the company’s hope that Mr. Kane will be the liaison to establishing a branch in Europe, especially in Finland.
Resumes of Key Managers and Employees

The resumes of all key managers and employees at JavTools are attached in the Appendices. For more information refer to the Appendix.

Future Additions to Management Team

Moving Forward the company would like to include a manager for a research and development team. The company would also like to separate the Sales team from the Marketing team.

Board of Directors and Advisors

The company has a board with four members.

The chairman of the Board is Mr. Jeremy Van Antwerp and his subsidiaries are:

- Mr. Mark Michmerhuizen,
- Mr. Ned Nielsen and
- Mr. Bob Masselink.

The company also has a legal attorney in the person of Ms. Delali Zormelo and the following Advisors:

- Accountant - Mr. Frederick Ankomah
- Insurance Agent - Ms. Mea Zuiderveen of Adoptive Insurance Company
- Banker - Mr. Sesugh Ubwa of Bank of America
- Consultant - Eric Walstra of Gentex, Inc.

Mentors and Key Advisors at JavTools include:

- Mr. Mark Michmerhuizen
- Mr. Randall Brouwer
- Mr. Yoon Kim

Operations

Legal Form of Ownership

The company currently operates as a partnership as it is currently a small business made of the nine individuals. We currently operate on an internal source of income and have not interacted with the market at any level. Since our products have not yet been released to the public, we do not expect any lawsuits. Moving on, we would transform the company into a Limited Liability Company (LLC) as we would be receiving loans for operation. As an LLC we would be able to protect all employees present and future from any lawsuits. We
would also be able to separate individual assets from the company’s asset as an LLC. In case of foreclosure we would be able to sell the company as an LLC instead of a partnership.

**Company Structure**

The company is currently operating under the structure shown in Figure 1 below.

![Figure 1: Basic Hierarchy Structure of JavTools](image)

**Decision Making Authority**

The decision making authority flows in accordance with the company structure. The president makes the major decisions based on consumer wants and go ahead of the board of directors. The intricate details are made by teams and individuals working on a particular project.

**Compensation and Benefits**

In our company, the Chief Executive Officer earns up to $80.00 an hour including Benefits and packages. The Team leaders are paid up to $65.00 and the other members of the company are paid $55 per hour with benefits included. These figures are documented in the running of the company. However, since the company has not yet taken off, these packages are held back and accumulated over the months of work for the current year. The year’s wages will be spread across the entire members of the company, therefore the compensation benefits of each member will increase.
Description of Production

Raw Materials

The raw materials used in the production of our product are shown in the Table 1 below with their associated cost.

Table 1: Cost of Raw Materials

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inertial Measurement Unit and other Sensors</td>
<td>$45.99</td>
</tr>
<tr>
<td>Microcontroller Unit</td>
<td>$0.50</td>
</tr>
<tr>
<td>Javelin</td>
<td>$500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$546.49</strong></td>
</tr>
</tbody>
</table>

Key Supply Chain Components

The Supply Chain for CoachJav is shown in Table 2 below.

Table 2: Key Supply Chain Components

<table>
<thead>
<tr>
<th>Stage of Production</th>
<th>Value Added/unit</th>
<th>Value of Product/unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtaining IMU</td>
<td>$6.00</td>
<td>$6.00</td>
</tr>
<tr>
<td>Redesigning IMU</td>
<td>$220.00</td>
<td>$226.00</td>
</tr>
<tr>
<td>Add-On for Human Interaction</td>
<td>$150.00</td>
<td>$376.00</td>
</tr>
<tr>
<td>Installation of Package on Javelin</td>
<td>$150</td>
<td>$526.00</td>
</tr>
<tr>
<td>Javelin Unit Transported to Customer</td>
<td>$50</td>
<td>$576.00</td>
</tr>
<tr>
<td><strong>Total Value</strong></td>
<td><strong>$576.00</strong></td>
<td></td>
</tr>
</tbody>
</table>
The method of Total Quality management used is the Just in Time method, which means we supply to the customer directly per request. This method of management is used to keep the construction of javelins simple while being able to differentiate our product, by allowing options and customization of the product. The final value of the product is $576.00 per our supply chain.

Facilities, Location and Layout

The location of the company is in an urban area. Location is picked in between the countryside and the urban area for manufacturing and a small display outlet in the urban area / in a sports outlet. We picked these two locations because:

- We would like to keep the renting of the space small but also be close enough to waste on transportation.
- Our customer base will be in the urban area among schools and training grounds. With this in mind we will provide a small area for display to market our product and for easy customer-product accessibility.

Figure 2 shows the layout of the manufacturing plant.

![Figure 2: Layout of Manufacturing Plant](image-url)
Financial Forecasts

Financial Forecasts

The financial forecasts for the first three years of the business would be analyzed in this section of the report. The forecasts is analyzed through JavTools’ business prediction of its annual income statements, balance sheets, quarterly cash flow statements, break even analysis and a ratio analysis.

Key Assumptions

In order to have a complete 3 year business forecast some key assumptions were made. The company assumed an annual growth rate of 10%, which is a reasonable growth rate for startup companies. It was only assumed that 5% of manufactured units would not be sold and this would be distributed evenly throughout the year. Nevertheless, these units would be used in the marketing campaign across several states and countries. It was assumed that 5000 CoachJav units would be sold in the first year, 7500 in the second and 9750 in the third at a unit price of $849 for the entire package. The feasibility of these forecasts also rests on the assumption that our company will be able to secure a loan of $200000, with an interest rate of 10% as well. See appendix for other related assumptions.

Financial Statements

To analyze the feasibility of the company, the following financial statements were analyzed, forecasted over the next three years. They are:

- Income Statement
- Balance Sheet
- Cash Flow Statement

Income Statement

The income statement table in the Appendix shows the Company’s statement of income. The statement shows cost and sales revenue for a forecast of the first three years of operation. The net income after tax is also calculated in the table. From the forecast it can be realized that the company will make a net income of about $160,000.00. This amount could be used to pay off some of the debt and structure expansion within the company. Subsequent years show an income of about $560,000.00 and $855,000 which would be used to clear the debt completely and boost marketing of the product, along with incorporating other products like CoachJav for other sports.

Balance Sheet

The company would not be analyzing its financial forecasts using a balance sheet. The company is first and foremost assuming no credit sales within the next three years; the assets possessed by the company is liquid assets in the form of available cash. Inventory currently possessed by the company cannot be accumulated for as assets as everything would be sold by the end of the year. The company debt is the loan which accumulates a 10% interest rate.
**Cash flow Statement**

A table showing a statement of cash flow for the first three years is attached to the appendix in this report. From the table, it is shown that the company ends with a positive cash balance. The cash flow diagram also shows the invested capital, the borrowed funds. There are no changes in assets and liabilities other than the cash, notes payable and equipment thus reemphasizing the exclusion of a balance sheet.

**Break-Even Analysis**

The break-even analysis is shown in the table below. The break-even table shows that the company will break even after selling 4000 units in the first year, 3742 units in the second year and 4097 units in the third year. At these volumes, we will have a break-even price of $635.28, $423.51 and $356.68 respectively per year. Since we believe there will be a huge market for the product based on the pending request we have received so far, the company believes the break-even sales volume of about $3 million will be surpassed each year.

**Ratio Analysis**

From the ratio analysis table in the appendix, one realizes that the company’s gross margin on revenue is 23% in year 1, 27% in year 2 and 28% in year 3. This shows the company’s profitability, as revenue is made above cost. The profit margin in year 1 is 4% and it increases to 9% in year 2 and 10% in year three. These values represent a growth in profits and the ability of the company to quickly pay off its debt and return capital to the company owners. As assets and liability are currently liquidized we cannot for certain base strong facts on our net asset turnover. Nevertheless, the increase in net asset turnover over the three years represent efficiency in inventory management. Last but not least our debt to equity ratio decreases over the three year period showing how rapids we are reducing debt based on our forecast.

**Loan or Investment Proposal**

JavTools’ cofounders and other stakeholders determined that in order to successfully startup the business, we would need a minimum of $300,000 in cash and assets. This was determined by the amount needed to leave us with a positive cash flow at the end of the first year as shown in the Statement of Cash Flow in the Appendix.

**Amount Requested**

As previously stated, the company’s startup cost is $300,000 dollars. Each of the team four co-founders has invested $25,000 of their personal funds, for their 20% stake in the company. The team is requesting a loan of $200,000 from Holtrop Loans Plc.

**Purpose and Uses of Funds**

The purpose of the loan is to pay the rent bill for the first quarter, and buy the initial equipment required to begin production on the 4th of January, 2016. The team also needs to compensate hourly workers and management staff. The companies executives have agreed forego compensation until the company is profitable and the loan is well on track to be paid back.
Repayment Schedule (Exit Strategy)

The team financial team put together an aggressive loan repayment plan, with the objective of completely paying off the debt in six years, by 2022. The plan involves an initial payment of $50,000 in the second year, and an increase in paid installment of 10% from the previous year, until the debt is paid. On the event that JavTools defaults on its loan payments, based on the repayment agreement, Holtrop Loans Plc holds the right to make CoachJav liquify assets up to, but no greater than the amount due.

Implementation Plan and Launch

The company intends on commencing operations, on January 4, 2016. The first two weeks will be spent on renovations, purchasing equipment and other startup operations. Production is scheduled to commence on January 18, 2016. According to employees’ contracts, this is when pay periods will begin.
Appendix

A. Resumes of Employees
B. Assumptions
C. Financial Forecasts
D. Break-Even Analysis
E. Ratio Analysis
A. Resumes of Key Managers and Employees:

**Landon Potts**

Current Address: 2862 Hampshire Blvd SE
Grand Rapids, MI 49506
Email - lwp2@students.calvin.edu

Permanent Address: 6460 Ivan Trail
Middleville, MI 49333
Cell - (616) 558-4394

**Education:**

**Calvin College**, Grand Rapids, MI
Bachelor of Science in Engineering – Electrical/Computer Concentration
- Minor in Computer Science – expected May 2016
- Senior Design Project – capstone course
- Overall GPA – 3.5/4.0
- Varsity Cross Country, Indoor Track, and Outdoor Track

**South Christian High School**, Grand Rapids, MI
- Graduated May 2012 with 3.7/4.0 GPA, 32 ACT
- Varsity Cross Country (Team Captain), Swimming, Track (Team Captain)

**Previous Experience:**

**Intern, Christian Classics Ethereal Library - hymnary.org**, summer 2015
- Worked on Android app for hymnals
- Applied technical knowledge from classes
- Picked up new skills quickly to be productive

**Associate, Woodland Skating Center**, August 2010-Present
- Demonstrated excellent customer service skills
- Trusted to work alone or overseeing other employees
- Partnered with a team to accomplish common goals
- Managed several work areas simultaneously

**Technical Courses:**

**Calvin College**, Grand Rapids, MI; Liberal Arts Education
- Intro to Engineering Design
- Signals and Systems
- Physics: Mechanics and Gravity
- Intro to Thermodynamics
- Statics and Dynamics
- Calc. I, II, and III
- Differential Equations with Linear Algebra
- Engineering Chemistry and Materials Science
- Physics: Electricity and Magnetism
- Intro to Circuit Analysis and Electronics
- Graphical Communication – AutoCAD, Inventor
- Electronic Devices and Circuits

**Computer Skills:** Excel, Word, PowerPoint, AutoCAD, Inventor, MathCAD, C++, Eclipse, Python, MatLab, C#, Microsoft Visual Studio, Java, Android Studio

**References:**

**Randall Brouwer**, Electrical Engineering Professor at Calvin College
(616) 526-7078 – bror@calvin.edu

**Cindy Rootvets**, Manager, Woodland Skating
(616) 481-6646 – cindy@woodlandskating.com

**Nyna Sykes**, Associate Director, hymnary.org
(616) 526-8845 – ns24@calvin.edu
David Dadzie

Current Address: 2511 Normandy Dr SE, 104E
Cell Phone: (616) 264 1425
Email: dkd3@students.calvin.edu

Education
Calvin College – Grand Rapids, Michigan
Bachelor of Science in Engineering, Electrical/Computer Concentration
Expected graduation date: May 2015
Dean’s List
Cumulative GPA 3.165
Technical University of Berlin, Berlin Germany, Summer 2014
Coursework in Engineering and German Language and Culture

Coursework
- Mobile Robotic Systems
- Galactic Astronomy & Cosmology
- Analog Circuits & System Design
- Calculus I, II & III
- Engineering Material Science
- Fundamentals of Digital Systems
- Complex Variables
- Electrical Signals and Systems
- Contextual Diversity Studies
- Python
- Electronic Devices and Circuits
- Intro to Data Structures C++
- Circuit Analysis
- Engineering Statistics
- Differential Equations and Linear Algebra
- German
- Statics and Dynamics (Germany)
- Principles of Micro Economics
- French
- Control Systems
- Computer Architecture & Design
- Engineering Economy
- Intro to the Laws of Conservation and Thermodynamics

Experience
Senior Design Project September 2015 – Present
Calvin College Engineering Department – Grand Rapids, Michigan
- Research and Development of a wireless Data Capture system
- Design and construction of a micro device for Javelin that measures the release velocity and release angle to improve training experience.

Engineering Research Assistant May 2015 – Present
Calvin College Engineering Department – Grand Rapids, Michigan
- Design and construction of a solar simulator
- Design of SMPS for CVCC power supply

Lab Assistant August 2014 – Present
Calvin College Engineering Department – Grand Rapids, Michigan
- Assisting students with AutoCAD, Eagle CAD, Photoshop, and other Autodesk software
- Grading student Assignments

Other Experience
Class Grader January 2015 – Present
Calvin College Student-Athlete Advisory Council

Gaineys Leadership Retreat August 2015
Calvin College Student-Athlete Advisory Council

Data Analyst September 2011 – November 2011
Cal Bank Limited – Accra, Ghana
- Created spreadsheet of client shares and updated the companies database to determine value of stocks

Teacher/Teaching Assistant for 5th Grade September 2010 – July 2011
Ghana International School – Accra, Ghana
- Managed the classroom, organized the class each day
- Taught the children when the teacher was absent/sick
- Worked 45 hours a week

Software
- Autodesk Inventor, EagleCAD, and Dream weaver, Altera Mentor

Activities
Calvin College Track and Field Team Captain, August 2012 – Present
Drummer for Reklight, a worship team at Calvin College, October 2012 – Present
Treasurer for the Calvin College National Society of Black Engineers, August 2014 – June 2015
Mrs. Hannah Green

Address: 2648 Breton Ave SE
Grand Rapids, MI 49506

Email – hannah.green@gmail.com
Cell - (616) 558-4394

Education: Hope College, Holland, MI
Degree/Major in Accounting
- Minor in Business Finance – graduated 2010
- Passed CPA first time taking, summer 2010
- Overall GPA – 3.7/4.0
- Women’s Tennis

Grand Rapids Christian High School, Grand Rapids, MI
- Graduated May 2006 with 3.7/4.0 GPA, 28 ACT
- Women’s Tennis

Previous Experience:
Auditor, HR Block, 2010-2015
- Audit companies on site at businesses and within
- Applied technical knowledge from classes
- Picked up new skills quickly to be productive

Intern, Woodland Skating Center, summers 2008-2009
- Demonstrated excellent customer service skills
- Trusted to work alone or overseeing other employees
- Partnered with a team to accomplish common goals
- Managed several work areas simultaneously

Technical Courses:
Hope College, Grand Rapids, MI; Liberal Arts Education
- Intro to Accounting
- Learning to Count
- Finance
- Auditing
- Financial Statements

Computer Skills:
Excel, Word, PowerPoint, QuickBooks,

References:
Randy Ball, Accounting Professor at Hope College
(616) 123-7078 – baller.beatcalvin@hope.edu

Cindy VanVandersma, Manager, Woodland Skating
(616) 123-6646 – cindy@woodlandskating.com

Eric Halstead, Associate Director, HR Block
(616) 123-8845 – eric.halstead@hrblock.com
Ms. Laura Clifton

Address: 4567 Forest Hills Dr.
Forest Hills, MI 49500

Email – laura.clifton@gmail.com
Cell - (616) 123-4567

Education: Bristol Rovers University, Bristol, England
Bachelor of Science Engineering Technology and Mechanical Design,
• Minor in Computer Science – graduated 2012
• Passed FE exam first try
• Overall GPA – 3.847/4.0
• Band and Choir for 4 years, First chair French Horn

Previous Experience: Engineer Tech, OptiTech, 2012-2015
• Designing solutions dealing with video feeds
• Technical experience with embedded systems and coding
• Work with HD cameras

Intern, OptiTech, summer 2011
• Work with a team to accomplish a task
• Technical skills required to solder
• Worked on making prototypes for senior engineers
• Hired back as full time employee after internship

Technical Courses: Bristol Rivers, Bristol, England
– Intro to Engineering Design
– Dynamics of Machinery
– Embedded Systems
– Controls
– Coding Algorithms

Computer Skills: Excel, Word, PowerPoint, Java, C++, C, Python, Perl, Matlab, EagleCAD

References: Ogden Baker, Engineering Professor at Bristol Rivers
(616) 123-7078 – englandrocks@bristolrivers.edu

Cecilia Vonklizen, Manager, OptiTech
(616) 123-6646 – cindy@optitech.com

David Clifton, Associate Director, OptiTech
(616) 123-8845 – david.clifton @optitech.com
Ofiliojo Chibuokem Ichaba  
3201 Burton Street SE, Grand Rapids, MI 49546, USA  
ofiliojo@gmail.com  
+1-616-570-8788

**Education**  
**Calvin College** — Grand Rapids, MI  
Bachelor of Science in Engineering, Electrical and Computer Concentration, minor in Computer Science  
Expected graduation: May 2016  
Cumulative GPA: 3.044/4

**Relevant Courses**  
- Mathematics: Calculus I, II & III; Differential Equations w/ Linear Algebra; Complex Variables; Engineering Statistics  
- Computer Science: Applied Computing; Intro to Data Structures; Data Structures & Algorithms; Programming Language Concepts; Operating Systems & Networking

**Technical Skills**  
- MATLAB  
- Autodesk Inventor  
- AutoCAD  
- Eagle PCB Software  
- PSPICE  
- Programming Languages: C, C++, Python, C#, VHDL & Assembly Language  
- Allen Bradley RSLogix500 PLC Programming

**Relevant Experience**  
**Calvin College Engineering Department** — Grand Rapids, MI  
Senior Design Project Member, September 2015 – Present  
- Designing a javelin that measures the speed and angle of throw to improve training experience

**Integrated Solutions Angola, SA - Luanda, Angola**  
Engineering Intern, July 2013 - August 2013  
- Designed and implemented an efficient automatic inventory management system to meet the company’s needs.

**Other Experience**  
**Calvin College Student Senate** — Grand Rapids, MI  
Student Senator, September 2015 – Present

**Calvin College Information Technology** - Grand Rapids, MI  
Telecommunications Assistant, October 2013 – August 2015
HARRY KANE
32 Clifton RD
Chingford, London, 55879
1429909871
harry_kane@hotmail.com

Career objective: I would like to work for a company that is sport oriented and is willing to hire entry level Computer Scientist

Experience

Jay Tools
Software Developer
Develop software for Coach Jay

Tottenham Hotspur

Striker
score goals and help Tottenham qualify for the European Cup

Education

Computer Science
Chingford University, (2014)

Other Skills & Achievements

EPL Golden Boot award 2014-2015
PFA young player of the year 2014-2015
Fair Play award 2014-2015
Europa League Golden Boot
England Team Call-up

References available upon request.
JOHN MUGABE
4521 Kwame Nkrumah Circle
Grand Rapids, MI, 49506
3626909871
john_mugabe@gmail.com

Career objective: I am an engineering oriented professional with a doctorate degree in business and engineering design, seeking a challenging and innovative environment to lead and spear head into success.

Qualifications: Helped Donerworks introduce embedded systems in their electronic design

Experience

Jay Tools
2015 - present

President
President of the company. Make important decisions regarding the company

Donerworks
1999-2015

VP of Engineering
made general decisions on engineering design and implementation

Education

Electrical and Computer Engineering
Calvin University, (1999)

MBA
Hsinghang University, (2003)

Engineering Design
University of KNUST, (2009)

Other Skills & Achievements

Employee of the year 2002
Employee of the year 2003
International recognition for Foreign Engineers 2007
IEEE Golden Engineer Award 2010

References available upon request.
Kwesi Opare Asare

Current Address
2511 Normandy DR SE
Grand Rapids MI, 49506

Cell Phone: 616 309 7651
Email: koasare@live.com
koa2@students.calvin.edu

Education: Calvin College – Grand Rapids, Michigan
Bachelor of Science in Engineering: Electrical and Computer Engineering
Concentration
Minor in Mathematics
Year of Graduation: May 2016
Current GPA: 3.2/4.0

Technical University of Berlin, Berlin Germany, summer 2013
Course work in Engineering and German Language and Culture

Course work
Engineering: Computer Architecture and Design, Controls System Engineering,
Fundamentals of Digital Design, Analog Circuits, Signals and Systems, Microelectronic
Circuits, Introduction to Circuit Analysis and Electronics
Math: Differential equations and linear algebra, Engineering Statistics, Multivariable
Calculus, Calculus I and II

Computer Skills:
Serial Communication (HyperTerminal, Putty) AVR Microcontroller Unit Programming
(Assembly Code, Embedded C, Arduino) Microsoft office Python
Autodesk Inventor Mathcad EagleCad AutoCad Adobe
Creative Collection Data Analysis and Structure

Work Experience:
Electrical and Computer Engineering Intern
Company: Herman Miller Inc. Field: Technology Integration
Tasks: Analog circuit design, AVR Microcontroller Programming, Vibration Sensor
Data analysis

Job Shadowing (January 2015)
Mentor: Ing. Mr. Eric Asare Company: Ghana Grid Company (GridCo)
Field: Network Performance Position: Director, Network Performance

Calvin Dining Services (January 2013 - )
Position: Student Worker/ SuChef
- Assist the chef in food set up and general dining hall activities

Other
Activities: Photography, Phone and Computer Repairs
Languages: French,
Societies: IEEE and IEEE ComSoc member; German
B. Key Assumptions

Selling Price of Javelin = $849

Units Sold:
Year 1: 5000
Year 2: 7500
Year 3: 9750

Units Manufactured: 5% greater than Units Sold
Year 1: 5250
Year 2: 7875
Year 3: 10235

Variable Cost of Goods Sold:
Raw Material = $546.49/unit
Direct Labor = $8.15/hour (0.5 hours/unit)
Utilities (Electricity, Water & Gas) = $21/hour (0.5 hours/unit)
Total per Unit = $561.065/unit

Fixed Cost of Goods Sold:
Rent:
Year 1 = $4000/month
Year 2 = $4400/month
Year 3 = $4840/month

Manager's Salary:
Year 1 = $42,000
Year 2 = $46,000
Year 3 = $50,000

Cost of Equipment:
Year 1 = $200,000
Year 2 = $50,000
Year 3 = $70,000

Variable Operating Cost:
Branding & Packaging = $3/unit
Shipping = $4.49/unit
Total per unit = $7.49/unit

Fixed Operating Cost:
Insurance = $5000/month
Salary:
Chief Executive Officer:
Year 1 = $100,000  
Year 2 = $110,000  
Year 3 = $121,000

VPs & Chief Financial Officer (3) :
Year 1 = $80,000  
Year 2 = $88,000  
Year 3 = $96,800

Other Employees (5) :
Year 1 = $50,000  
Year 2 = $55,000  
Year 3 = $60,500

Other Compensation:
Attorney = $45/hour (4 hours/week)
Accountant = $20/hour (2 hours/week)

Invested Capital = $20,000/founder = $100,000  
Loan Amount = $200,000  
Annual Interest Rate on debt = 10%

C. Tables of Financial Statements

Table 3: Income Statement

<table>
<thead>
<tr>
<th>Year</th>
<th>JavTools</th>
<th>Pro-Forma Statement of Income</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sales revenue</td>
<td>Year 1</td>
</tr>
<tr>
<td>1</td>
<td>4,245,000</td>
<td>6,367,500</td>
</tr>
<tr>
<td>2</td>
<td>2,945,591</td>
<td>4,418,387</td>
</tr>
<tr>
<td>3</td>
<td>290,000</td>
<td>148,800</td>
</tr>
<tr>
<td>4</td>
<td>28,580</td>
<td>56,125</td>
</tr>
</tbody>
</table>

Gross Margin | 980,829 | 1,744,188 | 2,299,942
### Variable Operating Costs

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>39,323</td>
<td>58,984</td>
<td>76,660</td>
</tr>
</tbody>
</table>

### Fixed Operating Costs

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>661,440</td>
<td>720,440</td>
<td>785,340</td>
</tr>
</tbody>
</table>

### Operating Income

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>280,066</td>
<td>964,764</td>
<td>1,437,942</td>
</tr>
</tbody>
</table>

### Interest Expense

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,000</td>
<td>17,500</td>
<td>12,250</td>
</tr>
</tbody>
</table>

### Income Before Tax

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>270,066</td>
<td>947,264</td>
<td>1,425,692</td>
</tr>
</tbody>
</table>

### Income tax (40%)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>108,027</td>
<td>378,906</td>
<td>570,277</td>
</tr>
</tbody>
</table>

### Net Income After Tax

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>162,040</td>
<td>568,359</td>
<td>855,415</td>
</tr>
</tbody>
</table>

### Table 4: Cash Flow Statement

<table>
<thead>
<tr>
<th>JavTools</th>
<th>Pro-Forma Statement of Cash Flows</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year 1</td>
</tr>
<tr>
<td>Beginning Cash Balance</td>
<td>-</td>
</tr>
<tr>
<td>Net Income After Tax</td>
<td>162,040</td>
</tr>
<tr>
<td>Depreciation expense</td>
<td>28,580</td>
</tr>
<tr>
<td>Invested Capital (Equity)</td>
<td>100,000</td>
</tr>
<tr>
<td>Increase (decrease) in borrowed funds</td>
<td>200,000</td>
</tr>
<tr>
<td>Equipment Purchases</td>
<td>(200,000)</td>
</tr>
<tr>
<td>Ending Cash Balance</td>
<td>290,620</td>
</tr>
</tbody>
</table>

### Table 5: Break-Even Analysis

| CoachJav |
## Break-Even Analysis

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales revenue</td>
<td>4,245,000</td>
<td>6,367,500</td>
<td>8,277,750</td>
</tr>
<tr>
<td><strong>Less: Variable Costs:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable Cost of Goods Sold</td>
<td>2,945,591</td>
<td>4,418,387</td>
<td>5,742,500</td>
</tr>
<tr>
<td>Variable Operating Costs</td>
<td>39,323</td>
<td>58,984</td>
<td>76,660</td>
</tr>
<tr>
<td><strong>Total Variable Costs</strong></td>
<td>2,984,914</td>
<td>4,477,371</td>
<td>5,819,160</td>
</tr>
<tr>
<td>Contribution Margin</td>
<td>1,260,086</td>
<td>1,890,129</td>
<td>2,458,590</td>
</tr>
<tr>
<td><strong>Less: Fixed Costs</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fixed Cost of Goods Sold</td>
<td>290,000</td>
<td>148,800</td>
<td>178,080</td>
</tr>
<tr>
<td>Fixed Operating Costs</td>
<td>661,440</td>
<td>720,440</td>
<td>785,340</td>
</tr>
<tr>
<td>Depreciation</td>
<td>28,580</td>
<td>56,125</td>
<td>57,228</td>
</tr>
<tr>
<td>Interest Expense</td>
<td>10,000</td>
<td>17,500</td>
<td>12,250</td>
</tr>
<tr>
<td><strong>Total Fixed Costs</strong></td>
<td>990,020</td>
<td>942,865</td>
<td>1,032,898</td>
</tr>
<tr>
<td>Income Before Tax</td>
<td>270,066</td>
<td>947,264</td>
<td>1,425,692</td>
</tr>
<tr>
<td><strong>Year 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Fixed Costs</strong></td>
<td>990,020</td>
<td>942,865</td>
<td>1,032,898</td>
</tr>
<tr>
<td><strong>Contribution Margin %</strong></td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
<tr>
<td>Break Even Sales Volume</td>
<td>3,335,196</td>
<td>3,176,340</td>
<td>3,477,633</td>
</tr>
<tr>
<td>Break Even Unit Volume</td>
<td>3928.381887</td>
<td>3741.271679</td>
<td>4096.151551</td>
</tr>
<tr>
<td>Break Even Unit Price</td>
<td>635.2754708</td>
<td>423.511954</td>
<td>356.6802735</td>
</tr>
</tbody>
</table>
## Equipment Depreciation

<table>
<thead>
<tr>
<th></th>
<th>Purchases</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment Purchases Year 1</td>
<td>200,000</td>
<td>28,580</td>
<td>48,980</td>
<td>34,980</td>
</tr>
<tr>
<td>Equipment Purchases Year 2</td>
<td>50,000</td>
<td>7,145</td>
<td>12,245</td>
<td></td>
</tr>
<tr>
<td>Equipment Purchases Year 3</td>
<td>70,000</td>
<td></td>
<td></td>
<td>10,003</td>
</tr>
<tr>
<td></td>
<td></td>
<td>28,580</td>
<td>56,125</td>
<td>57,228</td>
</tr>
</tbody>
</table>

| MACRS Rates (7-year recovery period) | 0.1429 | 0.2449 | 0.1749 |

**Interest Expense:**

<table>
<thead>
<tr>
<th>Annual interest rate on debt</th>
<th>10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>Year 2</td>
</tr>
<tr>
<td>Average debt balance</td>
<td>100,000</td>
</tr>
<tr>
<td>Interest expense</td>
<td>10,000</td>
</tr>
</tbody>
</table>

### E. Ratio Analysis

*Table 6: Ratio Analysis*

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross margin on Revenue</td>
<td>0.23</td>
<td>0.27</td>
<td>0.28</td>
</tr>
<tr>
<td>Profit margin</td>
<td>0.04</td>
<td>0.09</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>2014</td>
<td>2015</td>
</tr>
<tr>
<td>--------------------------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>Net Asset Turnover</td>
<td>2.12</td>
<td>3.18</td>
<td>4.14</td>
</tr>
<tr>
<td>Debt to Equity Ratio</td>
<td>2.60</td>
<td>2.30</td>
<td>1.84</td>
</tr>
</tbody>
</table>